



CENTRAL BANK OF CYPRUS
EUROSYSTEM

£5

THE CYPRUS ECONOMY

Historical Review
Prospects
Challenges

Editors:
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TABLE OF CONTENTS

Foreword	XXIII
1. The Cyprus economy: past successes, current and future challenges	1
1.1 Introduction	1
1.2 Economic and social conditions in 1960	7
1.3 1961-1973: The first years after independence – the import substitution strategy and the strategy for the promotion of tourism and agriculture	11
1.4 The Turkish invasion and its consequences	15
1.5 Economic policies to address the consequences of the Turkish invasion	16
1.6 The European path, 1980-2008: customs union, accession to the EU and adoption of the euro	25
1.6.1 The customs union agreement	25
1.6.2 Accession to the EU and adoption of the euro	28
1.7 The Cyprus economy in recent years	29
1.8 Challenges ahead	30
2. External transactions	39
2.1 Introduction	39
2.2 Historical overview of the trade relations of Cyprus	40
2.3 Balance of payments	44
2.3.1 Current account	46
2.3.2 Goods	48
2.3.3 Services	52
2.3.4 Income account	58
2.3.5 Current transfers account	59
2.3.6 Capital and financial account	60
2.3.7 International investment position	62
2.3.8 Foreign debt	63
2.4 Current account sustainability in Cyprus	64
2.5 External competitiveness of the Cyprus economy	69
2.5.1 Quantitative indicators of competitiveness	70
2.5.2 Qualitative indicators of competitiveness	72
2.6 Twin deficits	73

2.7 Policies to reduce the current account deficits: concluding remarks	77
3. Exchange rate policy in Cyprus	83
3.1 Introduction	83
3.2 Alternative exchange rate regimes	84
3.3 A historical overview of the exchange rate regime in Cyprus	90
3.4 Fixing the irrevocable conversion rate of the Cyprus pound against the euro on 1 January 2008	94
3.4.1 The macroeconomic background	95
3.4.2 Using econometric models for assessing the exchange rate	98
3.5 Challenges implied by euro area participation	100
3.6 Concluding remarks	102
Technical Appendix: Using the FEER model for estimating the equilibrium exchange rate of the Cyprus pound	103
4. Economic and monetary policy in the EMU	111
4.1 Introduction	111
4.2 Historical overview of the Economic and Monetary Union (EMU)	113
4.3 The convergence criteria and the path to the Exchange Rate Mechanism II (ERM II) and the adoption of the euro	122
4.3.1 EU Member States' strategies for joining the ERM II and adopting the euro	127
4.3.2 The adoption of the euro by Cyprus	129
4.4 The changeover from the Cyprus pound to the euro: practical preparations	130
4.5 Monetary policy in the EMU	132
4.6 Economic policy in the EMU	137
4.6.1 Fiscal policy	140
4.6.2 Coordination and surveillance of macroeconomic and structural policies	144
4.6.3 Regulation and supervision of the financial sector - Safeguarding financial stability and a permanent crisis management framework	151
4.6.4 Recent developments	154

5. Monetary policy strategy of the Central Bank of Cyprus (CBC)	159
5.1 Introduction	159
5.2 Alternative monetary policy strategies	161
5.2.1 Inflation targeting	163
5.2.2 Monetary targeting	167
5.2.3 Exchange rate targeting	169
5.3 Exchange rate policy and price stability in Cyprus	171
5.3.1 Salient features of the Cyprus economy	171
5.3.2 Keeping inflation at bay	172
5.4 Critical elements to the success of the CBC's monetary policy strategy	175
5.5 Accession to the European Union: financial liberalisation and policy challenges for the CBC	181
5.6 Participation of the Cyprus pound in ERM II	186
5.7 The adoption of the euro and the associated challenges	189
5.8 Conclusions and policy lessons	193
6. Implementation of monetary policy in Cyprus	199
6.1 Introduction	199
6.2 The implementation of the CBC's monetary policy under a protectionist regime, 1963-1995	200
6.2.1 Rapid growth in money supply and fears of inflationary pressures, 1965-1969	201
6.2.2 The oil crisis and the adoption of more flexible liquidity margins, 1970-1973	202
6.2.3 The Turkish invasion, 1974	204
6.2.4 The recovery of the Cyprus economy, 1975-1979	205
6.2.5 Inflationary pressures and the introduction of credit ceilings, 1980-1990	206
6.2.6 The Gulf War and the application of Cyprus for membership in the European Union, 1990-1995	209
6.3 Implementation of the CBC's monetary policy under the new monetary policy framework, 1996-2007	211
6.3.1 The process of financial liberalisation, 1996-1999	211
6.3.2 The Cyprus Stock Exchange (CSE) crisis in 2000	213
6.3.3 Liberalisation of interest rates and capital movements in 2001	221

6.3.4	Global economic recovery shadowed by the war in Iraq, 2002-2003	229
6.3.5	Accession of Cyprus to the European Union in 2004	231
6.3.6	Participation of the Cyprus pound in the Exchange Rate Mechanism II (ERM II) in 2005	237
6.3.7	Overheating of the Cyprus economy, coupled with a surge in borrowing both in domestic and foreign currency, 2006-2007	238
6.4	The implementation of monetary policy in Cyprus after accession to the euro area, 2008-2010	244
6.4.1	Cyprus accession to the euro area in 2008	244
6.4.2	The monetary policy of the euro area during the global economic crisis and its impact on the Cyprus economy	248
6.5	Summary	254
	Appendices	255
7.	The financial system of Cyprus	263
7.1	Introduction	263
7.2	The evolution of the financial sector in Cyprus	265
7.3	The banking and credit system	267
7.3.1	Establishment and development	267
7.3.2	The structure of the banking sector	271
7.3.3	Key features of the banking sector	273
7.3.4	Credit Co-operative Institutions	280
7.4	The broader financial system	284
7.4.1	The stock market and the Cyprus Stock Exchange	284
7.4.2	The excessive rise in CSE share prices in 1999	285
7.4.3	The bond market	287
7.4.4	The interbank market	291
7.5	The global financial crisis and its impact on Cyprus	292
7.5.1	The global financial crisis	292
7.5.2	The impact on Cyprus	294
7.5.3	Solutions and future prospects	296
8.	Public finances: trends, challenges and prospects	303
8.1	Introduction	303
8.2	The importance of fiscal policy	305

8.2.1	Effect on GDP	305
8.2.2	Effects on inflation	310
8.2.3	Effect on the current account	312
8.2.4	Population ageing and fiscal policy	313
8.3	A comparative analysis of general government revenue and expenditure between Cyprus and the other EU Member States	315
8.4	The general government fiscal balance and the structural fiscal balance from a historical perspective	318
8.4.1	Fiscal balance	319
8.4.2	Structural fiscal balance	321
8.5	Central government revenue and expenditure over time	324
8.5.1	Central government revenue over time	324
8.5.2	Central government expenditure over time	331
8.6	Public debt and challenges for fiscal sustainability in Cyprus	338
8.7	Concluding remarks	346
	Appendices	349
9.	Inflation and the importance of price stability: analysis and the effects on the domestic economy	357
9.1	Introduction	357
9.2	International environment and characteristics of domestic inflation	359
9.2.1	Developments in the international environment	359
9.2.2	Determinants of domestic inflation	361
9.2.3	Components of the Consumer Price Index (CPI)	369
9.3	Comparison of the domestic Consumer Price Index with the domestic Harmonised Index of Consumer Prices	373
9.4	Detailed developments in the Consumer Price Index	375
9.4.1	Inflation in the period 1971-1980	375
9.4.2	Inflation in the period 1981-1990	377
9.4.3	Inflation in the period 1991-1999	381
9.4.4	Inflation in the period 2000-2010	382
9.5	Breakdown of domestic HICP and comparison with the euro area HICP	385
9.6	HICP excluding its more volatile components	394
9.7	General remarks and conclusions	397

10. The labour market	403
10.1 Introduction	403
10.2 Population and labour force in Cyprus	404
10.2.1 Population	404
10.2.2 Labour force	407
10.3 Characteristics of the labour force in Cyprus	410
10.3.1 Education	411
10.3.2 Foreign labour force	413
10.4 Characteristics of the labour market in Cyprus	415
10.4.1 Trade unions and employer associations in Cyprus	415
10.4.2 Industrial relations in Cyprus	416
10.4.3 Wage-setting and wage indexation	418
10.4.4 Social insurance	420
10.5 Employment	421
10.6 Unemployment	425
10.6.1 Measuring unemployment in Cyprus	425
10.6.2 The evolution of unemployment in Cyprus over time	428
10.6.3 Unemployment correlations in Cyprus	428
10.7 Productivity and wages in Cyprus	435
10.7.1 Labour productivity	436
10.7.2 Level of wages in Cyprus	438
10.7.3 Unit labour cost	447
10.8 Competitiveness: challenges and prospects	448
11. Econometric models and macroeconomic forecasting tools	451
11.1 Introduction	451
11.2 Key leading economic indicators of GDP	455
11.2.1 GDP forecasting using a dynamic model	457
11.2.2 Real GDP forecasting via its components	460
11.3 Forecasting inflation	464
11.4 Vector Autoregressive Model	466
11.4.1 Origin and basic structure	471
11.4.2 Forecasting	473
11.4.3 Structural Vector Autoregressive Models	478
11.5 The CYMCM macroeconometric model	478
11.5.1 Use of the model	479
11.5.2 Theoretical framework	480

11.5.3 Model estimation and calibration	484
11.5.4 Baseline projection	484
11.5.5 Scenario analysis	487
11.6 Dynamic Stochastic General Equilibrium Models	489
11.7 Analysis of macroeconomic projections	491
11.7.1 Risk assessment	491
11.7.2 Comparison of the performance of real-time projections across different methodologies	495
11.7.3 Comparison of forecasts by the CBC with forecasts by other institutions	499
11.8 Summary	502
12. Finances of Cypriot households	507
12.1 Introduction	507
12.2 The usefulness of household finance surveys	508
12.3 Cypriot household finance surveys of 1999, 2002 and 2005	515
12.4 Establishment of the HFCN network–Significance and objective of the HFCS survey	515
12.4.1 Sampling design and sampling frame of the HFCS	516
12.4.2 The HFCS questionnaire	518
12.5 Results from past surveys	523
12.6 Preliminary results from the HFCS –2010 field survey with 2009 as the reference year	531
12.7 Results from the Family Budget Survey	534
12.8 Summary	537
13. Real Estate Market	543
13.1 Introduction	543
13.2 Magnitude, funding and structure of the real estate market in Cyprus and the EU	545
13.3 Real estate market, the macroeconomy and monetary policy	548
13.4 Methods for constructing real estate price indices	552
13.4.1 Simple Average method	554
13.4.2 Repeat Sales method	555
13.4.3 Hedonic method	557
13.4.4 Summary of methods	561
13.5 Cyprus residential property price indices	561
13.5.1 CBC Residential Property Price Index	562

13.5.1.1 Data collection	562
13.5.1.2 Index construction methodology	563
13.5.2 Other residential property price indices for the Cyprus real estate market	567
13.5.3 Comparison of Cyprus residential property price indices with respective indices in other countries	569
13.6 Real estate market characteristics	569
13.6.1 Stylised facts	569
13.6.2 Supply and demand factors	571
13.7 Cyprus real estate market characteristics	573
13.7.1 Overview	573
13.7.2 Supply and demand factors	575
13.8 Concluding remarks	591
Index of terms	598
Index of authors	605

CHARTS

1.1	Rural population	9
1.2	Agricultural land and permanent cropland	10
1.3	Indices of crop production, food production and livestock production	10
1.4	Life expectancy at birth	11
1.5	Net migration	13
1.6	Unemployment	15
1.7	Manufactures exports	19
1.8	Added value of the various sectors of the economy	30
1.9	Real GDP growth rate in Cyprus and the euro area	32
1.10	Fiscal deficit in Cyprus	33
2.1	Trade with euro area countries	44
2.2	Trade balance, 1960-2010	48
2.3	Exports of domestically produced goods and re-exports, 1960-2010	50
2.4	Imports of goods destined for home use and imports destined for re-exports	51
2.5	Services balance, 1995-2010	53
2.6	Income account, 2002-2010	59
2.7	Current account financing, 1995-2010	61
2.8	International investment position of Cyprus, 2002-2010	62
2.9	Fiscal balance and current account, 1960-2010	76
3.1	Exchange rate of the euro against the Cyprus pound	92
3.2	Effective exchange rate of the Cyprus currency (IMF weights)	96
3.3	FEER compared with REER	99
4.1	Inflation	117
4.2	Unemployment	117
4.3	Fiscal deficit in the first 12 euro area member states	139
4.4	Public debt in the first 12 euro area member states	139
5.1	M2 and claims on private sector	180
5.2	Effective exchange rates of the Cyprus currency (IMF weights)	188

6.1	Minimum liquidity ratio, M2 and GDP	203
6.2	Growth of claims on private sector	214
6.3	Cyprus interest rates before euro area accession	228
6.4	Deposits of residents in foreign currency	232
6.5	Daily purchases / sales of foreign exchange by the CBC from / to domestic banks, 2 Jan. 2001-28 May 2004	233
6.6	Deposits of residents in local and foreign currency	235
6.7	Selected exchange rates against the Cyprus pound	235
6.8	Credit developments in Cyprus, 2005-2009	241
6.9	Daily purchases / sales of foreign exchange by the CBC from / to domestic banks, 1 Jun. 2004-24 Dec. 2007	243
6.10	Exchange rate of the euro against the Cyprus pound	243
6.11	Index of production in construction	247
6.12	Cyprus MFI interest rates on euro-denominated loans (new business) to euro area residents	250
6.13	Cyprus MFI interest rates on euro-denominated deposits (new business) by euro area residents	251
7.1	Functions of financial systems	264
7.2	Number of branches of credit institutions per 100.000 population, selected countries	271
7.3	Size of the domestic banking system in selected countries - assets of MFIs excluding operations abroad, Dec. 2010	275
7.4	Developments in the size of the domestic financial system in selected countries - MFIs assets excluding operations abroad, 2001-2010	275
7.5	MFI loans to domestic residents, by sector, Dec. 2010	276
7.6	Sectoral distribution of loans to residents - NACE 1.1 classification	277
7.7	Contribution of financial intermediation, 1995-2010	281
7.8	CSE General Index versus Eurostoxx 50	286
7.9	Gross general government debt, 31 Dec. 2010	289
7.10	Holder of debt securities in the domestic market, 31 Dec. 2010	290
7.11	Distribution of investors in the Cyprus EMTN with maturity 1 Nov. 2015	290
7.12	One-day NIBOR and EONIA	291

8.1	Consumer price index, 1984-2011	311
8.2	General government budget balance and current account balance, 1960-2010	312
8.3	Number of employees per pensioner, 2007-2060	313
8.4	Age-related expenditure, 2007-2060	314
8.5	General government total expenditure, average for the period 2006-2010	316
8.6	General government total revenue, average for the period 2006-2010	317
8.7	General government expenditure for compensation of employees, average for the period 2006-2010, % of total expenditure	318
8.8	General government expenditure for compensation of employees, average for the period 2006-2010, % of GDP	318
8.9	General government budget and primary balances, 1995-2011	319
8.10	General government total revenue and expenditure, 1995-2060	320
8.11	Potential and real GDP growth rates and output gap, 1996-2010	322
8.12	Fiscal balances, 1995-2010	323
8.13	Central government revenues from direct taxes, 1970-2010	326
8.14	Central government revenues from indirect taxes, 1970-2010	327
8.15	Social Security Fund revenues from social contributions, 1970-2010	328
8.16	Real estate-related revenues from direct taxes, 1970-2010	330
8.17	Central government non-tax revenues, 1970-2010	330
8.18	Central government expenditure for compensation of employees, 1970-2010	332
8.19	Number of central government employees, 1960-2010	332
8.20	Number of central government employees, 1960-2010, % of the gainfully employed population	333
8.21	Central government expenditure for other current transfers, 1970-2010	334
8.22	Social Security Fund expenditure for social payments, 1970-2010	334
8.23	Central government expenditure for interest payments, 1970-2010	336
8.24	Central government capital expenditure, 1970-2010	337
8.25	General government gross debt and intragovernmental borrowing, 1995-2010	338
8.26	General government gross debt, 1960-2010	340
8.27	General government primary balance, 2010-2030	342

8.28	General government budget balance, 2010-2030	342
8.29	General government gross debt, 2010-2030	343
8.30	Sovereign bond yield spreads over German bunds, Jan. 2011-Dec. 2011	345
9.1	Comparison of CPI between Cyprus and other selected countries	360
9.2	Comparison of inflation with broad monetary aggregate M2 and GDP	369
9.3	Percentage change of CPI by economic origin	372
9.4	Percentage change of local goods by economic origin	372
9.5	Percentage change in Brent crude oil prices	373
9.6	Comparison of CPI with the HICP	375
9.7	Fluctuations in average annual CPI over the period 1960-2010	376
9.8	HICP: by category	386
9.9	Comparison of domestic HICP with the corresponding euro area HICP	388
9.10	HICP: unprocessed food	389
9.11	HICP: processed food	390
9.12	HICP: energy	391
9.13	Price of Brent crude oil	392
9.14	Exchange rate of US dollar against the euro	393
9.15	HICP: non-energy industrial goods	393
9.16	HICP: services	394
9.17	Comparison of HICP excluding energy between Cyprus and the euro area	395
9.18	Comparison of HICP excluding energy and food between Cyprus and the euro area	396
10.1	Dependency ratio in Cyprus	406
10.2	Change in labour force and the contribution of population and participation rate	407
10.3	Participation rate in the labour force	408
10.4	Female participation rate in the labour force	409
10.5	Change in labour force and the contribution of Cypriots and non-Cypriots	410
10.6	Percentage of population by education level	411
10.7	Participation in the labour force by education level, 2001-2010	413

10.8	Foreign labour force in Cyprus, 2001-2010	414
10.9	Foreign employment by sector, 2010	414
10.10	Sectoral shares in employment	420
10.11	Share of foreign employment in total employment by sector, 2010	423
10.12	Government civilian employees by main category of occupation, 1980 and 2010	423
10.13	Registered unemployment, unemployment based on the labour force survey and "revised registered unemployment"	427
10.14	Unemployment and GDP, 1960-2010	427
10.15	Beveridge curve, 2005-2011	433
10.16	Okun's law	434
10.17	Phillips curve, 1980-2010	436
10.18	Annual change in productivity and GDP	437
10.19	Average wages and gender wage gap, 1980-2008	439
10.20	Annual change in real earnings and productivity	446
10.21	Wages of Cypriots and non-Cypriots, 2010	446
10.22	Percentage change in unit labour costs, 1996-2010	447
11.1	Economic sentiment indicator and GDP	458
11.2	Estimated model's fitted values and nowcasting of real GDP	458
11.3	Local cardholder expenditure and private consumption	461
11.4	Indirect taxes and private consumption	461
11.5	Total registrations of motor vehicles and private consumption	462
11.6	Real GDP fan chart	493
11.7	HICP inflation fan chart	494
11.8	Real GDP projected by different types of models and reported for selected time periods	496
11.9	HICP inflation projected by different types of models and reported for selected time periods	496
11.10	Real GDP forecast errors of different types of models	497
11.11	HICP inflation forecast errors of different types of models	497
12.1	Questionnaire structure	519
12.2	Non-consumer spending by household, 2003 and 2009	538

13.1	Housing consumption and housing investment in member states, 2007	546
13.2	Value added and employment in construction sector in member states, 2010	546
13.3	Outstanding amounts of housing loans in member states, 2010	547
13.4	Euro area real residential property price index, real mortgage rates (up to 1 year maturity) in the euro area and real ECB main refinancing operations (MRO) interest rate	549
13.5	House and apartment price indices	567
13.6	Residential property price index	567
13.7	Cyprus residential property price indices	568
13.8	Residential property price indices - Cyprus and other countries	569
13.9	Net migration and number of households	576
13.10	Real disposable income and real average residential property price	577
13.11	Nominal interest rate of housing loans and outstanding amounts of housing loans	579
13.12	Housing loans and residential property price index	580
13.13	Business and consumer surveys and residential property price index	581
13.14	Residential property price index and sales contracts	583
13.15	New dwellings completed and housing stock	586
13.16	Price index of construction materials and residential property price index	587
13.17	Index of unit labour costs in the construction sector	588
13.18	Bulding permits authorised	589
13.19	Production index in construction, local sales of cement and residential property price index	590

TABLES

1.1	Annual growth rates of output per worker	8
1.2	Share of selected sectors in GDP	8
1.3	Social indicators	11
1.4	Gross fixed capital formation	12
1.5	Exports by main product categories	20
1.6	Number of people in various professions	20
1.7	Pattern of employment and value-added / worker	21
1.8	Workers' bank transfers	22
1.9	Trade between Cyprus and the European Community (EC)	26
1.10	Imports (cif) from European Community (EC) countries	26
1.11	Persons aged 20 years and over with higher education qualifications	31
1.12	Other indicators of prosperity	31
2.1	Balance of payments	45
2.2	Current account, 1960-2010	47
2.3	Current account, 1995-2010	66
2.4	Current account sustainability and macroeconomic variables, 1995-2010	67
3.1	Alternative monetary policy regimes	87
3.2	Use of exchange rate regimes internationally (September 2011)	89
4.1	The European Semester: Who does what and when?	150
6.1	Advances and loans to the private sector	229
6.2	Net foreign exchange transactions by the CBC	234
6.3	Deposits developments of domestic banks	236
6.4	Construction sector indicators	241
6.5	Interest rate announcements in 2007	242
6.6	Loans to domestic households	252

7.1	Comparison of tax rates in selected European countries	266
7.2	Bank branches in Cyprus	272
7.3	Structure of the banking sector (consolidated data)	273
7.4	Banks operating in Cyprus at the end of 2010	274
7.5	Balance sheet of the domestic banking sector (including CCIs) - non-consolidated assets (not including overseas operations)	277
7.6	Balance sheet of the domestic banking sector (including CCIs) - non-consolidated liabilities (not including overseas operations)	278
7.7	Profitability ratios for locally active banks	280
7.8	Main features of the CSE - selected periods	285
8.1	Central government accounts on a cash basis, 2010	325
9.1	Comparison of various indicators with an impact on inflation over time	361
9.2	Subcomponents of domestic HICP: weights	387
9.3	Subcomponents of euro area HICP: weights	387
10.1	Cyprus population in census years	405
10.2	Percentage of population aged 25-64 by education level in Cyprus and the European Union, 2004 – 2010	412
10.3	Breakdown of per capita GDP, annual average of changes, 1996-2010	438
11.1	Econometric model for the estimation of real GDP	459
11.2	Econometric model for the estimation of real private consumption	462
11.3	Econometric model for the estimation of real exports	463
11.4	Impact on main macroeconomic variables of an increase in the user cost of capital by 1 percentage point	488
11.5	Impact on main macroeconomic variables by an increase in non-modelled wealth by 1 percentage point	489
11.6	Results of main forecast error summary statistics for real GDP	498
11.7	Results of main forecast error summary statistics for HICP inflation	498
11.8	Comparison of projections for the Cyprus economy by international organisations	500

11.9	Comparison of international organisations' average projections for the Cyprus economy during the period 2008-2012	500
11.10	Comparison of forecast errors for the Cyprus economy by international organisations	501
11.11	Comparison of international organisations' average forecast errors for the Cyprus economy	502
12.1	Household participation in various assets	528
12.2	Proportion of households investing in risky assets, by age	529
12.3	Household participation in various debts	529
12.4	Ownership of financial assets, by age of household head	530
12.5	Main residence - tenure status	532
12.6	Households using the main residence and other property as collateral	532
12.7	Households using the main residence or other property as collateral, by age	532
12.8	Purpose of household loan (with the main residence as collateral)	533
12.9	Households with loans other than housing loans	534
12.10	Characteristics of households with savings accounts, notice accounts, certificates of deposits or other such deposits	535
12.11	Main results	536
12.12	Average annual household consumption expenditure by main category of goods and services, 2003-2009	537
13.1	Methods for constructing real estate price indices	561
13.2	Residential property price indices by type and by district	566
13.3	Residential property price indices by type and by district	566

BOXES

1.1	International Business Companies in Cyprus	23
1.2	Cyprus as a maritime centre	27
2.1	Tourism	55
4.1	What is economic and monetary union?	115
4.2	The structure of the European System of Central Banks and the Eurosystem	121
4.3	The Exchange Rate Mechanism II (ERM II)	125
4.4	The “Europe 2020” strategy: priorities and objectives	147
5.1	The Taylor rule	165
5.2	Focusing on the Consumer Price Index for monetary policy purposes	173
5.3	The safeguarding of the CBC’s independence	175
5.4	The impossible trinity theorem	178
5.5	Introduction of the new monetary policy framework as of 1 January 1996	183
5.6	The role of the CBC following Cyprus’s entry into the euro area	191
6.1	The stock market bubble of 1999-2000	215
6.2	Announcement by the CBC on monetary policy decisions	225
7.1	Supervisory measures adopted by the CBC which protected the Cypriot banking system during the crisis of 2007-2010	295
7.2	Financial stability: strengthening the framework for microprudential supervision and crisis management and resolution in Cyprus	297
9.1	Competitiveness within the euro area	363
9.2	Estimation of a VAR model for the monetary sector of the Cyprus economy for the period 1995-2007	370
9.3	The Phillips curve and the case of Cyprus	378

10.1	The global economic crisis and the labour market of Cyprus	429
10.2	Key determinants of net income in Cyprus	441
11.1	Explaining the GDP accounting identity	456
11.2	Forecasting energy inflation in the context of CBC's June 2010 projection exercise	467
11.3	Use of VAR models by the CBC for testing the effects of economic shocks	474

Foreword

This book marks the 50th anniversary of the Central Bank of Cyprus (CBC), which coincides with the Cyprus Presidency of the Council of the European Union in the second half of 2012.

The book aspires to fill a gap in the very limited literature on the Cyprus economy. Indeed, those interested in the Cyprus economy – students, academics and policymakers – only have access to sources that are largely outdated and/or limited in scope. This gap became increasingly apparent through the module entitled “Topics on the Cyprus economy” taught by George Syrichas at the University of Cyprus for the past 15 years. The lectures and notes of this course were the raw material for writing the book in hand.

The topics discussed in this book fall within the CBC’s key areas of focus. The book covers the evolution of the Cyprus economy from 1960, i.e. the island's independence, until today and explores its current challenges and future prospects. It elaborates on issues such as the balance of payments, inflation, the country’s European path, unemployment, public finance, the financial sector, monetary and exchange rate policies, economic forecasts, the real estate market and the portfolios of Cypriot households.

The book represents the culmination of a collective effort across all levels. While the writing was chiefly carried out by staff of the CBC’s Economic Research Department, the final outcome has benefited from constructive comments provided by a multitude of other experts. In this respect, we are very grateful to: Professors Louis Christofides, Michael Michael, Andros Kourtellos, Elena Andreou, Marios Zachariadis, Sofronis Clerides and Panayiota Flori-Lysioutou at the Department of Economics, University of Cyprus; Panos Pashardes, Professor of Economics and Director

of the Economics Research Centre (CypERC), University of Cyprus; Dr Zenon Kontolemis, Research Fellow of the Economics Research Centre (CypERC), University of Cyprus; Alexander Michaelides, Professor of Finance at the Department of Public and Business Administration, University of Cyprus; Stavros Tombazos, Professor at the Department of Social and Political Sciences, University of Cyprus; Andreas Savvides, Professor at the Department of Commerce, Finance and Shipping, Cyprus University of Technology; Petros Sivitanides, Professor at the Neapolis University Pafos; Michael Haliassos, Professor of Macroeconomics and Finance at Goethe University Frankfurt; Georgios Kouretas, Professor of International Finance at the Department of Business Administration, Athens University of Economics and Business; Haralambos Akhniotis and Andreas Matsis, former members of the CBC's Monetary Policy Committee; Symeon Matsis, former Director-General at the Ministry of Communications and Works; Stavros Michael, Director of the Directorate of Budget and Fiscal Control, Ministry of Finance; Michalis Kammis, Director-General of the Association of Cyprus Banks (ACB); Yiannis Tirkides, Manager, Group Planning and Development at Laiki Bank; Dr Marios Clerides, Group Senior General Manager, Risk Management and Strategy at Hellenic Bank; Andreas Christodoulou, Authority for the Supervision and Development of Co-operative Societies; Dr Costas Stephanou, senior analyst at the Financial Stability Board; Liana Ioannidou, senior officer at the Cyprus Securities and Exchange Commission (CySEC); Thomas Kazakos, Director-General of the Cyprus Shipping Chamber; Prodromos Vlamis, Centre for Planning and Economic Research; Costas Poullis, Christos Phanopoulos, Vaso Zacharia and Kleantes Ioannides of the CBC's Bank Supervision and Regulation Department; Elena Gregoriadou and Elena Makri, Licensing Section, CBC; Joseph Theodorou, Financial Stability Department, CBC; Chrystalla Haili and Ioanna Pavlidou, European Affairs Unit, CBC; Eleni Nicolaou, Balance of Payments Section, Statistics Department, CBC; and Panayiotis Pourpourides, visiting senior researcher at the CBC's Economic Research Department.

It would be an omission not to acknowledge the students' apt remarks and comments during the lectures and on the content of the original lecture notes. We are also grateful to George Georgiou, Marios Louca and Kyproula Papachristodoulou of the CBC's Communications and Publications Unit, and Anna Markidou of the CBC's Economic Research Department, for the valuable

contributions they made to the editing and publication process.

In the face of the global economic crisis that has taken its toll on our economy, the study and understanding of the topics in this book become all the more important since one cannot fully grasp the present without knowing the past. Through this book, the CBC, the monetary institution where economic theory meets practice, draws on its knowledge and expertise gathered during its 50 years of existence, thereby contributing to tackling current challenges and better preparing for the future. We hope that the book will be useful not only to students and professionals with a special interest in the Cyprus economy, but also to the public at large.

Athanasios Orphanides

George Syrichas

ABBREVIATIONS IN CHAPTER 1

CBC: Central Bank of Cyprus

cif: Cost, insurance and freight

CIPA: Cyprus Investment Promotion Agency

CYP: Cyprus Pound

Cystat: Statistical Service of Cyprus

EC: European Community

EEC: European Economic Community

ERM II: Exchange Rate Mechanism II

EU: European Union

Eurostat: Statistical Office of the European Union

fob: Free on board

GDP: Gross Domestic Product

HDI: Human Development Index

IBC: International Business Company

UK: United Kingdom

UN: United Nations

1. The Cyprus economy: past successes, current and future challenges

George Syrichas, Anna Markidou, Marios Louca*

1.1 Introduction

The Cyprus economy achieved enviable progress in the 50 years since the country's independence. The traditional agricultural economy of the early 1960s was gradually transformed into an economy characterised by a high standard of living and a robust financial sector. Recovering at a relatively fast pace from the catastrophic consequences of the Turkish invasion, it gained full membership of the European Union (EU) in 2004 and of the euro area in January 2008. This rapid economic growth following the Turkish invasion was described as an economic miracle and became a study case for international research.

In just five decades, per capita income in Cyprus rose from €290 in 1960 to €21.700 in 2010, corresponding to 89% of the EU average¹. The reasonable question to ask is how a small open economy – poor in natural resources – managed to grow so fast and rebound from the catastrophe brought about by the Turkish invasion of 1974. In fact, growth can be explained by the proper utilisation of the country's available resources and comparative advantages, such as the “sun and sea” concept, which supported the growth of tourism, and its geographic location, which

* The authors would like to thank Symeon Matsis, Zenon Kontolemis, Giannis Tirkides and Thomas Kazakos for their comments and suggestions, while acknowledging any mistakes or omissions as entirely their own.

1. Eurostat, GDP per capita (in nominal prices).

enabled the island to establish itself as a regional financial centre. However, none of these would have been possible without the rational use of human capital, which was called upon to play a more direct and decisive role, after the Turkish invasion drastically impaired the island's productive capacity.

The successful economic performance of Cyprus culminated in the country's accession to the EU. This prompted further economic progress that led to the adoption of the euro in January 2008. Although the economy sustained a broadly positive course up until 2008 at least, it has undeniably lost part of its momentum, showing signs of fatigue. Over the last decade, growth rates seem to have been slowing down. This is natural even in the most successful economies: high growth rates cannot be sustained forever. Economic data after the entry of Cyprus in the EU and the euro area and the new environment that emerged in the context of the recent international economic crisis revealed the weaknesses of the growth model on which Cyprus had relied in the previous decades and the failure of the economy, thus far, to adjust to the new conditions smoothly and at a timely manner. This failure largely stemmed from the strong growth performance that for many years had masked accumulating structural weaknesses and the need for drastic changes and adjustment to the new economic environment. The main characteristics of this model are growing public expenditure, emphasis on mass tourism and the services sector in general, with a sizeable financial sector. The traditional approaches to the further development of tourism based on the "sun and sea" concept, a financial sector that is disproportionately large relative to the country's gross domestic product (GDP), as well as a bloated public sector are now important sources of concern, calling for new approaches and actions, without necessitating a change in strategic goals. Furthermore, chronic distortions, outdated institutions and structural problems which plague a number of economic sectors have proven a drag both on the improvement of productivity and competitiveness and on the efforts to keep a rein on the large fiscal problem created during 2008-2011.

The difficulty to adjust lies in the fact that once a strategy has proven

successful over time, be it at personal, company or macroeconomic level, especially in the case of a macroeconomic policy which has managed to conceal the structural weaknesses of the economy for many years, then it is hard to decide a change of direction and even harder to implement it, no matter how dramatically the conditions may have changed in the meantime. In other words, the need for change is sacrificed to the notion “if it is not broken, why fix it?”. This is tangibly illustrated by the example of several countries which had to proceed with an overhauling of their economies but did so only after they entered severe economic crises, by which time it had become much more difficult to solve the problems or to undertake any corrective action for that matter.

Procrastination and delays in restructuring the Cyprus economy are largely owed to this attitude, but also to the reluctance of various social groups to shoulder any costs or to accept changes to what they see as “non-negotiable hard-won rights”. Such rights, however, were established in the past and in entirely different economic conditions. Globalisation, entry into the EU and the euro area and the fiscal deterioration of 2008-2011 necessitate structural reforms and radical changes to the economic model of Cyprus. In the current setting, economic agents and the economy in general become increasingly integrated into the international competitive environment, while on the other hand the traditional fiscal policy, which involves high growth rates of government spending, becomes unsustainable and potentially disastrous for macroeconomic stability in the country. It should of course be pointed out that the economic problems pre-existed and did not first emerge in 2009. The economic and fiscal crisis simply revealed the risks entailed and the urgent need for structural changes.

Typical examples, apart from the fiscal imbalances, have been the stock exchange bubble of the late 1990s or, more recently, the disproportionate increase in real estate prices, accompanied by overborrowing and intense inflationary pressures, which further eroded the competitiveness of the Cyprus economy and led to higher current account deficits.

Of course, obstructionism and interference with the effort to modernise the institutions and the functioning of the economy and adjust to the new, more competitive environment are not novel phenomena. A case from the recent past is the liberalisation of the financial sector, whereby the abolition of the lending rate ceiling began to be debated in the early 1980s and was only implemented in the early 2000s, in the run-up to EU accession. Those who at times oppose the necessary modernisation and warnings of the impasse entailed by an obsolete growth model always harp on the same string: fears are exaggerated. This complacency reflects the deeply-rooted belief in the Cyprus economy's remarkable resilience, which has enabled it to transform into an advanced economy, overcoming even the blow of the Turkish invasion. This view is partly correct, as the drivers of growth have varied over time, and so have the policies pursued. However, it seems to be ignoring that Cyprus has benefited from a number of external factors, such as the war in Lebanon, the higher incomes of Arab countries in the 1980s, as well as the fact that the performance of the Cyprus economy, at least until recently, relied excessively on mass tourism, which has exhausted its potential.

In the face of this impasse, there seems to be no clear view about the growth model which would enable Cyprus to properly adjust to today's circumstances and return to the growth rates it recorded before the onset of the international financial turmoil of 2008-2009. Apart from the fact that the necessary structural changes are not proceeding at a satisfactory pace, a lot of otherwise interesting suggestions about e.g. transforming Cyprus into a regional hub for financial, medical and education services; the creation of technology parks, emphasis on quality tourism, exploitation of natural gas reserves, etc. only serve to make the absence of clear targets more strongly felt and show that the economy is anxiously in search for a strategic compass, which will help it navigate through the new environment of the 21st century. This feeling is also reinforced by the fact that individual policies have often been contradictory. An example from the recent past are the suggestions about a policy to attract four to five

million tourists: this, by its mere size, would be an unrealistic goal and, in addition, it would rely on the mass tourism model which, by definition, is incompatible with the targeted shift to quality tourism.

The boom of tourism in Cyprus can be likened to the Dutch disease – it brought similar results as the discovery of oil in the UK and of natural gas in the Netherlands. These discoveries contributed to a rise in the standard of living and wages in these two countries, at the same time reducing their competitiveness in other sectors of the economy and causing an economic contraction. A parallel can be drawn with the case of Cyprus, where the profitability of tourism and the offered higher wages were among the factors which contributed to the shrinking of the agricultural and industrial sectors².

Tourism, shipping and a booming financial sector, with the prosperity they brought about, as well as the excessive, as it turned out, increase in real property prices, masked the fundamental structural weaknesses and the large macro- and micro-economic imbalances of the Cyprus economy. This was accompanied, for a long time, by a degradation of economic discourse and of any serious and consistent effort to diagnose the problems of the economy and explore possible remedies. The failure to give serious thought and to actively address the dysfunctions of the economy led to a lack of medium- and longer-term economic planning and to the adoption, instead, of a go-through approach to managing the economy. Even the country's European perspective itself was chosen under the pressure of Cyprus's political problem, and EU membership was seen as the appropriate context which could offer protection against the ongoing Turkish threat, whereas, unfortunately, the economic aspects were essentially disregarded. As a consequence, some sectors of the Cyprus economy, e.g. industry, were not and still are not adequately prepared to cope with the new, competitive environment. Moreover, Cyprus's entry into the EU, despite the associated multiple benefits, such as the exchange rate security, a place among the core countries of the EU, higher inflows of

2. Between 1980 and 1990, nominal earnings in agriculture and manufacturing increased by 148,8% and 154,4%, respectively, while in wholesale and retail trade, hotels and restaurants the respective index increased by 170,5%.

deposits from abroad and a rise in property prices, unfortunately caused further complacency as to the economic outlook. Thus, public finances, among other things, which should have acted as a counterweight to the aforementioned developments, were left to deteriorate to the point that they came to represent a major drag on the country's growth prospects and long-term prosperity.

More specifically, further to the identified failures of the Cyprus economy to properly adjust to the new environment of the EU and the euro area, the situation was exacerbated after the international financial crisis of 2008 and the recession which hit several countries, including Cyprus. These adverse developments brought to light the large structural problems and weaknesses of the economy, at a time when the fiscal deficit was growing markedly. As a consequence of the fiscal deterioration, Cyprus was placed under the excessive deficit procedure in 2010. There followed a round of downgrades of the economy's credit rating by international rating agencies, which also expressed concerns about the Cypriot banking sector's exposure to the macroeconomic shocks triggered by the Greek debt crisis. These downgrades led to a substantial increase in the cost of government borrowing from international markets and there is now visible risk of a forced recourse to the European Financial Stability Facility.

Given this adverse turn of events, it is imperative that we revise the mentalities and attitudes which have prevailed for decades and understand the new globalised environment with the opportunities and challenges it brings along. The main objective of this book – besides analysing the successful economic policy of the past and drawing lessons from it – is to identify the changes which have taken place since the accession of Cyprus to the EU. This also involves an exploration of the necessary structural reforms which will enhance the country's current and future growth potential. In the chapters which follow we examine, among other things, the need for financial stability, as well as for structural measures to permanently reverse the poor record of past years in terms of fiscal aggregates, competitiveness and the current account balance.

Chapter 1 is structured as follows: **Section 1.2** reviews the political, economic and social conditions prevailing in 1960. **Section 1.3** (p.11) analyses the strategies followed by the government in the period from independence up until the Turkish invasion, such as the import substitution strategy and other protectionist measures, the strategy for increasing the productivity of the agricultural sector and the infrastructure projects. **Section 1.4** (p.15) looks at the consequences of the Turkish invasion on the Cyprus economy. **Section 1.5** (p.16) discusses the economic policy pursued after the invasion. Cyprus's European path, from the customs union to EU membership and the adoption of the euro, is described in **Section 1.6** (p.25). **Section 1.7** (p.29), discusses the structure of the Cyprus economy in recent years and the prosperity gains which have been achieved. Finally, **Section 1.8** (p.30) examines the challenges facing Cyprus today, such as the need for fiscal consolidation and increase in competitiveness.

1.2 Economic and social conditions in 1960

The management of the Cyprus economy by the British was geared towards the political goal of making the best out of the country. According to the British rule and the customs union with the UK, Cyprus as a colony was expected to export primary goods in exchange for the industrial products it imported from Britain. As a result, in 1960, the government of the independent Republic of Cyprus took over an economy with almost every symptom of underdevelopment and with fundamental structural weaknesses.

On the other hand, colonialism also left a legacy of a relatively good infrastructure, a satisfactory institutional framework and skilled human resources, all of which constituted the necessary initial conditions for subsequent economic growth. According to Ranis (1995), the existence of initial conditions plays a decisive role in a country's growth process. Although there are country-specific characteristics, Cyprus and some other

TABLE 1.1 Annual growth rates of output per worker

Economic Miracles	Growth, %	Economic Disasters	Growth, %
Korea	6,1	Ghana	-0,3
Botswana	5,9	Venezuela	-0,5
Hong Kong	5,8	Mozambique	-0,7
Taiwan	5,8	Nicaragua	-0,7
Singapore	5,4	Mauritania	-0,8
Japan	5,2	Zambia	-0,8
Malta	4,8	Mali	-1,0
Cyprus	4,4	Madagascar	-1,3
Seychelles	4,4	Chad	-1,7
Lesotho	4,4	Guyana	-2,1

Source: Temple (1999), page 116.

TABLE 1.2 Share of selected sectors in GDP

(%)

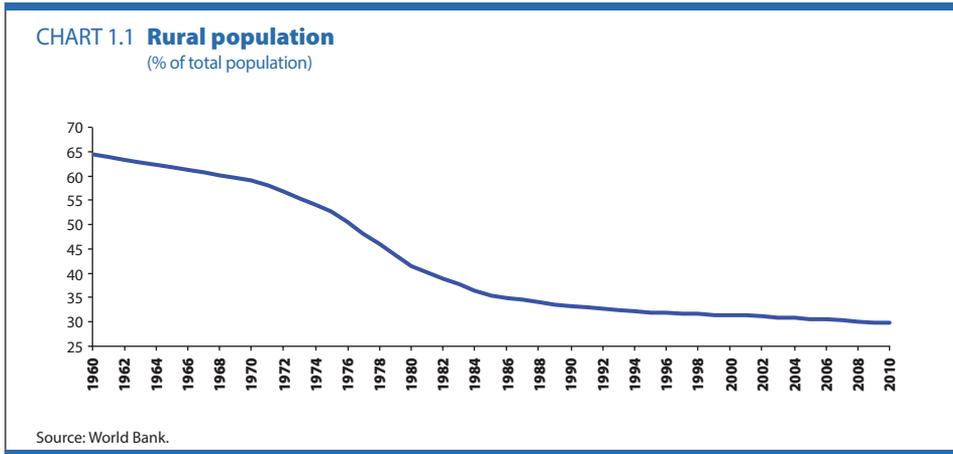
Year	Agriculture	Mining and Quarrying	Manufacturing	Trade	Construction	Services (financial and business)
1960	16,0	4,9	12,4	10,6	5,2	21,0
1970	15,9	5,6	12,6	13,5	7,1	17,1
1975	15,7	2,3	17,1	10,7	7,2	15,7
1980	9,6	1,3	17,5	11,7	13,5	14,3
1990	6,9	0,3	14,2	11,2	9,5	15,3
2000	3,5	0,3	8,9	11,2	8,1	6,9
2010 (prel.)	2,2	0,3	5,8	10,8	8,5	7,3

Sources: Cystat, CBC.

fast-developing countries can be seen to share a number of common features (Table 1.1), which acted as a catalyst for the take-off of their economies. Cases in point are e.g. Korea and Singapore, two relatively small economies with limited natural resources, to which, as in the case of Cyprus, colonialism³ bequeathed human capital and infrastructure - two essential conditions for development.

Looking at the Cyprus economy from a national accounts perspective (Table 1.2), we can clearly see its heavy reliance on the primary sector (agriculture, mining and quarrying), which at the time of independence accounted for 20,9% of Gross Domestic Product (GDP). Agricultural

3. Korea was a colony of Japan, while Singapore was a colony of Great Britain.



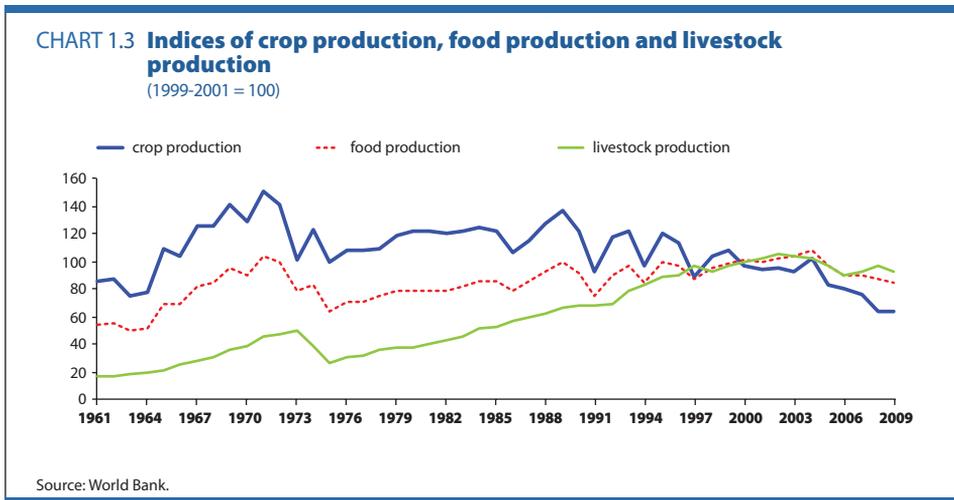
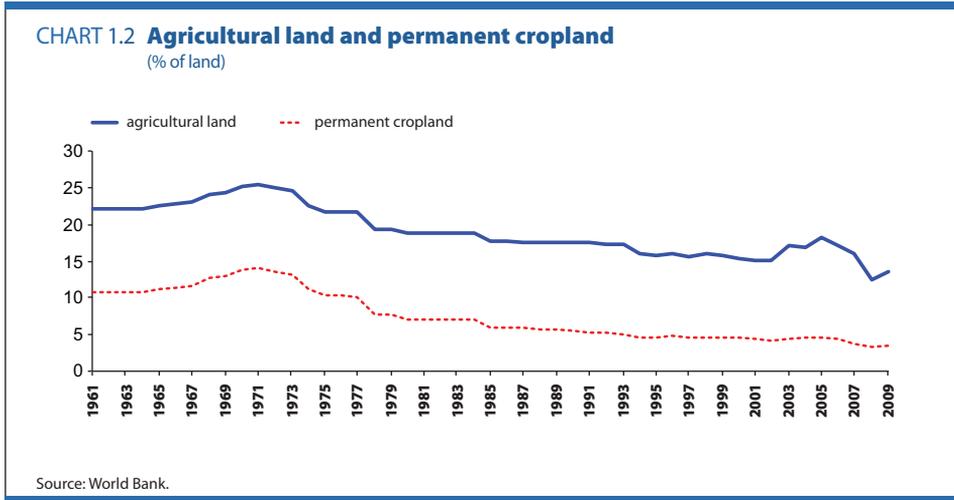
population was 63,9% of total population in 1961 (**Chart 1.1**), while agricultural land⁴ and permanent cropland⁵ corresponded to 22,2% and 10,8% of land area, respectively (**Chart 1.2**, p.10), while the indices of crop, food and livestock production stood at relatively low levels (**Chart 1.3**, p.10).

Industry had a share of 12,4% in GDP (**Table 1.2**, p.8) and consisted mainly of small-scale manufacturing of agricultural products. Thus, demand for industrial products was met through imports. Tourism receipts were very limited and the tourism infrastructure was rudimentary, with a total accommodation capacity of 4.300 beds, mostly concentrated in mountain resorts, when international tourists preferred seaside resorts. Moreover, the country's infrastructure in roads, airports, seaports and dams was in urgent need of expansion in order to restore the necessary conditions for rapid economic growth. The sources of foreign exchange were scanty and volatile, with the exports of metals yielding a significant share of total foreign exchange. The demand for metals and their prices in international markets were subject to sharp fluctuations, while ore deposits began to be depleted.

The social conditions broadly mirrored the condition of the economy in 1960. On average, only 43% of children aged 12-17 attended high school and only 28% of residential units in the countryside had an electricity connection. In addition, 93% of residential units in the countryside had no indoor or outdoor water supply. There was one doctor for every 1.440 persons and one

4. Agricultural land denotes the land suitable for agricultural production, both crops and livestock.

5. Permanent cropland is land cultivated with crops which occupy the land for long periods and need not be replanted after each harvest.



hospital bed for every 217 persons (**Table 1.3**, p.11). Moreover, in 1960, life expectancy at birth was 69,6 years for men and women together, with male life expectancy reaching 67,6 years and female life expectancy reaching 71,6 years (**Chart 1.4**, p.11).

The conditions which prevailed in Cyprus at the time of its independence, led the UN technical mission to note, in the so-called Thorp Report (1961), that “the Cyprus economy seems to be running along a downhill and rather bumpy road”⁶.

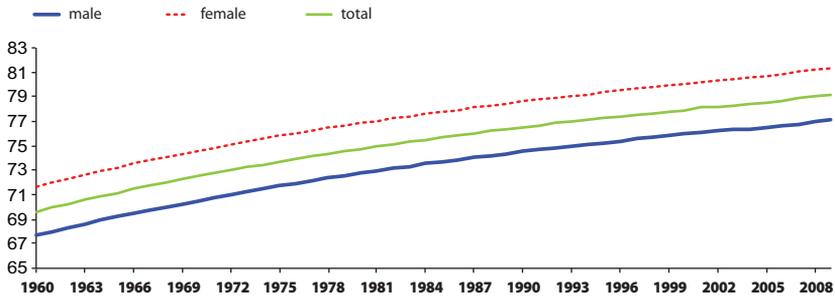
6. In the same vein, Mayer (1959) wrote, on the eve of the island’s independence, that the Cyprus economy was totally dependent on its status as a British air force base. He believed that independence would result in an incurable drop in the island’s standard of living.

TABLE 1.3 Social indicators

	1960	1970	1980	1990	2000	2008
Persons per doctor	1.440	1.201	908	483	385	358
Persons per hospital bed	217	190	148	170	220	266

Source: Cystat.

CHART 1.4 Life expectancy at birth
(years)



Source: World Bank.

1.3 1961-1973: The first years after independence – the import substitution strategy and the strategy for the promotion of tourism and agriculture

The years 1961-1973 were characterised by rapid economic growth, with the average growth rate of real GDP being as high as 7,4% annually. Key drivers of growth were manufacturing, tourism and agriculture, while construction also played a significant role. More specifically, the expansion of manufacturing was supported by the substitution of imports with domestically produced goods (import substitution strategy)⁷. This strategy found fertile ground after World War II in a large number of developing economies in South America, Asia and Africa and focused on the substitution of imports

7. The theoretical background of the import substitution strategy can be found in Singer (1950), Myrdal (1957), Prebisch (1959) and Nurkse (1961). For a comparative analysis of import substitution strategies and export-promoting strategies for 32 countries, including Cyprus, see Patsalides (1989).

TABLE 1.4 **Gross fixed capital formation**

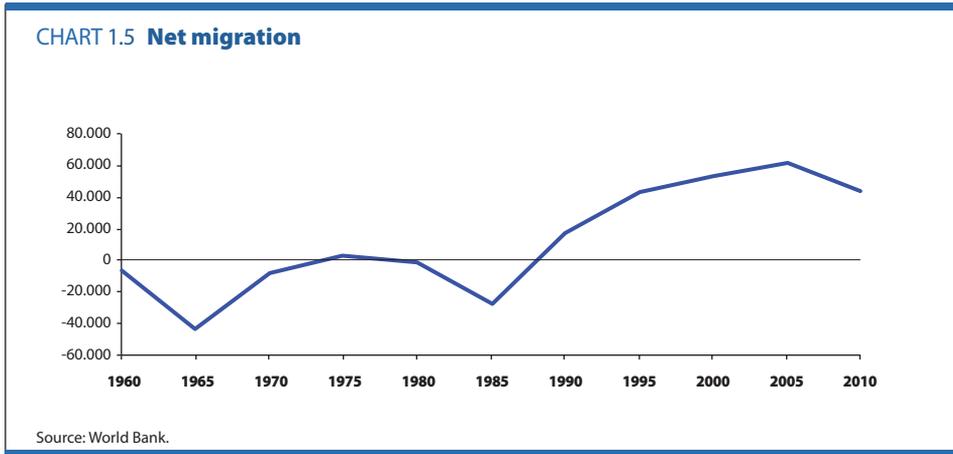
Year	% of GDP
1960	17,6
1965	18,3
1970	23,5
1973	28,6
1975	19,6
1980	37,8
1985	30,3
1990	27,0
1995	21,6
2000	17,8
2005	19,8
2010 (prel.)	18,8

Sources: Cystat, CBC.

with domestically produced goods, without overlooking exports. The tools which underpinned this strategy were a mixture of tariffs, and quantitative and foreign exchange restrictions that aimed to provide incentives and create the much needed domestic industrial infrastructure.

According to Demetriades (1984), the level of effective protection enjoyed by Cyprus's manufacturing against imported products ranged between 25% and 190% in 1967. Taking into consideration that Cyprus's manufacturing was protected by a series of other measures, such as quantitative restrictions and a complete ban on some categories of products, it is clear that this particular sector enjoyed effective protection. The Institute of Development Studies of the University of Sussex estimated that the value added for a number of industrial products was negative in relation to the cost of substituted imported products, on account of protectionism. Furthermore, the government helped the domestic industrial sector with tariff drawbacks, duty-free imports of raw materials and intermediate goods, and preferential treatment in state procurement tenders. Protectionism remained quite high even after the industry reached maturation in the 1980s.

The industrialisation of the island could not possibly be achieved without the necessary infrastructure. Thus, in the same period, emphasis was given on



upgrading seaports, the airport, roads, telecommunications and water supply, and on expanding the electric grid. In more detail, gross fixed capital formation increased from 17,6% of GDP in 1960 to 28,6% of GDP in 1973 (**Table 1.4**, p.12). As a result, in the aforementioned period the economy grew rapidly, emigration was contained (**Chart 1.5**) and confidence was restored, despite the political turmoil.

Moreover, the construction sector benefited from high investment in infrastructure projects and residential units and from increased demand for rented offices, shops and tourist accommodation.

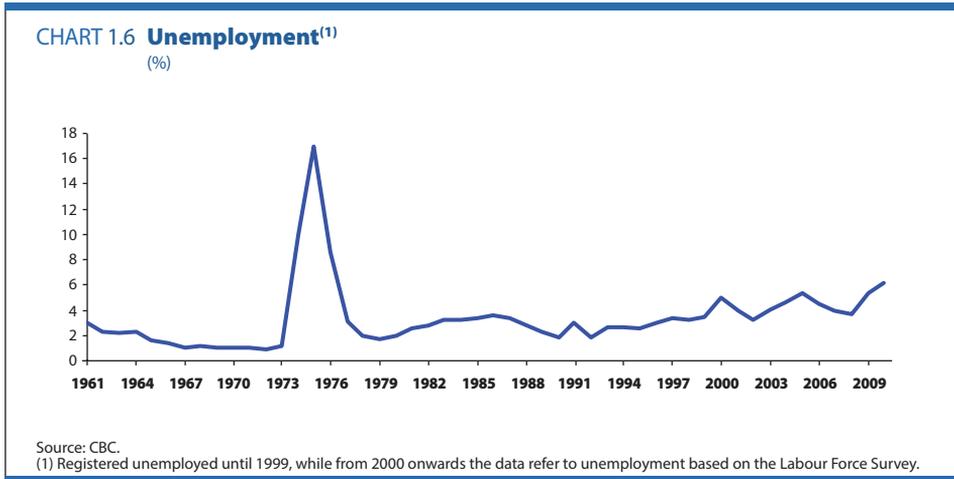
Emphasis was also placed on enhancing the productivity of the agricultural sector, through the redistribution of land, the expansion of water systems, the extensive use of machinery and fertilizers, and the establishment of the Agricultural Research Institute. As a result, agricultural production almost doubled (**Chart 1.3**, p.10). As the early phase of industrialisation is typically associated with improved agriculture, the provision of easy-to-use and efficient agricultural implements and machinery, and the wider use of irrigation, played an important role in overall economic growth. In other words, the increase in agricultural productivity released labour inputs, which were channelled to industry and other sectors, such as tourism and construction. Furthermore, the increased agricultural income created demand for industrial products.

Reflecting these developments, exports of goods and services increased considerably during 1960-1973 and agricultural exports became the main source of foreign exchange. The contribution of agriculture to exports was even greater, if we take into consideration the fact that a significant part of industrial exports, such as wine and juices, are of agricultural origin. The exports of clothing and footwear were also quite successful.

Gradually, a more balanced growth pattern expanded across all sectors of production, and manufacturing emerged as a new pillar of the economy. Agriculture saw its share in value added decline, but remained a major contributor to employment and to export profitability. Irrigated crops, mainly citrus fruit and potatoes, much in international demand, increased their share in the sector's output. As far as services are concerned, tourism became a significant source of foreign exchange, on the back of the government's policy to make this sector a driver for growth, through incentives in the form of favourable credit conditions and concessions of state-owned land. Mining and quarrying continued to play an important role in exports, but their share in GDP declined. At the same time, as mentioned above, the construction sector continued to grow, with housing representing a significant share of overall construction activity, reflecting the increased purchasing power of the private sector.

Moreover, during the aforementioned period, the government enhanced the policy which the British colonial administration had implemented in respect to education. Apart from compulsory primary education, the government gradually provided free secondary education for three years (junior high school). Emphasis was also given to technical education, with the establishment of two new institutes for occupational training at post-secondary level. These were the Higher Technical Institute and the Hotel and Catering Institute, which were established together with the Cyprus Productivity Centre. Thus, from the first years of independence, the foundations were laid for the development of human capital, which was to become one of the major comparative advantages of the Cyprus economy.

Another area of focus during the same period was the establishment of institutions such as: (1) the Central Bank of Cyprus (CBC), responsible for the



conduct of monetary and exchange rate policies, as well as banking supervision; (2) the Cyprus Development Bank, for the long-term financing of manufacturing and tourism; (3) the Planning Bureau, for preparing Development Plans, setting goals, prioritising, and allocating development resources; and (4) the Cyprus Tourism Organisation.

1.4 The Turkish invasion and its consequences

The abovementioned remarkable course of the Cyprus economy over the first fourteen years of the country's independence, in spite of the economic, political and social problems it faced, was interrupted in 1974 by the Turkish invasion and the military occupation of 36,2% of the island's territory. As a consequence, about 180.000 Greek Cypriots were forced out of their properties and the largest part of the island's resources and capital investment came under Turkish occupation. The only modern international airport, located in Nicosia, was lost too, thereby cutting Cyprus off any flight connection. The port of Famagusta, a major transport centre for the country's trade, was seized. Unemployment rose dramatically, with thousands of persons living on state subsidies. According to official figures, unemployment reached 10% in 1974 and 16,9% in 1975 (**Chart 1.6**)⁸.

8. It is, however, estimated that these percentages do not reflect the actual conditions in the labour market, because unemployment benefit payments were suspended as a result of the plummeting of public revenue. This reduced the state's potential for income support, investment in housing, infrastructure and social support.

In the agricultural sector, the largest part of resources was lost. Almost half of the agricultural land, the bulk of the most productive crops, such as citrus and other fruit trees, and most of the livestock were located in the occupied areas.

Industry was also badly hit, losing a significant part of existing plants, and most of the mines and quarries came under military occupation. The occupied territory contained almost the entire tourist infrastructure, such as luxury hotels, while many of the country's famous archaeological sites and monuments were located in the occupied part of the island.

Against this background, both foreign and domestic demand fell, and exports of goods and the tourist industry suffered a heavy blow. In the domestic market, purchasing power plummeted and investment activity almost collapsed. Domestic savings fell dramatically, to levels too low to finance the investment urgently needed for reconstructing the economy. This left the country dependent on foreign aid and foreign savings. In other words, the loss of resources, raw materials and accumulated capital and the drop in incomes led to high dependency on inflows from abroad in order to meet the basic needs, while at the same time the saving potential of the country fell to almost nil and capital outflows were recorded. This led to huge fiscal, trade and current account deficits. These deficits, which were impossible to finance with domestic resources, and the enormous needs for investment intensified the pressures on the country's foreign reserves and generated a pressing need for external financing.

1.5 Economic policies to address the consequences of the Turkish invasion

The great effort to restart the economy focused on the mobilisation of all available resources towards promoting productive employment. A significant consequence of the invasion was a sharp fall in the labour force, as Turkish Cypriot workers moved to the occupied northern part of the island and many Greek Cypriots emigrated (**Chart 1.5**, p.13). In fact, an important aspect of

the policy adopted in the aftermath of the Turkish invasion was the encouragement of Cypriots to temporarily seek employment abroad. In more detail, in 1977, 14.700 Cypriots (7,3% of the economically active population) were migrant workers in Greece, Bulgaria, the Arab countries and elsewhere, constituting a significant source of foreign exchange⁹.

Nevertheless, given the very high rate of unemployment, the restart of the economy was based on labour-intensive policies. This involved the promotion of industries which required relatively high value-added labour, such as clothing and footwear, and infrastructure projects, especially housing. This strategy was underpinned by other policies, such as expansionary fiscal and monetary policies.

In particular, generous tax incentives were provided to the private sector for the promotion of labour-intensive projects which would absorb the unemployed¹⁰. The overall effort was supported by trade unions which agreed to a cut in wages in order to improve the competitiveness of exports and encourage hiring. Moreover, the expansionary fiscal policy involved significantly higher expenditure for major infrastructure projects -- roads, schools, a new airport, new provincial hospitals and the upgrading of the ports of Larnaca and Limassol – as well as the development of industrial areas. Substantial amounts were spent on the construction of refugee settlements, and loans were granted for supporting and reviving the wider agricultural sector, above and beyond ordinary activities, approved projects and amounts of money.

To address income and burden inequality, legislation was passed to curtail all types of income to reflect the reduced real output and to ensure a more fair income distribution across the various groups of the population. As already mentioned, wages (with the exception of low incomes) were cut by up to 25% under the *Wages Law*, which was passed in 1974, and the resulting savings were transferred to the Relief Fund for the Displaced and Afflicted. Reductions were also imposed on non-wage incomes, as well as on rents, under the *Residential Real Estate Law* passed in 1974, while another law provided for a proportionate reduction in rents for commercial property and protected tenants.

9. Matsis (1992).

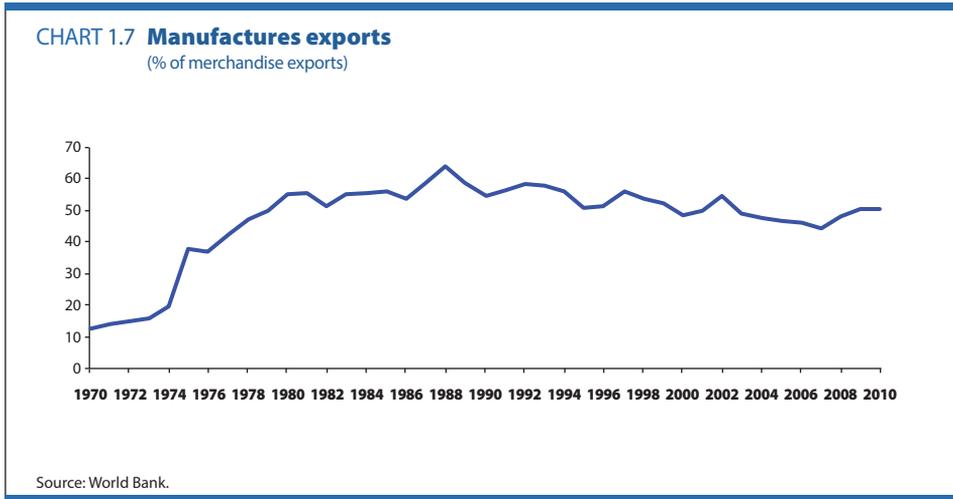
10. 100% direct amortisation and a tax discount of 3% on foreign-exchange receipts from exports.

Moreover, the *Employment Termination Law* was enacted in 1974, laying down the procedures and requirements for terminating an employment agreement. Under the *Wages Law* of 1974, wage cuts were introduced for firms affected by the invasion and only for the purpose of keeping or increasing its staff. As reported by Patsalides (1975), in order to relieve those afflicted by the invasion, the *Public Assistance Law* provided for financial aid to persons whose income and resources did not allow them to meet their basic needs. It is worth noting that the relevant plans applied also to the Turkish Cypriots who lived in the non-occupied areas.

Furthermore, measures to revitalise the private sector were adopted, such as the reduction of the statutory liquidity ratio of banks and the introduction of a penalty system for banks holding excess liquidity. The latter measure aimed to encourage bank lending to the private sector. Also, the financing of activities identified as “priority sectors” was supported through a special fund set up at the CBC, state guarantees for loans to individuals engaging in those sectors and a bond issue launched by the Cyprus Development Bank worth CYP 1 million.

As a result of efforts to rebuild the economy, the private sector grew rapidly and economic activity in general experienced a fast and impressive recovery. Gainful occupation increased significantly and, by 1977, conditions of full employment had been achieved, which was dubbed by international organisations as an “economic miracle”.

At the same time, industry produced for an even smaller market, but domestic demand rose sharply, as the displaced population had been deprived of durable and consumer goods. The main impetus to domestic activity, however, stemmed from the unexpectedly strong foreign demand for industrial products, especially from Arab countries. As a result, industrial exports as a percentage of total exports of goods rose from 37,6% in 1975 to 55,1% in 1980 (**Chart 1.7**, p.19). The major export categories were clothing and footwear, potatoes and cement, which e.g. in 1978 accounted for 22,6%, 10,4% and 8%, respectively, of total industrial exports.



Citrus fruit, wines and cigarettes were also significant export categories (**Table 1.5**, p.20).

Turning to the labour market, the official rate of registered unemployment fell almost by half, from 16,9% of the labour force one year after the invasion to 8,6% by 1976 (**Chart 1.6**, p.15). Within Cyprus, employment which had shifted away from agriculture was quickly absorbed by the secondary and especially the tertiary sector. In particular, by 1990, the number of workers in manufacturing increased to 48,5 thousand, from 24,3 thousand in 1975; in construction to 23,2 thousand from 8,9; in wholesale and retail trade to 36,8 thousand from 16,2; and in financial intermediation, real estate, renting and business activities to 16,2 thousand from 5,4 (**Table 1.6**, p.20). Thus, the share of agricultural employment gradually decreased (e.g. from 29,4% in 1976 to 20,1% in 1985 – **Table 1.7**, p.21), in favour of secondary and tertiary sector employment, with most of the shift being towards trade, hotels and restaurants, manufacturing, and construction.

As already mentioned, employment of Cypriots abroad played an important role in addressing the massive problem of unemployment. From practically nil prior to the invasion, the number of Cypriots working abroad increased significantly thereafter. This is also evident from the

TABLE 1.5 Exports by main product categories
(CYP thousand)

	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984
Citrus	5.203	5.115	6.631	6.701	8.851	8.227	11.045	12.750	13.510	14.323
Potatoes	7.725	17.707	19.435	10.772	13.624	12.683	16.064	22.530	12.372	30.172
Grapes	2.343	2.577	2.746	3.448	4.272	4.506	3.879	3.921	3.476	4.406
Fresh vegetables	562	1.570	2.192	2.761	2.797	2.388	2.730	3.156	2.421	2.800
Carrots	284	509	850	326	600	645	1.084	528	708	618
Carobs	592	1.021	1.402	1.110	1.172	1.247	803	2.708	1.113	1.561
Hides and skins	416	538	565	997	1.141	1.018	594	924	612	1.046
Wine and grape-must	3.780	4.927	6.147	5.778	6.717	6.456	7.927	8.832	9.236	10.185
Alcoholic beverages	385	2.415	1.061	662	1.263	1.612	2.388	1.839	1.756	1.781
Cigarettes	1.321	3.348	3.815	5.915	5.705	6.983	8.834	8.984	5.956	4.634
Clothing	3.450	8.355	11.983	16.322	22.111	27.937	39.507	31.664	38.382	61.864
Footwear	1.758	4.557	5.933	7.104	8.342	11.663	16.287	15.841	15.770	17.713
Paper products	1.378	1.464	2.034	2.959	5.219	6.767	9.788	8.965	5.290	7.041
Portland cement	5.980	9.168	10.556	8.306	10.251	12.880	10.923	10.584	9.955	6.697
Asbestos	2.127	3.316	4.381	3.724	5.202	4.616	6.056	4.009	3.250	2.101
Iron pyrites	1.579	641	888	476	847	1.172	412	17	155	393
Cupreous concentrates	2.495	3.339	1.864	1.462	995	105	0	0	0	0
Chromium	764	484	719	566	472	390	584	721	527	0
Other	6.671	14.114	26.299	24.186	28.063	37.190	52.659	58.540	55.413	67.621
TOTAL	48.813	85.165	109.501	103.575	127.644	148.485	191.564	196.513	179.902	234.956

Sources: CBC, World Bank.

TABLE 1.6 Number of people in various professions
(thousands)

	1960	1973	1975	1980	1990	2000	2010 (prel.)
Agriculture, forestry and fishing	94,8	93,5	34,8	36,9	34,8	32,5	27,9
Mining and quarrying	5,4	3,7	2,3	1,7	0,7	0,6	0,7
Manufacturing	28,1	35,9	24,3	39,9	48,5	37,0	35,5
Construction	20,4	28,0	8,9	22,0	23,2	26,2	34,6
Wholesale and retail trade	16,2	25,8	16,2	24,3	36,8	54,2	67,2
Transport, storage and communications	9,6	11,5	7,4	9,5	15,3	21,4	23,4
Financial intermediation, real estate, renting and business activities	2,4	5,9	5,4	8,2	16,2	31,2	41,5

Sources: Cystat, CBC.

Notes: The data are not strictly comparable due to changes in the definitions.

After 1974, the data refer only to the areas controlled by the government of the Republic of Cyprus.

steep rise in Cypriot workers' bank transfers in the years after the invasion (Table 1.8, p.22).

Therefore, thanks to the intensive use of resources, especially of the displaced labour force and the available raw materials, the restoration of

TABLE 1.7 Pattern of employment and value-added / worker
(%)

	Share in employment		Contribution to employment growth	Value-added / worker at 1980 prices ^(a)		Value-added / worker in 1985 at current prices ^(a)
	1976	1985		1976	1985	
Agriculture	29,4	20,1	-3,7	46,7	41,8	40,1
Mining and quarrying	1,5	0,5	-2,2	139,0	165,1	158,1
Manufacturing	18,5	20,6	26,2	92,4	84,9	81,3
Electricity, gas and water	0,8	0,7	0,3	191,6	230,7	223,9
Construction	6,9	9,5	16,2	152,9	99,7	94,8
Trade, hotels and restaurants	15,5	19,5	29,8	115,2	95,3	91,5
(Hotels and restaurants)	(4,4)	(7,0)	(13,3)	(61,5)	(77,5)	(132,1)
Transport, storage and communications	5,4	5,9	7,3	174,9	173,2	165,8
Banks, insurance, real estate and business services	3,5	4,4	6,7	646,7	378,7	362,6
				(227,5) ^(b)	(207,1) ^(b)	(258,1) ^(b)
Public administration, community, personal and social services	18,5	18,8	19,5	97,5	89,2	137,6
TOTAL	100,0	100,0	100,0	100,0	100,0	100,0
(in thousand)	(153,9)	(213,2)		(CYP3.252,0)	(CYP4.335,0)	(CYP4.527,0)

Source: World Bank (1987), page 4, Table 1-2.

(a) As a percentage of the economy's average.

(b) Without inputted value of housing.

infrastructures and the opening of a new airport in Larnaca, as well as the orientation of production towards foreign markets, within one year after the invasion the worst had passed and economic collapse had been avoided.

The remarkable performance of the economy during the aforementioned period was supported by a number of favourable external factors. First, Cyprus benefited from the abovementioned rise in the purchasing power of Arab countries on account of successive increases in oil prices. This opportunity was exploited by Cypriot businessmen and translated into many project contract awards, thousands of jobs for Cypriot workers, and export market penetration, in addition to an influx of tourists.

Second, with the destruction of Lebanon as a service hub in the Middle East, Cyprus gradually emerged as its potential successor; at the same time, many Lebanese companies and citizens found refuge in the country.

TABLE 1.8 Workers' bank transfers
(CYP million)

1974	3,3
1975	4,0
1976	7,0
1977	14,2
1978	16,6
1979	19,2
1980	22,2
1981	24,0
1982	26,4
1983	29,4
1984	31,1
1985	31,2
1986	29,6
1987	30,7
1988	33,3
1989	34,1

Source: CBC *Bulletin*, various issues.

Since Cyprus shared several characteristics with Lebanon, such as proximity both to the Arab countries and Europe, a sound telecommunications network, frequent air connections, a temperate climate and a friendly social environment, it became the destination of choice for numerous foreign companies which fled from Lebanon after the crisis. The impact on the number of international business companies was particularly strong. Thus, after 1976, Cyprus was gradually transformed into a hub for international business companies (see **Boxes 1.1**, p.23 and **1.2**, p.27 on the evolution of Cyprus into an international financial and maritime centre).

Third, foreign aid, both in cash and in kind, filled significant gaps in meeting the refugees' needs and it also covered a large part of the country's financing requirements. More specifically, foreign financial aid helped to contain both the current account and the fiscal deficits. Without this support, it would have been even harder to finance the needs of the Republic of Cyprus, at a time when the country was in dire economic crisis and its creditworthiness had been impaired.

Thus, the economic growth of Cyprus in the aftermath of the Turkish

Box 1.1 **International Business Companies in Cyprus**

Cyprus is an ideal place for international business activities, due to the many advantages it offers. Its strategic location, high-skilled labour force and excellent business infrastructure, coupled with tax incentives, are factors which have helped Cyprus to develop into an important International Business Centre. Cyprus also avails of a modern banking system and an extensive network of business services.

After the Turkish invasion, Cyprus sought new sources of foreign exchange. Two amendments to the *Income Tax Law*, in 1975 and 1977¹, created a favourable tax environment for international business companies (IBCs) and for their staff working abroad. IBCs (including those operating in the form of branches) were taxed at a corporate tax rate of 4,25%. Cooperatives and branches subject to management and control outside Cyprus were fully exempt from corporate tax. Following these amendments, which coincided with rapid growth in neighbouring countries on account of the rally in oil prices, Cyprus attracted a large number of companies that conducted business with Arab countries.

The IBCs registered in Cyprus engage in a wide range of activities, from commerce and telecommunications to oil extraction, and serve the interests of powerful financial and business groups which use Cyprus as a base for their international businesses. It is worth mentioning that many IBCs are fully oriented to the international market and/or are established and staffed in Cyprus. IBCs give considerable boost to professional services such as legal, accounting, real estate valuation, engineering and consulting, and are a significant source of foreign exchange.

The success of the venture is attributable to a series of policy

1. *Law amending the Income Tax Laws of 1961-1973 (1975) and Law amending the Income Tax Laws of 1961-1973 (1977).*

choices and decisions, which allowed for a stable tax incentive regime and, more generally, a business-friendly economic and administrative environment, which was inviting to foreign investors. Such an environment offered, among other things, simplified set-up and operation procedures, absence of red tape and administrative intervention as well as easy licensing. To these, one should add the good, by international standards, telecommunications infrastructure and the availability of high-skilled personnel. Moreover, the country took advantage of the historic opportunity of the transition of Russia and other Eastern European countries to a free market economy, in combination with agreements for the avoidance of double taxation.

All relevant procedures were assigned to a single organisation, the CBC². The public service was only responsible for issuing work permits, but this was a simple process, once the IBC had been licensed by the CBC.

As of 2004, the term International Business Company (IBC) replaced the term offshore company, which is no longer used. The IBCs in Cyprus continue to enjoy significant tax advantages, such as the lowest corporate tax rate (10%) in the EU, which Cyprus offers, same as Bulgaria and Hungary, and a broad array of interstate agreements for the avoidance of double taxation.

2. With the repeal of the Foreign Exchange Control Law, the CBC ceased to be the competent authority for the IBCs. The relevant responsibilities were transferred initially to the Ministry of Commerce, Industry and Tourism and the Ministry of Finance, and later on to the Cyprus Investment Promotion Agency (CIPA).

invasion was supported by both exogenous and endogenous factors. Exogenous factors facilitated a quick recovery of economic activity, although a crucial role in this respect was played by the industriousness and flexibility of the Cypriot workforce, as well as by the creative entrepreneurial spirit of Cypriot businessmen. Additional important factors were the implementation of appropriate fiscal and growth policies, as

well as the co-operation between the government, trade unions and employers.

During the 1980s, the composition of growth began to change, with a buoyant tourism sector becoming the main driver of the economy. That same decade, however, marked the beginning of problems associated with the pressure that tourism put on natural and human resources. Furthermore, high fiscal deficits were created and the competitiveness of manufacturing suffered losses, as a result of the effort to directly reduce unemployment by the promotion of labour-intensive projects. Inflationary pressures intensified in the context of the second oil crisis, and inflation reached 13,5% in 1980. In response, monetary policy became increasingly tighter, in the form of a higher liquidity ratio and temporary credit ceilings, thereby bringing inflation back to more normal levels.

1.6 The European path, 1980-2008: customs union, accession to the EU and adoption of the euro

Recognising that the years of growth driven by strong demand from Arab countries were over, the government gradually, from the early to the mid-1980s, shifted its focus to improving access to European markets and to further strengthening its relations with the European Economic Community (EEC)¹¹.

1.6.1 The customs union agreement

In 1987, following negotiations, the agreement on the customs union of Cyprus with the EEC was signed. According to this agreement, which came into effect on 1 January 1988, the customs union would be implemented in two stages – an initial 10-year stage followed by a 5-year stage. In the first ten years, the tariffs between Cyprus and the EEC were abolished and Cyprus adopted the EEC's Common Customs Tariff. In the second stage, Cyprus implemented the common agricultural policy of the EEC and adopted the

¹¹. Cyprus's interest in joining the EEC dates back to the 1960s and was connected to the UK's aspiration to become a member of the EEC. The Association Agreement between Cyprus and the EEC was signed in 1972 (Vassiliou, 1994).

TABLE 1.9 Trade between Cyprus and the European Community (EC)
(CYP million)

	1973	1981	1988	1989	1990	1991
Imports from EC (cif)	86,9	241,5	472,5	631,0	629,1	621,7
Imports from EC (fob)	78,2	217,3	425,2	567,9	566,2	559,5
Exports to EC (fob)	31,9	62,8	141,5	186,3	206,6	191,7
Trade deficit (2-3)	46,3	149,5	283,7	381,6	359,6	367,8

Source: Kranidiotis et al. (1994), page 169, Table 2.5.

Notes: cif: cost insurance and freight.

fob: free on board.

TABLE 1.10 Imports (cif) from European Community (EC) countries
(CYP million)

	1973	1981	1988	1989	1990	1991
EC (Total)	85,9	241,5	472,5	631,0	629,1	621,7
Great Britain	30,2	69,5	120,4	129,0	149,2	157,9
Belgium & Luxembourg	4,1	7,0	17,4	20,0	20,9	21,2
Denmark	2,2	5,0	7,3	8,7	10,3	12,8
France	10,4	24,3	43,4	133,3	76,5	44,5
W. Germany	14,0	35,1	80,3	103,3	106,2	116,2
Greece	-	38,2	63,4	69,4	81,9	88,8
Ireland	0,2	2,6	6,6	9,8	7,9	10,5
Italy	12,4	47,3	89,2	107,3	117,1	123,4
Netherlands	4,4	12,5	22,9	24,9	28,9	26,0
Spain	-	-	17,6	21,3	25,6	19,5
Portugal	-	-	4,0	4,0	4,6	6,1

Source: Kranidiotis et al. (1994), page 170, Table 2.7.

Note: cif: cost insurance and freight.

Community policies on competition and transports. This new customs regime represented a drastic change in the protection of the Cyprus economy, especially of domestic manufacturing, which had long benefited from relatively high import duties. On the other hand, it opened up new markets for the industry and trade of Cyprus (**Tables 1.9** and **1.10**).

Cypriot exports, however, seem to have failed – to a large extent – to exploit the new favourable environment and penetrate into the vast European market. This failure, however, stemmed not only from the inability of most Cypriot industrial products to become more competitive (something for which the agreement between Cyprus and the EEC was certainly not responsible), but also from the trade agreements between the EEC and the

Box 1.2 Cyprus as a maritime centre

Over the past 30 years, Cyprus has developed into a modern international maritime centre, with its shipping industry contributing 6% to GDP.

Accession to the EU in May 2004 opened up new horizons for Cyprus's shipping and secured the country's competitiveness in sea transport. Moreover, a number of tax and economic advantages, such as the upgraded Shipping Taxation System, which is considered one of the most competitive tax systems for shipping companies in the EU, low ship registration costs and annual tonnage taxes, as well as the availability of qualified local staff, encouraged many European firms to establish local companies, providing the entire spectrum of shipping services.

More specifically, the new Shipping Taxation System, also known as "Tonnage Tax System", covers all three lines of business in international shipping, i.e. ship owning, management and chartering. Under this system, the benefits applicable to owners of Cyprus flag vessels and ship managers are extended to owners of foreign flag vessels and charterers. The tax benefits which previously applied only to profits from the operation of vessels in shipping activities were extended to cover profits on the sale of vessels, interest earned on funds used other than for investment purposes and dividends paid directly or indirectly from shipping related profits. It is worth mentioning that this new shipping taxation system is the only tonnage tax system approved by the European Commission for a Member State with an open registry.

The Cyprus registry today ranks tenth among international fleets and third among EU fleets with 1.040 vessels of a gross tonnage that exceeds 18 million. Furthermore, Cyprus is considered the largest ship management centre in the EU and is one of the two countries with the largest number of ship management companies worldwide,

with a total of around 60 such companies operating in its territory. Several of these companies rank among the largest of their kind in the world and 90% of them are controlled by Cypriot and other EU interests. Such companies employ almost 55.000 seafarers, out of whom 12.000 are EU nationals.

low-cost Eastern European countries, which intensified the competitive environment prevailing at the time. Moreover, during the same period, most European countries were experiencing an economic downturn, while the depreciation of the currencies of competitor European countries further exacerbated the already adverse competitive conditions faced by the Cyprus economy.

Ayres (1996), reviewing Cyprus's agreement with the EEC, tends to conclude that the agreement was not very beneficial for Cyprus. According to his analysis, both total exports and domestic exports of Cyprus as a percentage of GDP showed a downward trend, which became more marked after 1987. Moreover, the share of exports to the EEC fell from 63,9% in 1972 to 41% in 1987 and 36% in 1994.

1.6.2 Accession to the EU and adoption of the euro

The benefits for Cyprus from full EU membership became visible quite soon. Integration in a market without internal borders became the new reality faced by Cyprus's markets for products, services, labour and capital. For certain sensitive sectors, accession entailed some cost in the short run, which was however mitigated through sector-specific transitional periods that were negotiated and agreed upon with the EU, so that these sectors could smoothly adjust to the new competitive environment.

The sense of security inspired by EU membership, alongside the monetary stability that prevailed ahead of the then anticipated economic and monetary union of Europe, established favourable conditions for long-

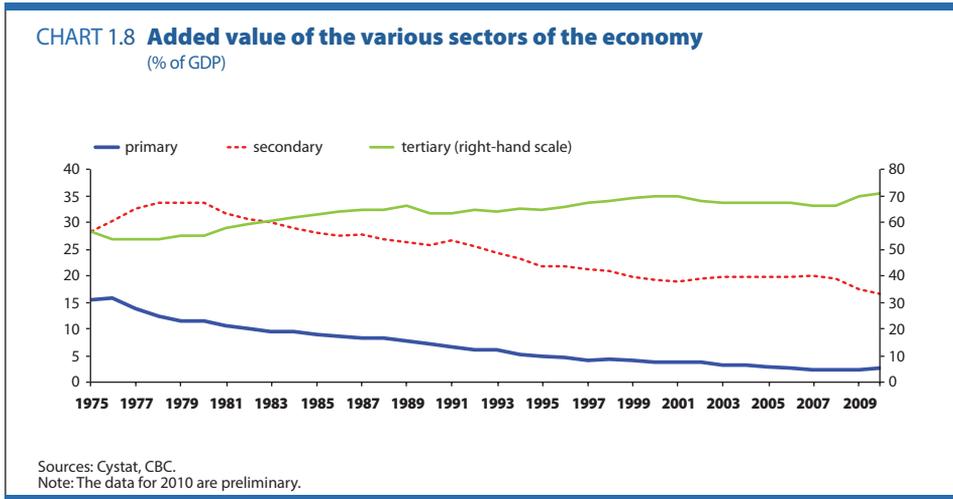
term production and investment decisions. This environment was bolstered by EU funds, which covered all economic sectors, and by regional funds. Cooperation between Cyprus and the EU in the areas of technology, research and development and training was stepped up through various Community programmes. This provided Cyprus with the technological enhancement and modernisation it urgently needed in the context of its strategic growth model.

More specifically, formal negotiations for the accession of Cyprus to the EU began in 1998 and lasted through to December 2002. In December 1999, in Helsinki, the European Council, bringing together the heads of government of EU Member States, announced that a political settlement of the Cyprus problem would not be a precondition for EU membership. On 1 May 2004, Cyprus officially acceded to the EU, in its biggest enlargement so far, when ten new countries became members of the united Europe. Subsequently, Cyprus joined the European Exchange Rate Mechanism II (ERM II) and, after an economic consolidation process, it joined the euro area on 1 January 2008, adopting the euro as its official currency.

1.7 The Cyprus economy in recent years

In recent years, the Cyprus economy has been dominated by the services sector: trade, financial and business services, and shipping are key drivers of economic growth. The construction sector and the real estate development sector also play an important role in the economy.

Sectoral contributions to growth have varied significantly over time (**Chart 1.8**, p.30). The primary sector has seen its contribution to GDP decline further, reflecting not only the loss of the largest part of agricultural land, but also a structural shift of the economy towards the tertiary sector. Wholesale and retail trade, and hotels and restaurants were the largest contributors to the total value added in the 1990s, which is consistent with the growing importance of internal and foreign trade and of tourism in the economy. Progressively, other sectors also grew in importance, such as



financial and business services and real estate, which became major contributors to economic growth. It is worth noting that the role of government services (public administration, defence, health and education) gained significance too.

The remarkable successes in the economic field were matched by equally remarkable improvements in overall welfare and education. The percentage of persons aged 20 years and over with higher education qualifications increased from 19% in 1992 (19% for men and 16% for women) to 31% in 2010 (30% for men and 32% for women) (**Table 1.11**, p.31). Moreover, the expected number of years of schooling increased from 9,9 in 1985, to 14,7 in 2011, while the Human Development Index (HDI) of the United Nations (UN)¹² rose from 0,718 in 1985 to 0,840 in 2011 (**Table 1.12**, p.31). The robust growth that Cyprus enjoys becomes evident from international comparisons, as it ranked 31st among 187 countries in 2011, ranking among the countries with a very high HDI.

1.8 Challenges ahead

Notwithstanding the significant achievements of the past, the Cyprus economy has been facing major challenges over the last years. Fluctuations

12. UN, Human Development Indicators: <http://hdrstats.undp.org/en/indicators/103106.html> and <http://hdrstats.undp.org/en/tables>. The HDI is a measure of development which combines life expectancy, educational level and income, and takes values between a minimum of 0 and a maximum of 1.

TABLE 1.11 Persons aged 20 years and over with higher education qualifications
(%)

	1992	1997	2000	2005	2010
Higher education, total	19	17	22	25	31
Higher education, men	19	17	24	25	30
Higher education, women	16	16	20	25	32

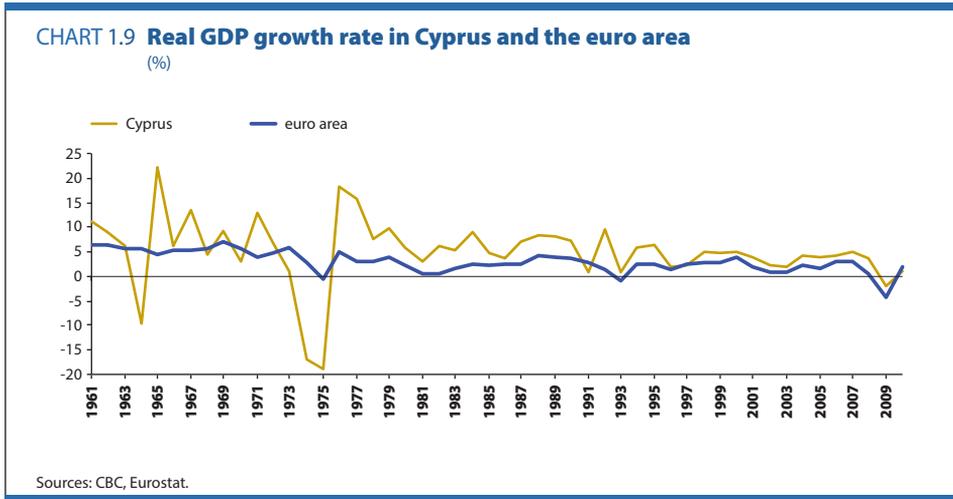
Source: Cystat.

TABLE 1.12 Other indicators of prosperity

	1985	1990	2000	2005	2011
Expected years of schooling (of children)	9,9	10,1	12,4	13,5	14,7
Human Development Index (HDI)	0,718	0,747	0,800	0,809	0,840

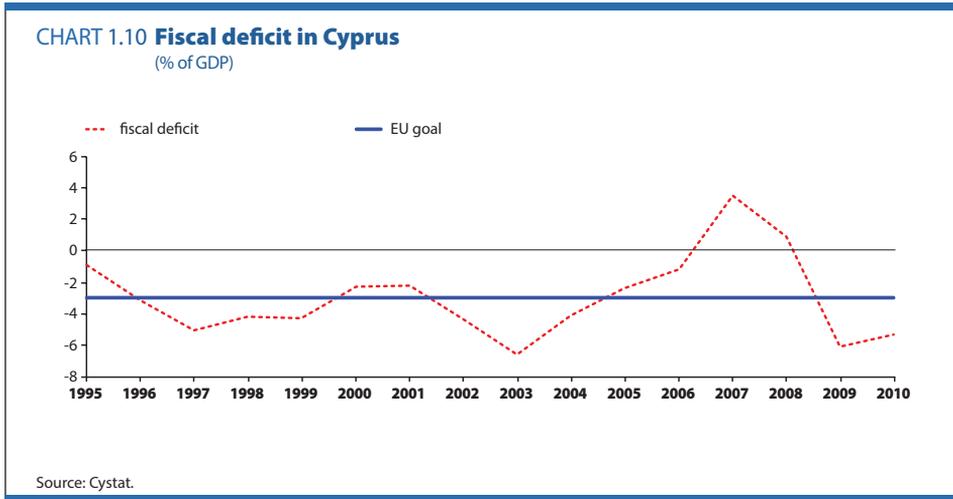
Source: United Nations.

in economic growth over the last decade have reflected in part the economy's reliance on tourism, the performance of which often depends on political stability in the region and on economic conditions prevailing in Western Europe. Still, from 2000 through to 2009, the Cyprus economy grew faster than the euro area average (**Chart 1.9**, p.32). This, combined with the broader path of economic convergence with the EU, enabled the country to join the European Exchange Rate Mechanism II (ERM II) in May 2005 and adopt the euro as its national currency on 1 January 2008. Thanks to a disciplined retrenchment programme implemented in the run-up to the euro, the fiscal deficit, which had deteriorated sharply and stood at 6,6% in 2003, was reversed to a surplus of 3,5% in 2007 (**Chart 1.10**, p.33), while real GDP grew by 5,1% and inflation fell to 2.4% in that year. This welfare came under pressure with the onset of the international financial turmoil and the subsequent recession. Construction, tourism and business services slowed down considerably, reflecting a decline in foreign and domestic demand as a result of the ongoing global economic crisis. Although the crisis affected Cyprus later than its European partners, the Cyprus economy entered a recession in 2009, with real GDP dropping by 1,9% (after it had



grown by just 1,1% in 2010 - see **Chart 1.9**). Moreover, the most worrying of all recent developments was the significant increase in the fiscal deficit to 6,1% and 5,3% of GDP in 2009 and 2010, respectively, implying a breach of the Treaty reference value of 3% of GDP (**Chart 1.10**, p.33). The higher deficit reflected a significant rise in public expenditure at a time when public revenue fell dramatically. Meanwhile, additional challenges are posed by the unsustainability of the current pension system. Fiscal developments triggered an excessive deficit procedure against Cyprus and, as mentioned in the introduction of this chapter, a round of successive downgrades of the Cyprus economy by international rating agencies. An additional factor behind these downgrades was the Greek fiscal crisis, given the linkages between the banking sectors and, more generally, the economies of the two countries. These developments caused the borrowing costs of the Cypriot government, as reflected in its bond yields, to soar, crucially undermining the country's growth prospects.

It should also be pointed out that further fiscal relaxation in 2008, at a time when the economy was growing at a fast pace, combined with bank credit expansion on the back of falling interest rates, compounded inflationary pressures, causing a further erosion of the already low competitiveness of the Cyprus economy, reflected in a widening current



account deficit. The erosion of competitiveness has been a long-standing problem of the economy and stems, among other things, from the fast annual growth of earnings, relatively low labour productivity and the asymmetric inflationary pressures faced by Cyprus compared with the rest of the euro area.

These developments bring to the fore the urgent need for drastic measures and structural changes. The current growth model has exhausted its potential to promote further expansion of the Cyprus economy. Therefore, in addition to a thorough overhauling of this model, a package of structural changes is now seen as necessary to ensure the medium- to longer-term growth of the Cyprus economy.

Amongst the primary goals of structural changes must be to improve productivity. In this context, it is necessary to examine and address the problems and developments caused by the serious deterioration of competitiveness over the last years. In particular, the persistent deficits on the current account expose our country to increased risks, as the recent financial turmoil has rendered foreign financing more uncertain. Financing the current account deficit, which is now over 7%, compared with an average of 3% in the period until 2004, was no problem in the past thanks to the large inflows of foreign direct investment. However, the

recent downgrades of the credit rating of the Republic of Cyprus by international rating agencies and the deterioration of its macroeconomic aggregates have jeopardised the continued inflows of foreign investment, which are anyway declining as a result of weaker growth in the rest of Europe.

It should also be underlined that the strong growth of unit labour cost and the appreciation of the real exchange rate have been key factors behind the widening of the trade deficit, which has hovered around 30% of GDP in the last decade. Exports of services, especially business services, partly offset this trend. Now, the growth momentum of these sectors, which has been impaired by the recent deterioration of the Cyprus economy, must be strengthened, and this will require measures to enhance competitiveness. It is also worth pointing out the rather worrisome fact that the high increases in real wages for a number of years, including the period after the 2009 crisis, are not in line with the trends in the rest of the euro area or with the country's economic cycle.

As far as tourism is concerned, according to Adamou and Clerides (2009), Cyprus has long exhausted its potential to sustain a mass tourism market. It therefore needs to move away from the "sun and sea" concept towards other types of tourism, such as sports, religious, congress and health tourism, which will help mitigate the problem of seasonality.

Another area where adjustment is needed is the financial sector, the size of which relative to the country's GDP seems to be a source of concern in the emerging new international environment. Traditionally, the financial sector developed within a strict regulatory framework which required e.g. the maintenance of high liquidity ratios on deposits denominated in domestic or foreign currency. An extensive discussion of the regulatory framework and of CBC interventions is provided in Chapters 5-7 (pp. XX). Certainly, the large size of the banking sector relative to GDP implies that banking supervision has to be constantly upgraded to keep abreast of developments in the international and European prudential frameworks, such as Basel III. The new CBC

guideline requiring banks to increase their Tier I capital according to their assets and the creation of a Financial Stability Fund are significant steps in this direction.

In conclusion, the Cyprus economy, in less than fifty years, was transformed from a traditional, agricultural economy to a services-based economy, with a high standard of living, and the country became a member of the EU and the euro area. Despite its successes, the economy today is facing huge challenges that call into question not only further growth, but also many past achievements. Competitiveness losses, fiscal deterioration, exclusion from international markets, successive credit rating downgrades, the Greek crisis and its serious repercussions on Cypriot banks, coupled with the international crisis and especially the crisis in the euro area, all create an explosive mix which challenges the role of Cyprus as a financial hub and its growth prospects in general. The year 2012 will tell whether the Cyprus economy is still resilient enough to cope with any difficulties and adversities lying ahead. On an optimistic note, it is worth mentioning the broad consensus reached, even at the last hour, on measures to bring the fiscal deficit down and rein in public debt, thereby releasing resources for economic growth. Another very welcome development which, if properly utilised, can support long-term growth is the discovery of natural gas reserves in the Cyprus Exclusive Economic Zone.

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ABBREVIATIONS OF CHAPTER 2

BGS: Balance of Goods and Services

CAB: Current Account Balance

CBC: Central Bank of Cyprus

CYP: Cyprus pound

CYSTAT: Statistical Service of Cyprus

EEC: European Economic Community

EU: European Union

GDP: Gross Domestic Product

NPS: Net Private Saving

2. External transactions

George Kyriacou, Michalis Ktoris*

2.1 Introduction

External trade has always been a very significant factor for economic growth, progress and prosperity in Cyprus. The small size of the Cyprus economy means that the country depends on foreign trade to procure raw materials and export its products. High trade dependency is reflected in the proportion of exports and imports of goods and services to Gross Domestic Product (GDP), which in the case of Cyprus was almost 100% for the 2000-2010 period, compared with a euro area average of 40%.

The exports of Cyprus are mostly services, while imports are predominantly goods. This is probably to be expected, given that the economy of Cyprus mainly focuses on the tertiary sector, therefore it exports more services than goods and, on the other hand, has to import many goods that are not produced domestically.

The transactions between residents and non-residents are recorded in the balance of payments, which is a significant aggregate for Cyprus, as it reflects developments in the economy, and, given the openness of the Cyprus economy, must be monitored and analysed on an ongoing basis.

The trade dependency of the Cyprus economy implies that competitiveness considerations are particularly relevant. Maintaining high levels

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of competitiveness is important for promoting exports and reducing import substitution, thereby supporting domestic production and job creation in the country.

This chapter examines developments in the balance of payments and its individual components in Cyprus over time since Cyprus became an independent republic, as well as relevant policy issues. Section 2 provides a historical overview of the trade relations of Cyprus with other countries, and Section 3 analyses developments in the balance of payments and its components over time, using data for the past fifteen years, including a subsection focusing on tourism. Section 4 discusses current account sustainability and Section 5 deals with the notion of competitiveness. Section 6 discusses the so-called twin deficits, and Section 7 explores policy implications.

2.2 Historical overview of the trade relations of Cyprus

The importance of external trade for Cyprus was recognised as soon as the country gained independence. Specifically, the United Nations Report (Thorpe; 1961) noted that Cyprus cannot and should not seek isolation. Thus, right from the start, Cyprus sought to broaden economic and trade relations with other countries. In this context, it was a signatory to General Agreement on Tariffs and Trade, (GATT). However, Cyprus was highly dependent on the United Kingdom, its main trade partner accounting for almost one third of Cyprus's trade in goods in 1961. For this reason, but also for political considerations, Cyprus remained in the Commonwealth, enjoying the preferential regime, and continued to be a member of the sterling area for a few years longer.

The close trade relations of Cyprus with the United Kingdom urged Cyprus to follow the UK's efforts to join the European Economic Community (EEC). In 1961, when the UK began to negotiate its accession to the "Common Market", as the EEC was originally known, Cyprus expressed an interest in joining the EEC. As mentioned above,

the close trade relations between Cyprus and Great Britain, as well as the risk of losing the Commonwealth preferential regime did not leave many choices for Cyprus. Thus, on 10 December 1962, Cyprus applied for EEC membership, which however was conditional on the success of the UK's efforts to join the EEC. When the negotiations between the United Kingdom and the EEC came to an impasse in 1963, the application of Cyprus was frozen until 1967, when the UK expressed renewed interest in accession (Vasiliou, 1994).

In subsequent years, Cyprus furthered its economic relations with Eastern countries which absorbed a large amount of the so-called "problematic" products, such as viticultural products and certain kinds of fresh fruit. These relations proved particularly useful after the Turkish invasion, when large volumes of such products could not be exported elsewhere. Also, after the Turkish invasion, significant trade relations were established between Cyprus and the Arab countries. The timing was particularly favourable, as the surge of demand from Arab countries, partly due to higher income from oil, coincided with the need of Cyprus to reactivate its economy in the aftermath of the Turkish invasion. Cyprus seized the opportunity to meet Arab demand by exporting agricultural products, while industrial plants were set-up and put into operation soon enough to export to rich Arab markets. Several domestic construction companies sought major project contracts abroad, providing jobs for thousands of Cypriots. In 1977, the number of Cypriots on temporary employment abroad, mostly in Arab countries, was about 14,000 or around 7% of the labour force. Moreover, Cyprus was benefited from inflows of foreign exchange and skills when Lebanese workforce fleeing from the conflict of 1975 took refuge on the island, partly compensating exchange losses from the relatively inexistent tourism sector. Cyprus also tried to succeed Lebanon as the business and financial centre of the area.

A milestone in the trade relations of Cyprus was the Customs Union Agreement with the EEC, which was signed in 1987 and paved the way to

Cyprus' accession to the European Union (EU) some years later¹. The term "customs union" refers to the abolition of customs tariffs and other restrictions on trade among participant countries, with a view to creating a free trade zone and a common market for the products included in the agreement. It should be noted that in the case of Cyprus a number of products were excluded from the customs union, for protectionist reasons. The Cyprus-EEC Customs Union was initially welcomed as an innovative agreement of a third country with the Community. However, in the light of subsequent developments it lost much of its importance. The signing of the Single European Act aimed to create a Single Market within the Community offered a comparative advantage to EEC producers, while it was criticised as being a kind of disguised protectionism against competition from third countries.

Although it did support bilateral trade with the EU, the customs union did not live up to the expectations that it would give a strong boost to Cyprus exports. Instead, the bilateral trade balance weighed in favour of the EU, leaving Cyprus with a deficit of CYP718 million in 1997, up from CYP279 million in 1988.

Similar is the evaluation of the Cyprus-EEC customs union by Ayres (1996), who, comparing the export performances of Cyprus and Malta, suggests that the agreement was not very beneficial to Cyprus. Cyprus and Malta are two small island economies sharing common experiences as former British colonies, both having undergone major economic and social changes in the past forty years. In addition, Malta, like Cyprus, signed an EEC association agreement in 1970, which evolved into a customs union in 1987. As regards the export performance of Cyprus, exports to the EU as a percentage of GDP exhibited a downward trend as from 1972, which intensified after 1987. Furthermore, the exports share to the EU fell from 63.9% in 1972 to 41.0% in 1987 and 36.0% in 1994, suggesting the declining importance of the EU as an export market. In contrast with the experience of Cyprus, Malta's exports to the EU increased substantially in 1972-1994, almost tripling as a percentage of GDP. The poor export performance of

1. For a thorough review of the Cyprus-EEC relations and, in particular, the Customs Union agreement, see Kranidiotes et al. (1994).

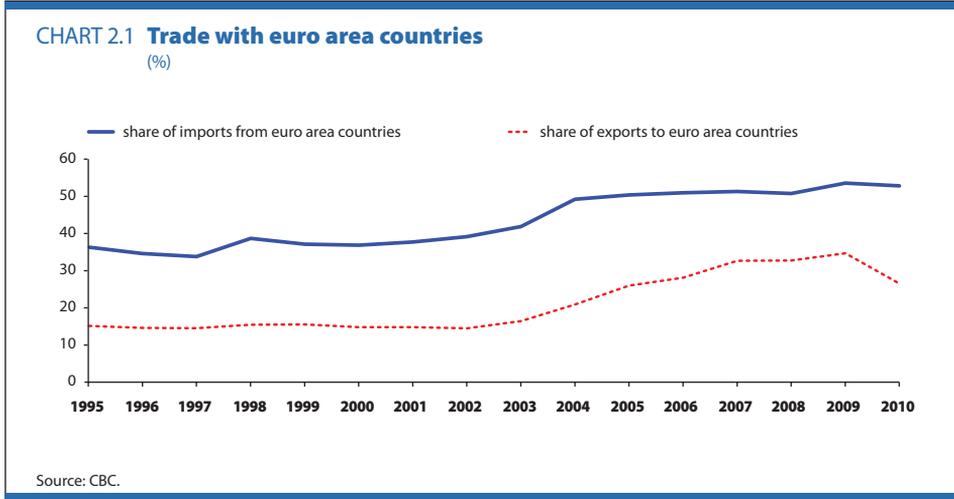
Cyprus also becomes obvious when compared with other groups of countries over the same period, in particular developing countries, Middle East countries and the rest of Europe.

According to the “Strategic Development Plan 1994-1998” of the Planning Bureau of the Republic of Cyprus, the deterioration is attributable to a number of factors, both exogenous and endogenous:

- (a) failure to make most of Cyprus industrial products more competitive;
- (b) failure of Cyprus products to penetrate other EU markets other than the UK, a traditional export partner;
- (c) conclusion of trade agreements between the EU and low-cost East European countries, leading to a more competitive environment;
- (d) the economic recession conditions prevailing in the past few years in most European countries;
- (e) the adverse impact on the Cyprus economy from developments in international exchange rate arrangements, especially after the realignments in the European Monetary System, resulting in devaluations of the national currencies of competitor countries (Italy, Spain, Portugal) or significant export markets for Cyprus (UK, Sweden). The successive devaluations of the currencies of competitive countries, coupled with the rigidity of the Cyprus pound, further aggravated the trade balance.

In a wider international context, it is worth mentioning the world trade agreement known as the Uruguay Round of GATT, which came into effect on 1 January 1995. This agreement led to the establishment of the World Trade Organization and, among other things, provided for a phased reduction of tariffs on more product categories than envisaged in earlier rounds and also was signed by a higher number of countries as contracting parties. Despite its international importance, that agreement did not seem to have affected Cyprus so much as the customs union and EU accession.

A milestone for the economy of Cyprus was EU accession in 2004,



followed by the adoption of the euro in 2008. This development had significant effects on the economy of Cyprus, such as the liberalisation of interest rates, the full independence of the Central Bank and the deregulation of the capital account.

Overall, the path to EU membership consolidated the status of Cyprus as a financial centre, with favourable implications for its exports of financial services and business (e.g. accounting, legal) services. In particular, exports of financial services rose by 580% in 2003-2010, at an average annual rate of 31.5%, and exports of business services rose by 81%, i.e. at an average annual rate of 8.8%.

Furthermore, the accession of Cyprus to the EU and the euro area increased trade with euro area countries. **Chart 2.1** shows the share of the euro area in Cyprus imports and exports. The import share rose significantly in 2004, remaining broadly unchanged ever since. The export share, on the other hand, has followed an upward course since 2004, interrupted only in 2010.

2.3 Balance of payments

The balance of payments of a country reflects the transactions of residents with non-residents in a given period of time. Its main

TABLE 2.1 Balance of payments
(euro million)

ITEMS	2010		
	CREDIT	DEBIT	NET
CURRENT ACCOUNT	10.767,3	12.122,1	-1.354,8
GOODS, SERVICES AND INCOME	9.880,4	11.237,7	-1.357,3
GOODS AND SERVICES	7.366,9	8.250,5	-883,5
GOODS	1.151,4	5.832,8	-4.681,4
SERVICES	6.215,5	2.417,6	3.797,9
Transport	1.453,3	970,1	483,1
Travel	1.646,9	866,4	780,4
Communications services	69,4	56,2	13,2
Construction services	38,5	11,0	27,5
Insurance services	35,1	31,1	3,9
Financial services	873,6	160,8	712,7
Computer and information services	73,6	29,6	44,0
Royalties and licence fees	6,4	23,1	-16,6
Other business services	1.849,3	168,3	1.681,0
Personal, cultural and recreational services	31,6	34,9	-3,4
Government services, n.i.e.	137,9	66,0	71,9
Services not allocated	0,0	0,0	0,0
INCOME	2.513,5	2.987,2	-473,8
Compensation of employees	30,9	161,4	-130,5
Investment Income	2.482,5	2.825,8	-343,3
Direct investment income	353,6	1.303,6	-950,0
Portfolio investment income	935,6	711,4	224,2
Other investment income	1.193,4	810,8	382,6
CURRENT TRANSFERS	886,9	884,4	2,5
General government	158,8	235,1	-76,2
Other sectors	728,1	649,3	78,7
CAPITAL AND FINANCIAL ACCOUNT			1.430,6
Capital Account	58,8	31,3	27,5
Financial Account			1.403,0
Direct Investment			762,9
Abroad			-593,6
In Cyprus			1.356,5
Portfolio Investment			-1.429,7
Assets			-2.445,3
Liabilities			1.015,6
Financial Derivatives			-125,3
Other Investment			1.995,0
Assets			1.368,8
Liabilities			626,2
Official Reserve Assets			200,1
NET ERRORS AND OMISSIONS			-75,7

Source: CBC.

components are the current account, the capital and financial account. The discussion in this section refers to the 1960-2010 period, focusing

on 1995-2010, a period for which the available data are in line with the European System of Accounts and comparable with those from other EU countries.

It should be noted that, with a view to full compliance with international statistical standards, in 2002 the Central Bank of Cyprus (CBC) introduced significant changes to the balance of payments compilation methodology. These changes concerned the definition of resident², data collection methodology and the classification of balance of payments items. In 2008, as part of the obligations entailed by Eurosystem membership, it was deemed necessary to harmonise the definition of “resident” for statistical purposes, mostly applying to legal entities³. The discussion of the balance of payments for 1995-2010 below uses the earlier definition of “resident” as adopted in 2002, which is seen as more representative for Cyprus. On the other hand, in the case of data on international investment position and external debt, the new definition is used, according to the recent change in 2008.

Table 2.1 (p. 45) shows the balance of payments of Cyprus for 2010, as published by the CBC. As further explained below, the balance of payments comprises the current account, and the capital and financial account. The sum of the two accounts (plus net errors and omissions) is zero. As shown in the table, the current account deficit of Cyprus in 2010 was €1,354.8 or 7.8% of GDP.

The following sections provide a historical overview of the individual components of the balance of payments.

2.3.1 Current account

The Current Account Balance (CAB) is one of the most important parameters of the economy of Cyprus, and of any open economy for that matter. The small, very open economy of Cyprus implies a need to monitor developments in CAB closely and regularly, for the purpose of assessing the

2. Residents are physical persons living (or intending to live) in Cyprus for over one year, as well as legal entities with a physical presence in Cyprus.
3. An organisation or corporation of any legal form established or registered in Cyprus, irrespective of its physical presence in Cyprus, is now deemed a “resident of Cyprus” for statistical purposes.

TABLE 2.2 Current account, 1960-2010
(% of GDP)

1960-1969	1970-1979	1980-1989	1990-1999	2000-2010
0,1	-6,2	-5,8	-2,7	-6,9

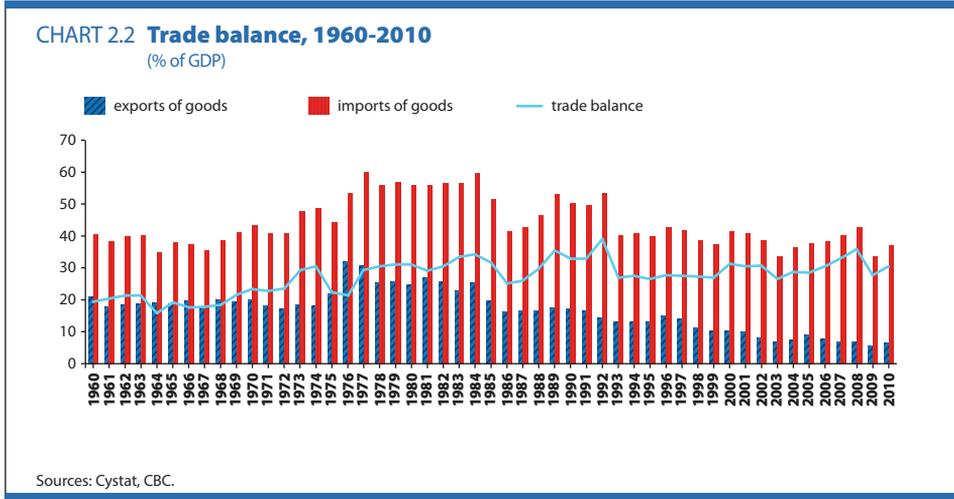
Source: CBC.

competitiveness of the economy, but also for the purposes of monetary policy, as explained in **Chapter 7** (p. 262).

In the first years of independence of Cyprus, external trade focused on the trade of goods, as well as the export of services, in particular foreign military expenditure. Until the late 1970s exports of goods almost equaled exports of services, but the end of the decade saw an increase in the importance of services. This initially reflected the rise in tourism to Cyprus and, later on, growing exports of business services (accounting, legal, etc.), as well as transportation services, while from 2007 onwards exports of financial services rose substantially.

Table 2.2 shows the CAB as a percentage of GDP for each decade of the 1960-2010 period. While in the first decade after independence the CAB was broadly in balance, the next two decades witnessed mostly deficits. As discussed in the fourth section of this chapter, this is not necessarily a negative development, provided that deficits primarily reflect imports of raw materials and intermediate goods as inputs for investment and, most importantly, are financed by foreign direct investment rather than borrowing. Initially, the CAB deficits of Cyprus were attributable to the strong investment activity which was observed in the aftermath of the Turkish invasion and caused deficits to soar even above 10% of GDP in certain years. As investment activity lost its momentum, deficits declined during the 1990s. In the 2000s, with Cyprus’ accession to the EU and the euro area and the boom in construction, in conjunction with the hikes in commodity prices, the deficit averaged 6.9%, reaching a record high of 16.8%⁴ in 2008. To enable a better understanding of the evolution of CAB, we will turn our attention to each of its four main components in turn.

4. For CAB developments after Cyprus joined the euro area, see Kyriacou and Papageorgiou (2010).



The rest of this section has a closer look at the four main components of CAB in Cyprus, as shown in **Table 2.1** (p. 45). This historical overview focuses on the past few years.

2.3.2 Goods

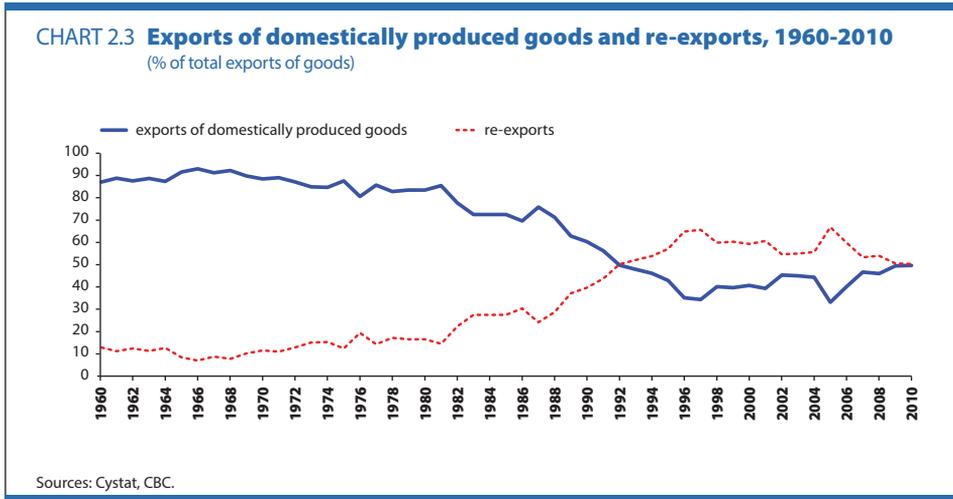
As shown in **Chart 2.2**, the goods balance of Cyprus has traditionally recorded high deficits, exceeding, with few exceptions, 20% of GDP, and averaging 30% of GDP in the past decade. The gradual fall in exports of goods as a percentage of GDP since the mid-1980s, along with the still high, although declining, levels of imports, led to an increase in the trade deficit in the past decade, with exports as a percentage of GDP falling to 7.5% of GDP in that period, from 13.1% and 20.4% on average in the 1990s and the 1980s, respectively, while goods imports as a percentage of GDP were 37.8%, from 42.5% in the 1990s and 51.3% in the 1980s. It is worth mentioning that the negative impact of the Turkish invasion on the trade balance was moderated to some degree by the increase in exports in the ten years following the invasion. Still, the trade deficit continued to rise during that period, as imports outpaced exports.

As mentioned earlier, the goods imports of Cyprus typically outpace

goods exports. On the one hand, the lack of industry in Cyprus implies that the country depends on other countries for industrial products, and on the other, oil imports become increasingly important: from 2.7% of GDP during the 1995-2000 period, imports of oil products for domestic consumption almost doubled to 5.3% of GDP in 2005-2010. Furthermore, the strong economic performance of Cyprus after the Turkish invasion, often supported by expansionary fiscal policies, caused a fast increase in real incomes and consumption expenditure on imported products. Moreover, trade liberalisation, specifically the abolition of customs duties on EC imports, and the dwindling competitiveness of Cypriot industrial products, as well as the voluntary shift of resources towards the tertiary sector, with an emphasis on tourism, finance and other business services, led to a decline in Cypriot exports, especially industrial ones.

Exports of goods

The importance of goods exports for the Cyprus economy has been diminishing. While in the 1960s the exports of goods were almost 20% of GDP, they have fallen substantially in recent years, averaging a mere 7% of GDP for the 2006-2010 period. This demonstrates the failure of Cypriot exports to penetrate foreign markets and the displacement of domestic products by imports. The inherent weaknesses of industrial exports can be summarised in that the Cyprus industry developed on the back of a protected market and two key export markets: First, the United Kingdom, penetrated largely thanks to the preferential regime enjoyed by Cypriot industrial products, and also supported by the presence of a large Cypriot community, being the main customers of domestic industries, especially in the clothing and food sectors. With the gradual decline in competitiveness, industry in Cyprus plummeted, failing to exploit the quotas implied by the customs union. The second market was the Arab market which although it seemed easy, it was soon lost to competition.

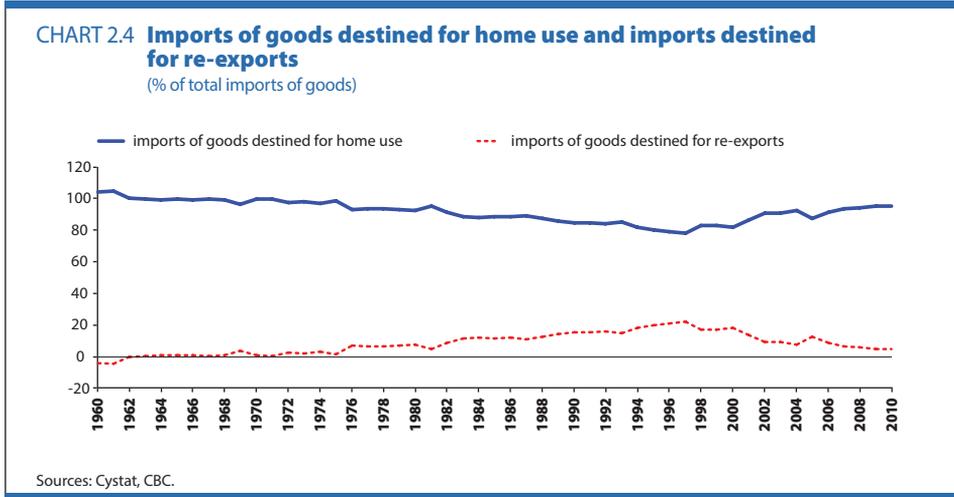


In addition to the above, the perceived competitive advantages of Cyprus in other non-industrial sector, which could be used as a tool for development and growth, such as tourism and “other business services”, played a significant role in the negative course of industry. Thus, the economy of Cyprus transformed from a traditional agricultural economy after the independence, to a services economy and has remained so to this day.

The goods exports of Cyprus comprise exports of domestic goods and re-exports⁵. Until the end of the 1980s, exports chiefly relied on exports of domestic goods; thereafter, re-exports grew in importance, and their share in total goods exports reached 57% in the past decade (**Chart 2.3**).

Exports of domestic products mostly focus on industrial goods, which on average accounted for about 80% of domestic exports in the past decade, with the remainder being almost fully accounted for by agricultural goods. Domestic industrial exports have predominantly been clothing and footwear products, which however has exhibited a downward trend, due to lower competitiveness and increased competition from emerging markets, hence its export performance has been poor. An encouraging factor, on the other hand, is the export performance of pharmaceuticals, which are on the rise and are the

5. Re-exports are goods exported in the same state as previously imported, or after small processing.



leader in domestic exports. Regarding agricultural products, potatoes and citrus fruit hold the top position, although the respective export receipts are subject to marked fluctuations from one year to the next, as they depend on volatile factors such as foreign prices, weather conditions, etc.

The geographical breakdown of exports has been influenced by the European path of Cyprus over recent years. In particular, the share of EU countries in Cyprus exports was just above 50% in the past decade, up from smaller shares in earlier years.

Imports of goods

The imports of Cyprus can be divided into those intended for re-export and those intended for domestic consumption. The former are closely related to re-exports, which include, among other things, the purchase cost of imports for re-export plus a profit margin. The ratio of re-exports to imports for re-exports was 1.1 in the 1980-2010 period, before rising to 1.4 in the past decade.

Chart 2.4 shows imports for re-export and imports for domestic consumption, with imports for domestic consumption far exceeding

imports for re-export. The share of imports for re-export recorded an upward trend in 1978-1997, but started to decline in 1998. The fall in the share of imports for re-export since 1998 is attributable both to the decline in these imports and the large increase in imports for domestic consumption. In particular, the total increase in imports for domestic consumption in the 1980-2010 period was 820%, or an annual average rate of 7.5%. Also, regarding the 1998-2010 period, imports for domestic consumption recorded an increase of 128% while imports for re-exports fell by 46%.

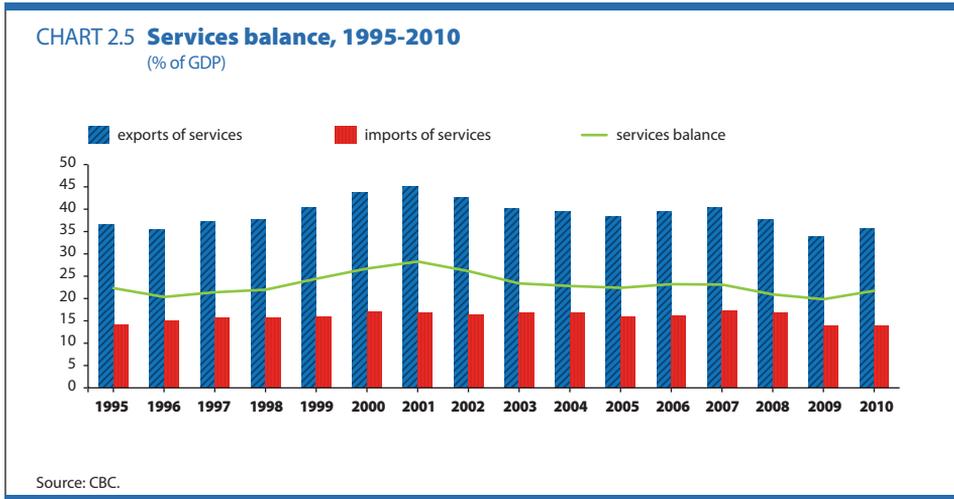
The main categories of imported goods in the past fifteen years were intermediate goods, accounting for about 33% of imported goods for domestic consumption, as well as imports for consumer goods, with a significant share of 28%. As mentioned above, imports of oil products rose substantially in the past few years, with their share approaching 20% in 2010, from a mere 8% in 1995.

Regarding the geographical breakdown of imported goods, in the past fifteen years these imports mostly came from EU countries, with a share of close to 70% in the 2006-2010 period.

2.3.3 Services

The comparative advantage of Cyprus in services exports and the focus of the economy on these sectors have led to an increase in the exports of services; as a result, the services balance has recorded large surpluses (**Chart 2.5**, p.53). These surpluses have, to a large degree, counterbalanced the high trade deficits. Specifically, the services surplus as a percentage of GDP peaked at 28% of GDP in 2001 and stood at 21% in 2010. The chart shows that the fluctuations of the services balance as a percentage of GDP were mostly attributable to movements in exports of services, since imports of services as a percentage of GDP have shown a less volatile pattern.

A comparison of the trade in goods with the trade in services in the



last fifteen years would reveal that the goods to services ratio in imports has been broadly unchanged, standing on average at 2.2. On the other hand, exports of services exceed exports of goods, and this divergence increases. While in 1995-1999 the services to goods ratio in exports was 3, it rose to an average of 5.5 in 2006-2010, testifying to a further specialisation of the Cypriot economy in services.

Exports of services

The services exports of Cyprus focus on four main sectors: transportation (including cargo and passengers, and ship management), travel services (travel – mostly tourist expenditure), financial services and “other business services” (e.g. accounting and legal services). In the past fifteen years, these sectors together accounted for 90% of total exports of services, allocated as follows (in 2010): transportation 23%, travel 26%, financial services 14% and other business services 30%. Sectoral receipts as a percentage of GDP in the same year were 8.3%, 9.4%, 5% and 10.6%, respectively.

Travel services have always been the most important category of services exports, except in 2010, when they ranked second to other

business services. Travel receipts rose fast from the beginning of the 1980s to 2001, then the sector began to decline. This is largely attributable to the falling competitiveness of the Cypriot tourism product, due to the emergence of competitive destinations in the region that offered a similar product at a lower cost. Thus, travel services as a percentage of GDP fell to levels close to 10% in 2010 from around 20% in 2000. Given the importance of tourism for the economy of Cyprus over time, **Box 2.1** (p.55) provides a further discussion.

Exports of other business services (accounting, legal, business, etc.) began to grow in Cyprus after the conflict in Lebanon in the 1970s and the gap left by the waning importance of the country as a business center in the region. This, combined with the advantages offered by Cyprus, i.e. geographical location, EU and subsequently euro area membership, tax incentives and other business-friendly practices, had a substantial contribution to the development of this sector in Cyprus. More recently, other business services continued to grow from 6% of GDP in 1995 to 11% of GDP in 2010.

In the sector of transportation, Cyprus, due to its location and the tax and other incentives it offers, has one of the largest fleets in Europe and globally. Transportation exports in the past few years are almost a quarter of total services exports, partly accounted for by the fact that a part of tourist flows to and from the country use domestic air carriers, as Cyprus is an island destination in a remote corner of the EU.

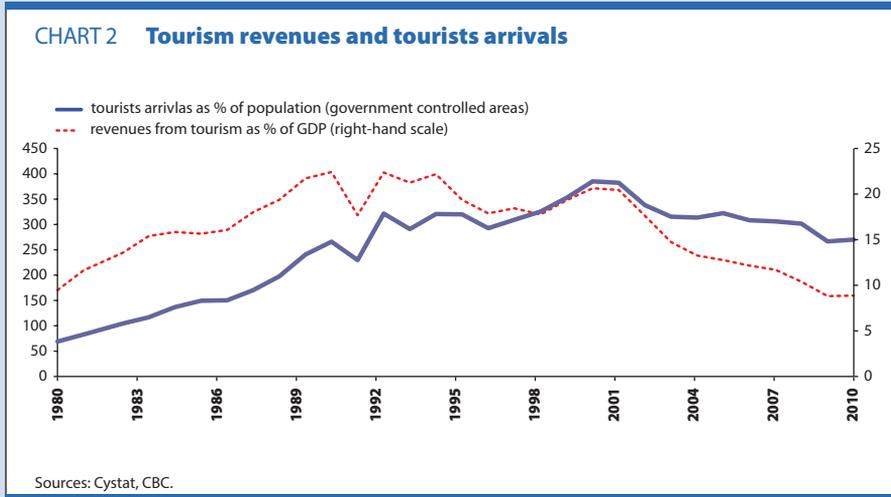
Lastly, a large increase has been recorded in the exports of financial services, particularly since 2007. While in 1995-2000 these exports represented a mere 3% of total exports of services, this share quadrupled to 12% in 2007-2010. Membership of the EU and the euro area played an important role in this respect, with Cyprus serving as a bridge between the EU and the euro area on the one hand, and third countries on the other.

Box 2.1 **Tourism**



Tourism has been a key driver of growth for the Cyprus economy; however, it has been on a downward trend in the past few years (**Chart 1**). After Cyprus’s independence in 1960, the development of tourism featured high on the economic policy agenda. Over time however, the real per capita expenditure of tourists has trended downwards (**Chart 2**, p.56). This is evidence that the tourism product needs to be enriched and improved, by an expansion and enhancement of existing tourism infrastructure, in order to attract higher-income tourists.

According to Adamou and Clerides (2009), Cyprus has been pushing the limits of its capacity to sustain a mass-market tourism for several years now. It seems likely that the relative magnitude of the tourism sector (**Chart 1**) will continue to decline, as the economy diversifies towards financial and legal services which have a higher value-added. The tourist sector is no longer attractive to Cypriot workers, as higher wages and better work conditions can be found elsewhere. As a result, governments have permitted the employment of migrant workers to



fill the gap. This has provided some temporary relief, but at the same time it has given rise to concern about the lower quality of service and the loss of the local character of hospitality services.

There is broad consensus among analysts that Cyprus needs to move away from the traditional sun-and-sea model of tourism towards a higher quality product. One of the biggest challenges which must be addressed in order to successfully make that transition is the deteriorating state of the tourist infrastructure. Many of the hotels were built in the 1980s and early 1990s and are by now in need of major renovation. Resort areas were developed hastily without proper planning and are lacking basic amenities, such as public transportation, facilities for pedestrians and cyclists, and parks. In tourist satisfaction surveys, visitors consistently express dissatisfaction with the state of the infrastructure and the natural environment of Cyprus (Clerides et al., 2009). Private investment in the sector has been channeled into new infrastructures but not on upgrading existing ones. As a result, productivity in the sector has been stagnant (Mamuneas and Pashardes, 2003).

The Cyprus Tourism Organisation's 2003 Strategic Plan recognised the problem and highlighted the importance of

upgrading the quality of the Cypriot tourist product. But although the maximisation of revenue from tourism was stated as the overarching goal, most of the more specific numerical targets (increase in arrivals, longer stays, increase in winter tourism, etc.) focused on quantity rather than quality.

Another significant aspect is the fact that before Cyprus' accession to the EU, sectors with positive contributions to the current account balance, such as tourism, availed of government support in the form of direct subsidies, grants, exemption from customs duties, etc. Now the potential for such support is limited, which increases the need to improve competitiveness.

The successful transition away from mass tourism and toward a more diversified and higher-quality tourist product will benefit the Cypriot economy in a number of ways. Focusing on attracting high-quality tourism and maximising income per visitor rather than the number of arrivals or overnight stays will reduce the environmental burden of tourism. Moreover, the provision of high value-added services will create high quality jobs. For example, the development of an infrastructure to attract visitors interested in Cyprus' cultural heritage will generate a need for historians and other professionals for work in museums and historical sites. In other words, moving on from the sun-and-sea model, tourism should develop in other areas, such as religious, convention and sports tourism, as well as health tourism.

Imports of services

Imports of services mostly focus on two sectors, transportation and travel. These two together account for 78% of total imports of services. Transportation, which is the more important of the two, is affected by the dependence of Cyprus on the imports of goods, which contributes to higher

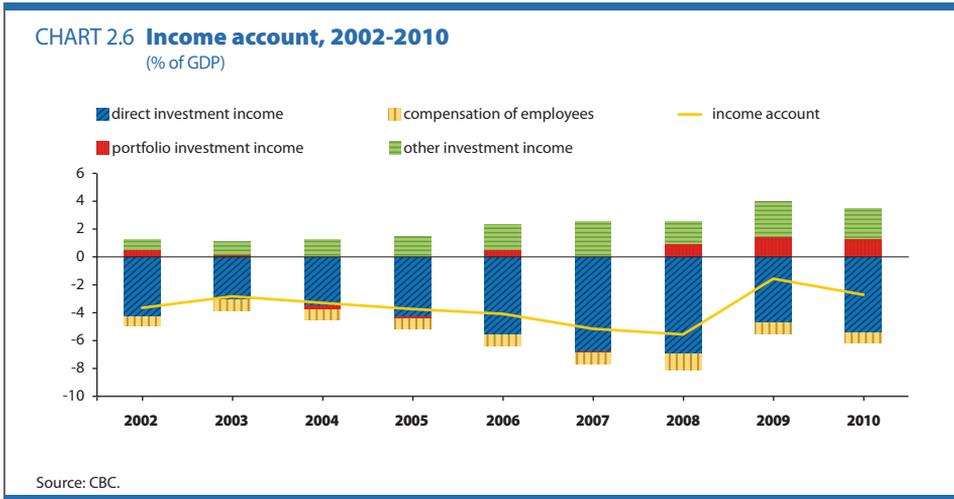
imports of transportation services. Furthermore, as is also the case with exports of transportation, transportation imports are also affected by the number of residents of Cyprus visiting foreign destinations and choosing foreign airlines. This number is expected to increase, as the Eurocypria works will stop around end-2010. Moreover, it should be noted that the past few years saw an increase in imports of financial services and other services.

2.3.4 Income account

The efforts of Cyprus to develop into a business and financial centre in the region after Lebanon lost this role, by applying an attractive corporate tax regime and other business-friendly practices, alongside, more recently, the accession of Cyprus to the EU and the euro area, gradually yielded fruit and increased the importance of this component of the BoP. The income account consists of two types of transactions between residents and non-residents: (a) labour income; and (b) receipts and payments referring to income from financial investment abroad. The enhanced role of this sector is also reflected in increased payments to and from Cyprus for income created by higher investment in Cyprus. First, several foreign firms, due to the advantages offered by Cyprus, have chosen to carry out their activities in Cyprus, either directly or through subsidiaries or branches. In addition, the efforts of Cyprus to evolve into a financial centre in the region have boosted foreign deposits in Cyprus.

Against this background, the income account of Cyprus is strongly negative, recording deficits every year from 1995 to 2010, with the exception of 1998 when the large losses suffered by foreign companies were reflected in a notional surplus according to the BoP compilation methodology.

Chart 2.6 (p.59) shows the income account together with its components for 2002-2010. Obviously, the negative position of the account largely reflects outflows of income from foreign direct investment (foreign direct investment is investment in a country by non-



residents, whereby non-residents acquire a holding of at least 10% in a company). This is attributable to the large size of inward direct investment, which gives rise to dividends payable to the owners of such investment and recorded as payments of direct investment income. These amounts typically exceed the inflows of income from foreign direct investment by Cyprus residents. The labour income sub-account is also negative, though less so than direct investment income. On the other hand, other investment income (other investment mostly consists of deposits and loans) has been positive since 2000, while positive results are typically recorded in portfolio income (portfolio income mainly consists of bonds and foreign investment whereby a non-resident acquires a holding of less than 10%). The latter two components owe their positive sign to the efforts of Cyprus to evolve into a financial centre in the region, which attracted foreign deposits to Cyprus and created increased income from their profitable management.

2.3.5 Current transfers account

The current transfers account is the least important item of the CAB of Cyprus. The first item of this account consists of current transfers of

general government, which includes payments to/receipts from the EU. This category showed net inflows until 2006, which were then reversed to net outflows, as Cyprus became a net contributor to the EU budget.

The second and most significant category consists in current transfers of sectors other than general government and includes, among others, workers' remittances; between 1995-2010, this sub-account mostly showed a net inflow position, with the exception of 2009 and 2010.

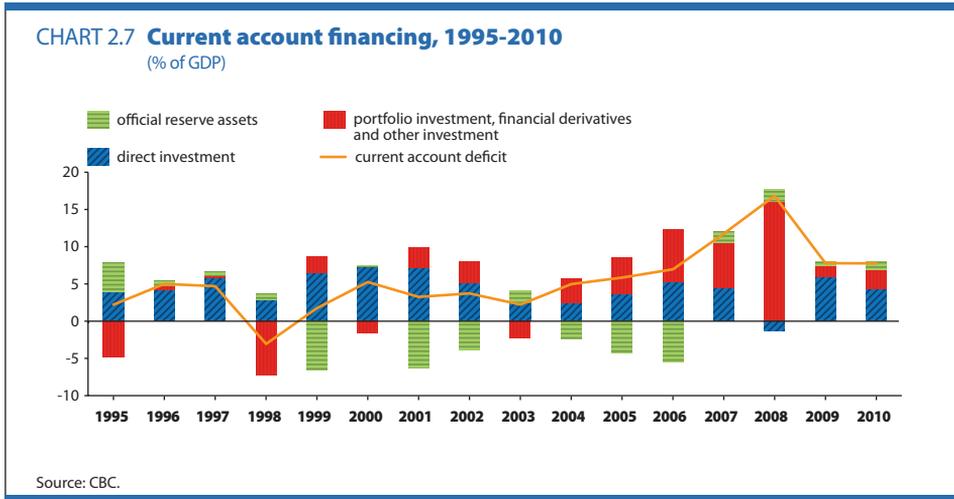
2.3.6 Capital and financial account

The capital and financial account is the second part of the balance of payments and mirrors developments in the CAB, recording in particular the use of surpluses or the financing of deficits stemming from the CAB. In the case of CAB deficits, a country has three options in order to finance the deficit: selling assets to non-residents, borrowing from non-residents and drawing on its international reserve assets. The reverse happens in the case of a surplus.

The balance of payments component under review consists of two sub-components: the capital account and the financial account. The capital account of Cyprus is very small, with an average balance of just 0.2%, as a percentage of GDP, for the 1995-2010 period.

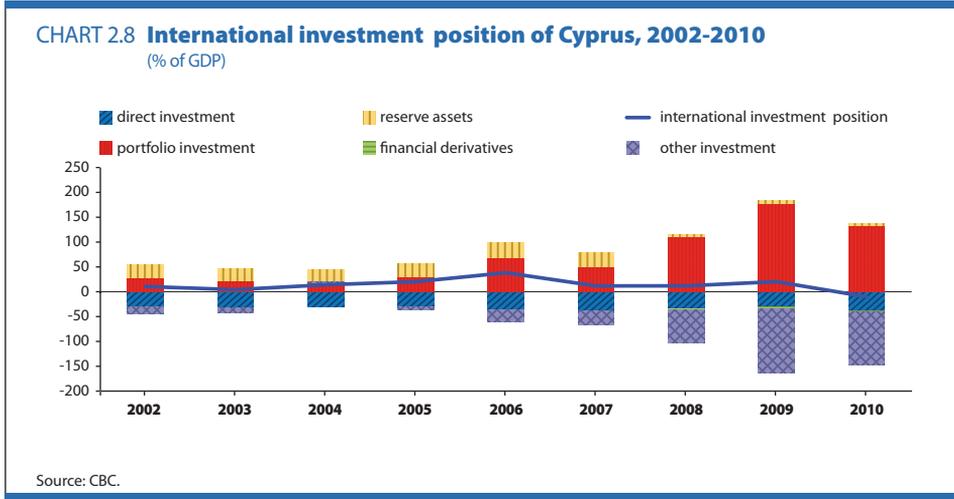
As the capital account is close to zero, the financing of deficits in Cyprus is ensured through the financial account. **Chart 2.7** (p.61) shows the financing of CAB deficits by the main categories of the financial account. Typically, the primary category used to finance the CAB deficits is direct investment, which financed 66% of the CAB deficit in 1995-2010. Furthermore, direct investment as a percentage of GDP averaged 4.4% in 1995-2010, compared with an average CAB deficit of 5.4% as a percentage of GDP. Direct investment is mainly associated with the sectors of financial intermediaries and real estate, renting and business activities (for further details, see next sub-section).

Although direct investment has traditionally financed the bulk of the



CAB deficit, this was not the case in 2007-2008 (**Chart 2.7**). During that period, the CAB deficit rose to very high levels and was predominantly financed by other investment. It should be noted that the other investment category is seen as a shorter-term source of financing, as it mostly consists of loans and deposits. This means that in order to finance net imports, Cyprus residents borrow from abroad, use deposits by non-residents or draw on their own deposits abroad. On the other hand, financing through direct investment is considered to be longer-term and, in addition, it increases the country’s production capacity⁶ (the financing of CAB deficits and the benefits of direct investment are discussed further in a subsequent section). In between the two categories, in terms of the time horizon, is the third main category used to finance the deficit, namely portfolio investment. The latter two categories show significant volatility from one year the next and are therefore reported as an aggregate sum in **Chart 2.7** (this sum also includes financial derivatives, which were very low in the 1995-2010 period). The final category of financial transactions is reserve assets, which was negative on average in 1995-2010 and stood at 1% of GDP, although in 2007-2010 it had also contributed to financing the deficit.

6. Part of foreign direct investment are dividends to holders of foreign direct investment, which are re-invested and is important for Cyprus. In particular, in 2005-2010, net reinvested profits corresponded on average to 30% of the CAB deficit.



2.3.7 International investment position

The financial account discussed above is directly associated with the International Investment position (IIP) of Cyprus. While the financial account refers to transaction flows during a year, the IIP refers to the respective stocks⁷. In other words, the IIP is a statement showing the value and composition of a country’s external financial assets and liabilities.

Data on the IIP are available for Cyprus for the 2002-2010 period. **Chart 2.8** shows that the net IIP was positive up to 2009, reversing to net negative position in 2010. Among the individual categories of the IIP, net direct investment made a negative contribution, i.e. direct investment by non-residents is higher than direct investment of residents abroad, which is to be expected since direct investment is typically the main source of financing of the CAB deficit of Cyprus. Regarding direct investment positions in Cyprus, the latest available data (2009) suggest a high concentration in the sectors of financial intermediaries (53%) and

7. The function connecting financial transactions (FT) with the IIP is:

$$IIP_t = \sum_t FT_t + \sum_t Other\ Changes_t$$

where other changes can refer to exchange rate variations, changes in the remuneration of assets and liabilities, reclassifications, write-offs, etc.
Moreover, as mentioned above:

$$CAB_t = -FT_t$$

The latter equation implies a negative relationship between IIP and CAB and shows that CAB deficits lead to a deterioration in the IIP of the country.

real estate, renting and business activities (33%). Direct investment comes mostly from Greece, Russia and the United Kingdom. For outward direct investment by Cyprus residents, in 2009 the main recipient countries were the United Kingdom, the Netherlands and Greece, and the main recipient sectors were financial intermediaries with a share of 64% and the real estate, renting and business activities with a share of 17%.

The other category to show a net liability position for Cyprus is other investment, particularly in recent years, which is largely attributable to higher inflows of deposits by non-residents. The evolution of other investment in Cyprus is, as mentioned above, associated with that of portfolio investment, which has been increasingly positive in the past few years, thereby offsetting a decline in other investment. The link between the two categories is associated, inter alia, with tax incentives for intercompany asset transfers, which, in this case, do not reflect actual redistribution of foreign financing. Moreover, the link could also reflect how banks utilise the foreign deposits they accept. Lastly, the reserve assets of Cyprus were positive in 2002-2010. The chart shows a sharp decline in reserves in 2008, which is associated with the entry of Cyprus into the euro area, since the euro-denominated reserves of Cyprus were no longer classified as reserve assets after 1 January 2008, as the euro became the national currency. These reserves were reclassified under other investment and portfolio investment.

2.3.8 Foreign debt

The foreign debt of a country is the part of its total debt which is due to non-residents and the borrowers can be the government, corporate or household sectors. Debt includes financial obligations to banks, governments or international financial institutions. It should be noted that foreign debt is closely associated with the IIP of a country and, specifically, it is a sub-set of the financial obligations that make up the IIP.

Cyprus' foreign debt is relatively high. In particular, in 2004 it stood at 198% of GDP, rising to 483% of GDP in 2009, before falling to 449% of GDP in 2010. The large foreign debt of Cyprus is directly associated with inflows of foreign deposits, which account for almost 50% of foreign debt. In line with this, the single most important foreign-debt-creating sector in Cyprus is financial institutions, with a share of 80% in foreign debt for the 2004-2010 period.

The dramatic increase in foreign debt in recent years should be considered in conjunction with the commensurate increase in foreign assets. In particular, deposits by non-residents in Cyprus are subject to strict CBC regulations, requiring banks to maintain a substantial level of liquidity in some proportion (e.g. 70% in 2010) with their foreign currency-denominated deposits. Thus, when calculated in the same way as foreign debt, the foreign assets of Cyprus would be 460% of GDP in 2010, exceeding foreign debt (449% of GDP).

2.4 Current account sustainability in Cyprus

Since 1960, the CAB of Cyprus has recorded mostly deficits, averaging 4.4% of GDP in 1960-2010. More recently, in 2000-2010, the average deficit rose to 6.9%. The question is whether the persistent and rising deficits in Cyprus are sustainable. Although there is no straightforward answer to this question, this section will try to assess the sustainability of CAB deficits, examining country-specific aspects such as the factors behind deficits, as well as their financing. It should be noted that unsustainable deficits have potentially adverse consequences for a country and can even lead to a financial crisis, shutting the country out of foreign exchange markets, and/or an economic crisis, in the form of a low or negative growth and job losses.

As mentioned above, there is no unambiguous way to determine whether the CAB deficit of a country is sustainable. However, Milesi-Ferretti and Razin (1996) suggest, as rule of thumb, that a CAB deficit

exceeding 5% of GDP should sound an alarm, particularly if financed by short-term borrowing and reflecting consumer expenditure, although they add that this threshold would depend on the specific features of the given country: for example, Australia have managed to finance high current account deficits for several years, while countries such as Chile and Mexico have not been able to do so. Examining Australia, Chile, Ireland, Israel, South Korea and, for two different periods, Malaysia and Mexico, the authors conclude that a country may have a sustainable current account, if it can sustain high deficits without drastic policy changes, as in the case of Australia and, for the 1991-1995 period, Malaysia. On the other hand, a deficit is seen as unsustainable if it leads to a crisis or a policy shift, e.g. a fiscal tightening; Ireland, Israel, South Korea and Malaysia (1984-1985) are examples of a policy shift, while the other countries in the sample faced a crisis as a result of their current account deficits. Although this definition is not very helpful in the early identification of problems, the experience of these countries can be compared with the situation in Cyprus, enabling useful conclusions to be drawn in the case of Cyprus.

More generally, an answer to the question of whether deficits are sustainable in any given country would first require an answer to the question of whether that country can create current account surpluses in the future in order to cover its present current account deficits, in other words, whether the economy is intertemporally solvent. Moreover, Milesi-Ferretti and Razin (1996) propose as an additional criterion of sustainability the willingness of a country to repay its external obligations, and its commitment to the pursuit of policies that would contribute in this direction, as well as the willingness of foreign investors to continue lending to the country.

Moving on to a national context, this section will discuss several variables, in an attempt to answer the question of whether the current account deficits of Cyprus are sustainable on the basis of the analyses by Milesi-Ferretti and Razin (1996) and Roubini and Wachtel (1998)⁸. These

8. Kyriacou and Papageorgiou (2010) recently examined the issue for the case of Cyprus from a specific perspective, using the so-called Fundamental Equilibrium Exchange Rate Model. See also related references in Chapter 3 of this book.

TABLE 2.3 Current account, 1995-2010
(% of GDP)

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	1995-2010	2007-2010
Current account	-2,2	-5,0	-4,7	3,1	-1,7	-5,3	-3,3	-3,7	-2,2	-5,0	-5,9	-7,0	-11,7	-16,8	-7,8	-7,8	-5,4	-11,0
Balance of goods and services	-0,2	-3,0	-1,9	-3,4	0,8	-1,3	1,6	-1,2	-0,5	-2,7	-2,6	-4,0	-6,5	-11,0	-5,1	-5,1	-2,9	-6,9
Income account and current transfers	-2,0	-2,0	-2,8	6,5	-2,5	-3,9	-4,9	-2,6	-1,8	-2,2	-3,2	-2,9	-5,2	-5,8	-2,6	-2,7	-2,5	-4,1
Imports of goods	35,8	38,2	37,3	36,6	33,9	38,3	36,8	35,4	30,8	33,0	34,2	34,9	36,5	38,8	30,8	33,4	35,3	34,9
Imports of goods for home use	28,9	30,2	29,2	30,8	27,7	31,7	31,5	31,0	27,4	30,1	29,6	31,4	33,6	36,1	28,8	31,1	30,6	32,4
<i>of which</i>																		
oil imports	2,2	2,8	2,7	2,0	2,6	4,2	3,9	3,4	2,1	3,6	4,6	5,2	5,1	6,5	4,7	6,0	3,8	5,5
Exports of goods	13,3	14,9	14,0	11,2	10,2	10,1	8,1	7,0	7,4	9,1	7,7	6,8	6,9	5,9	6,6	9,3	9,3	6,5
<i>of which</i>																		
domestically produced goods	5,6	5,1	4,7	4,3	3,9	3,9	3,8	3,5	3,0	3,2	3,0	3,1	3,2	3,2	2,8	3,3	3,7	3,1
Imports of services	14,2	15,1	15,8	15,7	16,0	17,1	16,7	16,4	16,8	16,7	15,9	16,2	17,2	16,8	14,0	13,8	15,9	15,5
<i>of which</i>																		
travel	3,6	3,9	4,3	4,3	4,4	4,4	4,4	4,8	4,6	5,1	5,5	5,3	6,7	6,1	5,3	5,0	4,9	5,8
Exports of services	36,5	35,4	37,2	37,7	40,4	43,8	45,0	42,5	40,1	39,5	38,4	39,4	40,3	37,8	33,8	35,6	39,0	36,9
<i>of which</i>																		
travel	19,4	18,0	18,7	18,0	20,2	20,9	20,7	18,3	15,7	14,3	13,7	13,0	12,3	10,8	9,1	9,4	15,8	10,4
financial services	0,8	0,9	1,1	1,2	1,8	2,1	1,6	1,3	1,1	1,4	1,6	1,7	3,3	4,8	4,7	5,0	2,1	4,5
other business services	6,3	6,3	6,4	7,0	7,4	8,2	9,5	8,7	8,7	9,3	8,9	9,6	9,0	8,1	8,2	10,6	8,3	9,0
government services	3,0	2,8	3,2	3,1	3,0	2,9	2,8	2,8	2,7	2,3	1,9	2,1	2,3	1,0	0,9	0,8	2,4	1,2

Sources: Cystat, CBC.

variables can be classified into two broad groups. The first group is associated with the source of CAB deficits, as reflected in the main current account components (**Table 2.3**); the second group comprises variables relating to the economy of Cyprus in general, such as national saving, investment, etc. (**Table 2.4**, p.67).

Table 2.3 examines the main CAB components for 1995-2010. The CAB showed an average deficit of 5.4% in 1995-2010, while the Balance of Goods and Services (BGS) also showed a deficit of 2.9% in the same period. This section discusses BGS only, as being more relevant for current account sustainability, than the income and current transfers account is.

The BGS deficit in 2007-2010 reached 4.1%, clearly deteriorating relative to the previous years. The reasons for this development are partly associated with factors other than competitiveness which, to the extent that they are not permanent or serious, do not directly affect current account sustainability. For

TABLE 2.4 Current account sustainability and macroeconomic variables, 1995-2010
(% of GDP)

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	1995-2010	2007-2010
Current account	-2,2	-5,0	-4,7	3,1	-1,7	-5,3	-3,3	-3,7	-2,2	-5,0	-5,9	-7,0	-11,7	-16,8	-7,8	-7,8	-5,4	-11,0
Exports	50,0	50,8	51,8	49,8	51,8	55,4	56,0	50,8	47,0	47,8	48,3	48,0	47,9	45,4	40,3	40,1	48,8	43,4
Gross national savings	20,0	16,9	15,1	24,7	16,3	14,5	13,2	15,0	15,1	14,5	13,8	13,5	10,8	7,2	9,4	9,1	14,3	9,1
Investment	21,9	21,6	19,4	19,2	17,0	18,3	16,4	18,8	17,4	20,2	19,9	20,8	22,4	24,2	17,3	18,4	19,6	20,6
Fiscal balance	-0,8	-3,2	-5,0	-4,1	-4,3	-2,3	-2,2	-4,4	-6,5	-4,1	-2,4	-1,2	3,4	0,9	-6,0	-5,3	-3,0	-1,7
Net inflows for direct investment	3,9	4,2	5,8	2,9	6,5	7,3	7,2	5,1	2,4	2,5	3,7	5,2	4,5	-1,3	5,9	4,4	4,4	3,4
Harmonised competitiveness indicator ¹	99,8	98,2	97,3	102,0	98,4	96,6	97,2	100,0	106,0	107,9	108,2	108,3	108,0	110,3	110,2	107,3	103,5	108,9

Sources: Cystat, CBC.

1. The harmonised competitiveness indicator is defined as the weighted average of the country's exchange rate with tradig partners, deflated with the consumer price index.

instance, one of the main reasons for the deterioration of the BGS deficit was the substantial increase in oil imports, given the high oil dependence of Cyprus and the higher international oil prices. The oil import reached 5.5% of GDP in 2007-2010, up from 3.3% in 1995-2006. Moreover, a major role in the soaring of deficits to record levels in 2007-2008 was also played by the overheating of the economy, particularly in the construction sector, with construction-related imports recording significant increases in that period.

Exports of services deteriorated in 2007-2010, primarily due to reduced receipts from tourism and, to a lesser degree, lower government services (mostly as a result of a decline in expenditure by the British Bases in Cyprus). The latter is not associated with the country's competitiveness, but rather with the fiscal restraint policy of the United Kingdom. However, tourism receipts are strongly affected by a loss in the competitiveness of the tourism product. On the other hand, 2007-2010 witnessed an increase in exports of financial services and other business services, albeit not enough to offset the fall in tourism receipts.

The BGS, as shown in **Table 2.3** (p.66), fell markedly in 2009 and 2010 compared with the two previous years, in line with the cooling of the economy. Moreover, it is important to note that net of the effect of oil prices, the BGS was lower in 2010 than in the three previous years.

Table 2.4 examines different macroeconomic variables that are

relevant for current account sustainability. Most of these variables were analysed by Milesi-Ferretti and Razin (1996) for the countries mentioned above. Their study found that high CAB deficits are more likely to be unsustainable when the size of the export sector is small, the level of domestic savings is low and the real exchange rate is appreciated relative to historical averages.

The CAB as a percentage of GDP has been persistently high in Cyprus, as already pointed out, and has kept increasing in recent years (11% in the 2007-2010 period). Among the countries examined in the above study, similar deficit levels were only seen in countries that faced a crisis or a policy shift as a result of current account imbalances.

According to the same study, a significant indicator is the ratio of exports to GDP, given that exports increase the ability of a country to repay its debt. This ratio is high in Cyprus compared with the above mentioned countries, although it has declined in recent years, to a large extent as a result of the global financial crisis.

Turning to national savings⁹ and investment, it is important for a country to maintain both at high levels, since they act as a form of commitment to higher future output. In the case of Cyprus, net national savings as a percentage of GDP declined in the 1995-2010 period and have stood at single-digit levels in the last three years. On the other hand, investment has been broadly stable, with the exception of the crisis years. Compared with the countries considered by Milesi-Ferretti and Razin (1996), savings in Cyprus remain at relatively low levels, and only Chile, which faced a crisis due to CAB deficits, had a single-digit saving ratio. Investment ratios are similar in all the countries examined.

The fiscal balance of Cyprus as a percentage of GDP has been mostly negative in Cyprus. The fiscal balance in Cyprus is associated with the CAB, although this relationship has weakened in the past few years (see **Section 2.6**, p.73). However, according the same study, most of the countries in the sample that had unsustainable CAB deficits also had high fiscal deficits, although these were higher than those observed in Cyprus.

9. National saving is the sum of private and public saving.

Net foreign direct investment inflows, which are seen as a more durable and healthy source of financing, as they increase the production capacity of the country, have remained high in Cyprus. In 1995-2010, net direct investment inflows as a percentage of GDP were around 4.4%, while the CAB deficit as a percentage of GDP reached 5.4%, implying that a very large part of the CAB deficit is financed by foreign direct investment. In this respect, Cyprus compares favourably with the countries in the sample examined by Milesi-Ferretti and Razin (1996).

The Harmonised Competitiveness Indicator (for further analysis, see next section) for Cyprus has remained high since 2003, compared with the previous years, reflecting high domestic production costs. This indicator is more meaningful for similar products produced by all countries in the sample and, thus, their selling prices are very significant, while this is not so much the case with Cyprus. For instance, income from accounting and legal services depends on the presence of foreign companies in Cyprus, attracted, among other factors, by a favorable tax regime.

The picture emerging from the above discussion is rather mixed, as the CAB deteriorated in the past few years, which, however is not solely associated with competitiveness issues. The challenges remain, even though, with Cyprus in the euro area, the possibility of unsustainable current account balances leading to a currency crisis is non-existent. Growing deficits could undermine the growth prospects of the economy, unless supported by a sound fiscal policy and structural changes to improve competitiveness.

2.5 External competitiveness of the Cyprus economy

Competitiveness is a multidimensional concept and can be defined in many different ways. Simply put, competitiveness is the success of a country in promoting its products in international markets. Thus, external competitiveness is of great significance for countries like Cyprus, which rely

heavily on exports and foreign direct investment. A failure of policies for improving competitiveness could pose challenges to growth and job creation. Usually, but not necessarily, low competitiveness is reflected in continuous and high CAB deficits.

The degree of competitiveness can be assessed using two groups of indicators. The first group comprises quantitative indicators (price competitiveness indicators), such as unit labour cost. The second group comprises qualitative indicators (non-price competitiveness indicators), such as administration methods, quality of services, etc. These two groups are examined below.

2.5.1 Quantitative indicators of competitiveness

This group includes indicators such as labour costs and the exchange rate that relate to factors affecting the cost of domestic exports, as well as indicators that evaluate export market shares. The discussion below focuses on three key price competitiveness indicators: unit labour cost, the real effective exchange rate and the export market share.

Unit labour cost

Unit labour cost is defined as compensation per employee divided by productivity or, alternatively, labour cost per unit of output.

The unit labour cost index of Cyprus (bases 2000=100) stood at 89.7 in 1995, at broadly the same levels with the corresponding index for the EU as a whole and compared with 97.1 for the euro area. In 2010 this index for Cyprus was considerably higher than the respective euro area and EU indices, in particular following the significant wage increases in Cyprus in 2009, amid a recession. Specifically, the Cyprus index stood at 131.8 in 2010, compared with 114.2 and 119.7 for the EU and the euro area respectively. It should be noted that, on the basis of this index, Cyprus ranked 13th among the 17 euro area countries in 2010, well

below from 6th in 1995 (among 15 countries, in the absence of available data for Greece and Malta for that year).

Although Cyprus' performance in terms of this index appears unsatisfactory, it should be noted that, as Cyprus relies more on exports of services than exports of goods, it is possible the index does not accurately reflect the competitiveness situation, as services are not so strongly affected by unit labour cost. Still, the index should be taken into consideration when examining the competitiveness of Cyprus, particularly when it persistently points to worrisome trends.

Real effective exchange rate

The real effective exchange rate of a country is defined as the weighted average of the bilateral rates of the national currency against foreign currencies, adjusted for the impact of prices. Weights reflect the country's trade with other countries, and adjustment for the impact of prices is mainly based on the consumer price index, unit labour cost and the GDP deflator.

The present analysis uses the Harmonised Competitiveness Indicator (HCI), which is deflated by the consumer price index and consistent with the concept of the real effective exchange rate. This indicator for Cyprus stood at 99.8 in 1995, rising to 107.3 in 2010, while the respective euro area average moved in the opposite direction, falling from 108.7 in 1995 to 99.3 in 2010. In terms of this index, Cyprus ranked 7th in the euro area in 1995 and 10th in 2010.

Export market share

The export share of Cyprus in total world exports has been on a downward trend since 1995: from an average of 0.069% in 1995-1999, it fell to 0.059% in 2005-2009. This mainly stemmed from exports of goods, as the export share of services declined marginally during that period. The falling export

market share of Cyprus would suggest a deterioration in the country's competitiveness concerning the trade of goods rather than services.

2.5.2 Qualitative indicators of competitiveness

These indicators are different from the quantitative indicators in that they are not directly measurable and are typically derived from qualitative surveys. Two such broad indicators that compare competitiveness across countries including Cyprus are the World Bank's *Ease of Doing Business* index and the World Economic Forum's *Global Competitiveness Report*.

The *Ease of Doing Business* index is published by the World Bank and is based on the study of laws and regulations in each country, with input from more than 5,000 government officials, lawyers, business consultants, accountants and other professionals. According to this index, Cyprus ranks 40th among 183 countries in 2012¹⁰, up nine places from the previous year.

The second index, the World Economic Forum's *Global Competitiveness Report*, is a contribution to understanding key determinants of economic growth and explains why some countries are more successful than others in increasing incomes and opportunities for their populations. According to this, Cyprus ranks 47th among 142 countries in the 2011-2012 report, compared with 40th among 139 countries in the previous report. It is worth noting that in the 2007-2008 report, when Cyprus joined the euro area, it ranked 55th among 131 countries.

Apart from these general indicators, additional indicators are presented below, which examine more specific aspects of competitiveness. These are further discussed by Flamini (2010). According to the index of economic freedom¹¹ of 2010, Cyprus scores 70.9 out of 100 units and ranks 24th among 183 countries, broadly unchanged from 2009. The logistic performance index, published by the World Bank, ranks Cyprus 46th out of 130 countries, with a total of 3.13 units in a scale from 1 to 5. On the other hand, the Competitive Industrial Performance Index¹² in 2005 ranked Cyprus 41st out

10. The 2012 indicator mostly covers the second half of 2010 and the first half of 2011.

11. Published annually by The Heritage Foundation and the The Wall Street Journal. It covers 183 countries.

12. Published by the United Nations Industrial Development Organization (UNIDO). It examines the competitiveness of a country's industry.

of 122 countries, up 18 places compared with 2000. According to the Business Environmental Outlook Index, compiled by the Economic Intelligence Unit, Cyprus had an average score 6.8 out of 10 in 2005-2009, ranking 34th out of 82 countries. Furthermore, the “Lisbon Reform Scorecard” index created by the Centre for European Reform, assesses the performance of individual countries against their Lisbon targets. In the 2009 scoreboard, Cyprus ranked 14th out of 27 countries.

In general, the competitiveness of a country is a multidimensional measure and very difficult to estimate, which is why a multitude of indicators are used. According to the above analysis, quantitative indicators show that the competitiveness of Cyprus has deteriorated and falls short of the euro area average. The fact that the export share of Cyprus is on a downward course should also be a cause of concern. On the other hand, qualitative indicators, as examined above, suggest a relatively better picture for the economy of Cyprus. As a whole, both types of indicators lead to the conclusion that the competitiveness of Cyprus should be supported and any measures in this direction should be taken as soon as possible, since Cyprus is a small, open economy that relies on external trade and is also part of a monetary union and thus unable to use domestic monetary and exchange rate policy tools.

2.6 Twin deficits

As already mentioned, fiscal policy makes a significant contribution to achieving sustainable balance of payments deficits. The correlation between the fiscal deficit and the balance of payments deficit is often emphasised by the use of the term “twin deficits”. According to the twin deficit hypothesis, the fiscal deficit contributes to the creation of current account deficits. The equation associating the two deficits is:

$$CAB = (S_{pr.} - I_{pr.}) + (T - G - I_{pub.}) \Leftrightarrow CAB = (S_{pr.} - I_{pr.}) + Fiscal\ Deficit^{13}$$

13. A combination of the two identities, i) $GDP = C + I + G + NX$ (GDP expenditure approach) and ii) $GDP = C + S + T$ (household income distribution).

where CAB stands for the current account deficit, S for savings, I for investment, T for taxes, G for public consumption, and pr and pub for the private and the public sector, respectively.

On the basis of the above equation, the fiscal deficit is directly linked to the CAB (twin deficits), and if private savings equal private investment, i.e. Net Private Saving (NPS) is zero, then the two deficits are equal.

In greater detail, the equation suggests that a deterioration in the CAB deficit can translate into lower private savings, higher investment and/or a higher fiscal deficit. The second case, where the CAB deficit is reflected in higher investment, is not a cause for concern, as it raises the production capacity of the country. However, if a CAB deficit is associated with lower private savings or higher fiscal deficits, this would be alarming, as it would in effect increase the external debt of the country to support higher consumption.

It should be noted that according to the Ricardian equivalence proposition, fiscal deficits do not affect CAB deficits, as households adjust their NPS in response to the level of the fiscal deficit. In the above equation, this is reflected as a decline in the NPS in the event of an increase in the fiscal deficit, so that the CAB deficit remains unchanged.

As regards how fiscal policy shifts can affect the CAB, Abbas et al. (2010) identify three major channels: the direct impact through public demand for goods and services, the impact through the real effective exchange rate and the impact on interest rates and country risk premia.

First, the most direct way in which fiscal policy can affect the external account is through changes in government's consumption or investment demand for tradable goods. Government often accounts for a large part of domestic demand, so that, depending on the import propensity, shifts in the government import demand function translate into movements in the trade balance. Thus, in certain

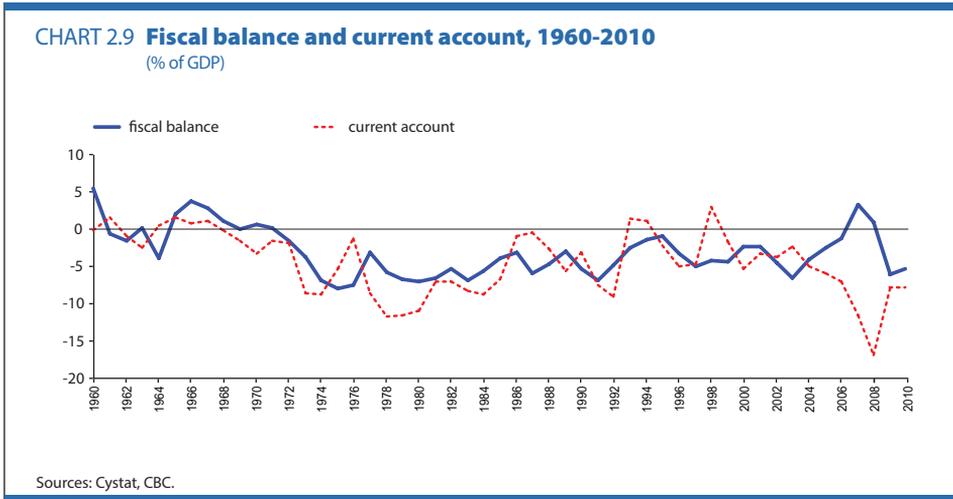
circumstances, a fiscal expansion, whether implemented through a tax reduction or through a spending increase, will tend to increase demand (including for imports) and the trade deficit.

Second, fiscal policy can also affect the current account by altering the relative price of non-tradables in relation to tradables (the real effective exchange rate): higher government spending on non-tradables (such as services or real estate investment) can induce a real appreciation, which in turn can tilt private consumption toward, and production away from, tradables. The ensuing worsening in the current account can be prolonged insofar as resource shifts are not easily reversed.

Third, fiscal tightening can reduce interest rates, including on external debt, thereby improving the current account balance. At the same time, lower country risk premia can also increase capital inflows, which can boost demand and real appreciation pressures and eventually worsen the current account. Conversely, fiscal expansions that are deemed unsustainable can generate capital flight and force a rapid external account adjustment.

The existing literature provides contradictory results about the existence of a relationship between the fiscal balance and the CAB. Bartolini and Lahiri (2010) find that although fiscal deficits are associated with CAB deficits in a number of countries, this relationship is not strong. Bagnai (2006), taking into consideration structural breaks in the relationship between the twin deficits in 22 OECD member countries, finds a strong relationship for almost half of these countries.

Regarding the case for Cyprus, **Chart 2.9** (p.76) suggests a generally positive correlation between the CAB deficit and fiscal deficits. In particular, the correlation coefficient of the two for 1960-2010 is 0.35 and increases if the last five years of that period are excluded. More specifically, the correlation coefficient for 1960-2005 stands at 0.59. The correlation of the two deficits seems to have been



disrupted from 2006 onwards, which is partly due to two distinct factors. In 2006-2008, the predominant factor was the boom in the real estate market: this, on the one hand, led to an improvement in the fiscal balance due to the higher government revenue associated with real estate; on the other, it weighed on the current account deficit, owing to higher imports of building materials and household appliances. Instead, in the 2009-2010 period, particularly in 2009, the disruption in the correlation reflected the effects of the economic crisis: falling domestic demand as a result of the crisis led to an improvement in the CAB, while government intervention to deal with the impact of the crisis, combined with lower revenue as a result of subdued economic activity, caused the fiscal balance to deteriorate.

Aristovnik and Djuric (2010) tested empirically the twin deficits hypothesis in the EU countries during the 1995-2009 period and found that fiscal deficits in these countries signalled a high level of substitutability between public and private savings, implying a weaker correlation between the CAB deficit and fiscal deficits. Regarding the results for Cyprus, although an increase in investment is found to be associated with a decline in the CAB, fiscal deficits

and CAB deficits do not seem to be correlated. Examined over a longer period, however, the 1960-2010 period in particular, the correlation appears to be significant: a 1 percentage point increase in the fiscal deficit leads to a 0.56 percentage point increase in the current account deficit. The model estimation included a dummy variable for 2006-2010, which was found to be significant; the fact that Aristovnik and Djuric (2010) failed to establish a correlation between current account deficits and fiscal deficits could therefore be due to results for the specific period.

2.7 Policies to reduce the current account deficits: concluding remarks

The fact that Cyprus participates in a monetary union and CAB deficits do not pose a risk to the exchange rate does not mean that persistent CAB deficits should be ignored. Jaumotte and Sodsriwiboon (2010) provide three reasons why CAB deficits should be a cause of concern for the respective countries:

- CAB deficits may reflect domestic distortions, such as low net savings resulting from transitory booms in asset prices or excessively rosy expectations about future growth;
- Gradual adjustment due to deficits is painful. If the CAB deficit results from competitiveness problems or overheating, it would likely require a protracted period of low growth;
- Even worse, the adjustment may be abrupt if, for instance, financing suddenly stops or becomes expensive

The membership of Cyprus in a monetary union makes it more difficult, in theory, to correct CAB deficits, as a currency devaluation is not an option. That is, Cyprus cannot pursue a domestic monetary or exchange rate policy in order to ensure that the national currency is weaker, thereby improving, under certain circumstances, its competitiveness. It can instead use alternative policies such as structural

policies to enhance productivity and make the economy more competitive. A more competitive economy means higher exports, hence an improved CAB.

Structural reforms: these involve a wide range of changes aimed to address distortions in the product and labour markets. These changes contribute to a more efficient functioning of the market and improve productivity.

Reducing relative labour costs: if the output of Cyprus is less costly than that of its competitor countries, then demand for Cypriot products will increase. A reduction in labour costs, or an internal devaluation, should be considered together with other policies to improve productivity.

Fiscal discipline: as mentioned in previous sections, the fiscal deficit is likely to affect the CAB. A disciplined fiscal policy can help to improve the CAB both directly and indirectly. Policies with a direct impact include a reduction in government imports, while policies with an indirect impact include measures that influence private consumption, thereby consumption-related imports.

In the case of Cyprus, an issue closely linked to the above considerations is the revision of the growth model, focusing on key sectors such as tourism, so that the country can properly utilise its comparative advantages. The utilisation of these advantages should make the economy of Cyprus more competitive, and could involve maximizing the benefits of already developed sectors or new sectors. For instance, among already developed sectors, tourism can be supported by enriching the tourism product (e.g. by promotion of medical tourism), while shipping could be boosted by the promotion of services supplementary to shipping, further improvements in the country's port infrastructure, etc.

These are some of the measures that could help Cyprus to improve current account deficits. There is no magic recipe as to which measures, and to what extent, should be implemented. In addition to

the expected impact on the CAB, the decision on the policy mix to be used should also take into consideration the overall impact on the economy of Cyprus as a whole. For example, an internal devaluation that would squeeze the purchasing power of consumers could be undesirable during downturns.

Moreover, the effects of the above measures on the CAB would take some time until they become visible (e.g. structural policies to improve competitiveness) and it is important that any measures be decided upon in a timely manner. It is a well-known fact that the sooner measures are taken to deal with an economic problem, the less painful and the more effective they turn out to be. Particularly in the current situation, where any wrong path taken is difficult to reverse once problems have emerged, e.g. a loss of competitiveness, this premise becomes all the more important.

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ABBREVIATIONS IN CHAPTER 3

b.p.: basis points

BEER: Behavioural Equilibrium Exchange Rate

CAB: Current Account Balance

CB: Central Bank

CBC: Central Bank of Cyprus

CYP: Cyprus Pound

ECB: European Central Bank

ECOFIN: Economic and Financial Affairs Council

ECU: European Currency Unit

EER: Effective Exchange Rate

ERM II: Exchange Rate Mechanism II

EU: European Union

FEER: Fundamental Equilibrium Exchange Rate

GDP: Gross Domestic Product

IMF: International Monetary Fund

IPD: Interest, Profits, Dividends

MPC: Monetary Policy Committee

NEER: Nominal Effective Exchange Rate

OECD: Organisation for Economic Co-operation and Development

PPP: Purchasing Power Parity

REER: Real Effective Exchange Rate

SCA: Sustainable Current Account

SDR: Special Drawing Rights

TCA: Trend Current Account

US: United States of America

VAT: Value Added Tax

3. Exchange rate policy in Cyprus

George Kyriacou, Maria Papageorghiou*

3.1 Introduction

The choice of the appropriate exchange rate regime is a matter that has attracted much attention from economists, academics and central bankers over the past decades. An ideal exchange rate regime has yet to be identified, because, as the title of Frankel's article (1999) aptly puts it, "no single currency regime is right for all countries at all times". Rather, the "appropriate" regime for a given country depends on the characteristics of its economy and on the conditions prevailing in its domestic and external environment.

The exchange rate, in other words the price of the domestic currency in terms of a foreign currency, is a crucial economic variable all the more so for open economies, i.e. economies that trade with other countries and have significant international transactions. Exchange rate policy, i.e. the policy for managing the currency and influencing the level of its exchange rate, is an indispensable part of a country's macroeconomic policy toolbox and has a role to play both in maintaining macroeconomic stability in a country and in creating the necessary conditions for sustainable growth and economic prosperity.

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In Cyprus, exchange rate policy had been an important instrument of economic policy ever since the establishment of the Republic and contributed greatly to the macroeconomic stability and robust economic performance that Cyprus experienced in the first five decades of its independence. The stability of the Cyprus pound over time, along with the overall macroeconomic strategy, was one of the fundamentals which safeguarded the country's sound macroeconomic policies, and a factor that contributed to a stable economic environment and underpinned the growth path of the economy. On 1 January 2008, the euro replaced the Cyprus pound as the currency of the Republic of Cyprus. The entry of Cyprus into the euro area and the consequent transfer of control over its currency from the Central Bank of Cyprus (CBC) to the European Central Bank (ECB) was a milestone in its economic and political history. The changeover brought new opportunities but also new challenges for the Cyprus economy, increasing the need for an appropriate economic policy and requiring new approaches and strategies for effectively addressing these challenges in the context of EMU participation.

This chapter provides a brief review of alternative exchange rate regimes, their characteristics and the conditions that need to be met for each regime in order to be appropriate and effective. This is followed by an examination of the exchange rate regimes applied in Cyprus over time and a historical overview of the exchange rate policies pursued. The next section of the chapter focuses on the equilibrium exchange rate and how this was examined in the case of the Cyprus pound on the occasion of its replacement by the euro on 1 January 2008. The final section of the chapter discusses the challenges facing the Cyprus economy following its entry into the euro area and provides some concluding remarks.

3.2 Alternative exchange rate regimes

The exchange rate of a currency is its price in relation to other currencies. Thus, the exchange rate of the domestic currency directly affects the prices

not only of imported but also of exported goods and services and other international transactions, thereby influencing directly a number of domestic economic indicators. Such indicators include inflation, loans denominated in foreign currency, the competitiveness of domestically produced products and more generally, most of the indicators of the domestic economy. Managing and setting the exchange rate of the currency is the subject matter of the exchange rate policy of a country or a union of countries sharing a common currency. Given the rapid growth of cross-border trade and international transactions in the last few decades, the role of exchange rate policy has become increasingly important and relevant to the formulation of macroeconomic policy.

Before turning to an analysis of the various alternative exchange rate regimes, we should first discuss in brief the concept of the “proper” or “appropriate” exchange rate for a country, i.e. the equilibrium value of the domestic currency in terms of another currency, which is based on and in line with the economic fundamentals of the country. This concept is multidimensional and there are many methods to evaluate the equilibrium exchange rate, without any one of them being superior to the others. The literature offers several definitions, which should be considered in the light of the specific circumstances of each country and keeping in mind the possible pros and cons of each option. According to one widely used definition, the appropriate exchange rate is the rate that equates overall domestic and international price levels. By another definition, it is the exchange rate that will produce balance in the current account, i.e. between inflows and outflows of goods, services and income, in the medium term. For more details see, *inter alia*, Driver and Westaway (2005), Isard (2007), MacDonald (2000), Latter (1996).

The choice of an exchange rate regime for an economy, as already mentioned, would depend on the characteristics of that economy, such as reliance on external transactions, the flexibility of the labour market or of prices, etc.. These characteristics are important because they have a bearing on the economy’s ability to deal with external shocks effectively.

For each currency, there is a broad array of options to choose from, e.g. ranging from the free float and the target zone to the fixed exchange rate or currency board arrangements. In **Table 3.1** (p.87) certain alternative exchange rate regimes are outlined, while the paragraphs below focus on the two most common extreme regimes, i.e. the free float and the fixed exchange rate regime, as well as an intermediate type, that of the fixed rate with margins or target zone.

The free floating exchange rate regime is based on the principle of freedom in the operation of market forces, i.e. of demand and supply of foreign exchange. The monetary or any other authorities do not intervene in the foreign exchange market for the purpose of influencing demand or supply. In practice, such a regime is seldomly implemented in its strict form, as its smooth functioning presupposes perfect efficiency of markets which renders official interventions unnecessary, if not harmful. Such a regime involves the automatic adjustment of the exchange rate to market conditions, which entails fluctuations. Given that markets are not always driven by economic fundamentals alone but can also be affected, even temporarily, by other factors, such as rumours and the psychology of the masses, these fluctuations are not always desirable and have a negative impact on international trade and transactions, as their unpredictability increases foreign exchange risk. Despite these disadvantages, a free floating exchange rate regime allows a country, as explained below, to conduct an independent monetary policy. In other words, by contrast to what happens in a fixed exchange rate regime, the central bank can formulate a different monetary policy and set different interest rates from those of its trading partners.

In the fixed exchange rate regime, the rate is not allowed to float freely but is pegged to a foreign currency or a basket of foreign currencies^{1,2}.

1. The basket of foreign currencies could be a notional currency. For example, the European Currency Unit (ECU) was conceived on 13 March 1979 as an artificial basket of currencies to be used by the Member States of the European Community (EC) as their internal accounting unit. The ECU was predecessor to the single European currency (the euro), which was introduced on 1 January 1999.
2. Another basket of currencies is the Special Drawing Rights (SDR), consisting of the euro, the Japanese yen, the pound sterling and the US dollar. The US dollar-equivalent of the SDR is posted daily on the IMF's website and is calculated as the sum of specific amounts of the four basket currencies valued in US dollars, on the basis of exchange rates quoted at noon each day in the London market. The current weights, according to the IMF's website are: euro 0.872693, yen 0.00811301, pound sterling 1.01532, US dollar 0,633626.

TABLE 3.1 Alternative monetary policy regimes

Monetary policy regimes	Description / comments
Free float	The exchange rate is determined by the exchange rate market, without any intervention by the authorities. The ultimate form of this regime is very difficult to maintain for a long period of time, since markets are not always driven by economic fundamentals, but are also influenced by other factors, e.g. psychological, which intensify the exchange rate fluctuations and increase uncertainty.
Managed float	In general, this regime is a free float whereby the central bank intervenes in the foreign exchange market only to normalise any excessive short-term fluctuations. It is a regime which is encountered fairly frequently. The challenge in such a system is for the central bank to distinguish whether the fluctuations are short-term or are due to a change in the economy's fundamentals.
Crawling peg	The central bank intervenes in the market to achieve a controlled and gradual change in the fixed exchange rate. The interventions are usually very regular, if not continuous. The exchange rate, which is determined by market conditions, should be consistent with the rate targeted by the central bank. Usually, there is transparency in the formula used to determine the targeted rate.
Fixed with margin or target zone	Although a fixed (central) exchange rate is determined, variations are allowed within predetermined margins. One example of a fixed exchange rate regime with margin is the ERM II, in EU member states which have not yet joined the euro area. In this context, it is very likely to have intervention by the central bank in the foreign exchange market, in order to maintain the parity within a certain margin.
Fixed but adjustable	The exchange rate is usually fixed by the intervention of the central bank, but if its actual rate is not consistent with the economy's fundamentals, then it can be adjusted. This regime is prone to speculative attacks because of the liberalisation of capital movements internationally.
Fixed	Conversion rate at a given fixed price with foreign exchange intervention by the central bank for conservation of the parity. If the rate is not consistent with the economic fundamentals, the central bank cannot interfere indefinitely and may possibly need to change the parity. It is considered particularly prone to speculative attacks because of the liberalisation of capital movements internationally.
Fixed by Currency Board	The monetary base should be reflected by gold or foreign currency with a fixed rate. It is a very strict regime, requiring intervention by the central bank. Pressures in various sectors of the economy, e.g. the financial sector, may lead to similar pressures (political or economic) for a change in the rate or even the abandonment of the regime.
Unified currency	In an economic union, each country's currency is abolished and a new single common currency is adopted. An example is the EU's Economic and Monetary Union. The main advantage of the single market is the increased prospects for trade, while the main disadvantage is the asymmetric shocks in different economies participating in the system, especially if their structures differ.

Source: CBC.

The fixed exchange rate and the absence of fluctuations encourage trade and investment flows between the countries participating in the peg. At the same time, provided that the exchange rate is credible, this regime helps maintain low inflation, so long as the anchor-currency country also pursues a credible monetary policy and has low inflation. The vehicle

for achieving the fixed exchange rate is central bank interventions in the foreign exchange market, for the purpose of buying or selling foreign exchange depending on market needs. If, for example, foreign interest rates increase relative to domestic ones and there is an unwelcome tendency for capital outflows abroad (implying sales of the domestic currency and purchases of foreign currencies), the central bank will intervene, using its foreign reserves to meet demand for foreign currency and thereby ensuring that the exchange rate remains unchanged. Fixed exchange rate regimes imply that the country's monetary authorities cannot conduct an independent monetary policy as an instrument for supporting macroeconomic stability; any deviation of domestic interest rates from the ones of the anchor currency would lead to excessive capital movements that would neutralise the intended impact of monetary policy. Moreover, under a fixed exchange rate regime there is the risk that the central bank cannot respond to market conditions. In other words, a central bank may not be able to keep a fixed exchange rate when it is not in line with the fundamentals of the economy. In this case, the central bank will not be able to support the domestic currency forever at the cost of diminishing its foreign exchange reserves. This inability often leads to speculative attacks against the currency, when markets consider the chosen exchange rate as overvalued. If the attacks succeed, a devaluation of the currency, often accompanied by a broader crisis, will be inevitable.

In between the two types described above lies the regime in which the exchange rate is fixed with margins or a target zone, e.g. $\pm 15\%$ around the central (fixed) rate. This regime requires the exchange rate of the currency to remain within a specific, pre-determined band, allowing for some flexibility. It is a quite common regime, applied, among other cases, in the Exchange Rate Mechanism II (ERM II) of the European Union. In this regime the negative aspects of the two extreme exchange rate regimes described above are somewhat moderated.

TABLE 3.2 Use of exchange rate regimes internationally (September 2011)

Exchange rate regime	Number of countries which have adopted the particular exchange rate regime
	2011
Free float	66
Managed float	17
Crawling peg	15
Fixed with margin or target zone	1
Fixed but adjustable	23
Fixed by the central bank	43
Fixed by Currency Board	12
Other	13
Total	190

Source: IMF.

An analysis of the use of exchange rate arrangements internationally is provided by Habermeier et al. (2009). Based on recent available data from the International Monetary Fund (IMF), **Table 3.2** illustrates the incidence of the various exchange rate regimes³. The most common regimes worldwide fall under Free Float, Fixed by central bank and Fixed but adjustable followed by the Managed float and the Crawling peg. With the exception of ERM II in the EU, which is a unique case, the less popular exchange rate regime is the one which is fixed by a currency board.

Choosing the appropriate exchange rate regime in the light of external and domestic circumstances is of great importance and can determine the course of an economy. Ghosh et al. (2010) drawing on IMF data, find that the choice of the exchange rate arrangement is important for the path of inflation, growth, trade and the movement of capital, as well as for dealing with foreign exchange crises. Especially in developing and emerging economies, fixed exchange rate regimes are typically associated with low inflation rates, low exchange rate volatility in nominal and real terms, higher trade and stronger growth. However, the paper finds that such regimes can also bring significant challenges, relating to the inability to conduct an

3. Annual Report on Exchange Rate Arrangements and Exchange Rate Restrictions 2011.

independent macroeconomic policy and higher risk of a foreign exchange crisis breaking out.

3.3 A historical overview of the exchange rate regime in Cyprus

Exchange rate policy in Cyprus has been historically geared towards maintaining macroeconomic stability through a policy of fixed exchange rate within narrow margins, i.e. by pegging the Cyprus pound to an anchor currency or basket of currencies. For a small and open economy such as Cyprus, this was considered the most appropriate exchange rate policy framework and, as suggested by the country's overall economic performance, it was a successful choice. Using the exchange rate policy as an instrument for controlling inflation worked well not only in terms of keeping inflation at low levels but also in shaping a stable macroeconomic environment, both of which were conducive to economic growth.

During 1960-1972, the Cyprus pound was pegged to the pound sterling. After the collapse of the Bretton Woods system in 1972, the peg was terminated and the pound was pegged to the US dollar for a short period of time. It was subsequently pegged to an import-weighted basket of currencies, between 1973 and 1984, and to a trade-weighted basket of currencies, during 1984-1992.

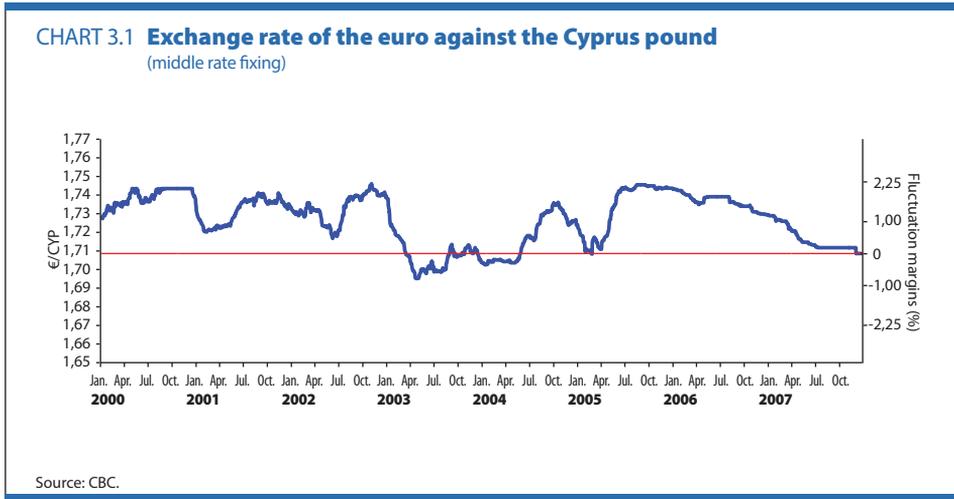
On 19 June 1992, the Cyprus pound was unilaterally pegged to the ECU⁴ at a central parity rate of 1 CYP = 1.7086 ECU and a $\pm 2.25\%$ fluctuation band. Even though the peg to the ECU did not fully reflect the geographical composition of Cyprus trade, the unilateral peg of the pound to the European notional currency was an important stepping stone towards reinforcing ties with European economies. Moreover, the peg of the Cyprus pound to the ECU contributed to the maintenance of macroeconomic stability in the country, thereby also supporting the economy's international competitiveness.

4. The ECU was a basket of currencies of the European Community Member States that was used as an internal accounting unit, prior to its replacement by the euro on 1 January 1999.

On 1 January 1999, after many years of a smooth peg with the ECU, the Cyprus pound was pegged to the euro at the same central parity rate of 1 CYP = 1.7086 euro and a fluctuation band of $\pm 2.25\%$. Against the background of capital account liberalisation and the associated larger scope for potentially destabilising speculative capital flows, the authorities introduced a wider fluctuation band of $\pm 15\%$, while at the same time retaining the narrower fluctuation band of $\pm 2.25\%$ as “indicative” or “soft” margins in order to anchor inflation expectations. The introduction of wider fluctuation margins ($\pm 15\%$) coincided with two major structural reforms in the Cyprus economy: first, the abolition of the statutory interest rate ceiling, which was immediately followed by a relaxation of restrictions on medium- and long-term foreign borrowing by residents; second, the introduction of a new procedure for determining the daily bilateral rates of the Cyprus pound vis-à-vis major international currencies: rather than being administratively set, the exchange rate of the Cyprus pound against the euro, the dollar and the pound sterling was determined through daily fixing sessions held at the CBC among commercial banks which were based on traders’ bid/ask quotations (**Chart 3.1**, p.92).

On 13 August 2001, the narrower band of $\pm 2.25\%$ was abolished and only the $\pm 15\%$ margins remained in place as, following the abolition of restrictions on medium and long-term borrowing by residents on 1 January 2001. Private individuals and firms increased their borrowing in foreign currency, mostly euro, taking advantage of the interest rate differential between euro-denominated and pound-denominated loans. This exerted an upward pressure on the exchange rate and also exposed these borrowers to increased exchange rate risk.

The decision to abolish the narrower fluctuation margins was taken concurrently with a decision to lower the policy interest rate by 50 basis points. This was deemed necessary due to the expected negative impact of the global economic recession of 2001 on the Cyprus economy. The interest rate cut also reduced the interest rate differential between euro-



denominated and pound-denominated loans, discouraging foreign currency borrowing by residents.

Interest rates were lowered further in September and November 2001 by 50 basis points on each occasion, as a consequence of the global economic slowdown following the 9/11 attacks, which had an adverse impact on the economic developments and outlook of Cyprus, mainly through its effects on tourism.

On 1 May 2004, Cyprus became a full member of the European Union (EU). Compliance with the *acquis communautaire*, which preceded its entry, entailed among other things the liberalisation of the capital account, which was accomplished gradually and smoothly, without causing tensions to the exchange rate of the Cyprus pound. The only exception was when, amid the highly charged environment around the time of the Annan Plan referendum of 24 April 2004, there were unfounded rumours of a possible devaluation of the Cyprus pound right after EU entry. In response, the CBC raised its interest rates by 100 b.p., and an announcement of its Governor sought to convey the appropriate message and dispel doubts about the chosen parity rate of the Cyprus pound vis-à-vis the euro. This response appeased the markets and caused rumours to subside. The

foreign exchange market returned to normal a few days after Cyprus' entry in the EU.

Interest rates remained stable for about ten months, in line with domestic and international developments. In the second half of 2004, the Cyprus economy showed signs of recovery, despite the rally of oil prices. In February 2005, the Monetary Policy Committee (MPC) decided to reduce interest rates by 25 b.p., also taking into account the further progress made with fiscal consolidation.

On 2 May 2005, the Cyprus pound joined ERM II at the pre-existing central parity of CYP 1 = €1.7086 or €1 = CYP 0.585274 and with the pre-existing fluctuation band of $\pm 15\%$. The participation of the Cyprus pound in ERM II confirmed its sustainability relative to economic fundamentals, and restored the conditions for further interest rate convergence. Thus, in two consecutive meetings of the MPC in May and June 2005, interest rates were reduced by 50 basis points each time.

On 1 January 2008, Cyprus successfully adopted the euro, following the ECOFIN decision of 10 July 2007. This in turn had followed the May 2007 Convergence Reports by the European Commission and the ECB in, confirming that Cyprus fulfilled the Maastricht Treaty criteria, one of which being the successful participation of the currency in ERM II without significant tensions. The irrevocable conversion rate of the Cyprus pound against the euro was locked at €1 = CYP 0.585274.

At this point, it should be recalled that historically Cyprus has never used devaluation of its currency as a lever for improving its economic fundamentals, mainly its current account balance (CAB). The exchange rate of the Cyprus pound vis-à-vis the euro evolved over time in line with its economic fundamentals, something corroborated by several studies as mentioned below. At the same time, it was acceptable that in the circumstances of a small and open economy such as that of Cyprus, broadly characterised by full employment conditions and wage

indexation, any short-term gains in competitiveness from a depreciation of the currency would be largely eroded by increases in labour costs and prices and, more generally, by inflationary trends⁵.

3.4 Fixing the irrevocable conversion rate of the Cyprus pound against the euro on 1 January 2008

Determining the irrevocable equilibrium exchange rate of the Cyprus pound vis-à-vis the euro was one of the most debated issues before the country's entry into the euro area. As discussed in more detail below, this process was based on multidimensional and in-depth studies, not only because the appropriate exchange rate is by nature difficult to identify, but also because of the longer-term consequences for a country from a misvalued irrevocable conversion rate.

Generally speaking, if a country adopts the euro at an undervalued conversion rate, this will bring about a temporary improvement of its international competitiveness, on account of relatively cheaper exports; at the same time however, its imports will become more expensive, generating inflationary pressures. This effect is particularly pronounced in the case of small and open economies with high import dependence especially for raw materials and intermediate goods, which makes domestic inflation more sensitive to any rise in import prices. Depending on the structure of the economy, e.g. a strong pass-through of import prices via the wage channel can pose challenges to competitiveness and/or macroeconomic stability in the medium term.

On the other hand, if a country adopts the euro at an overvalued parity, this will favour disinflation trends, which however will be accompanied by competitiveness problems, as domestic products will become more expensive. It is anyway doubtful whether disinflation would suffice to improve competitiveness, or it should be supplemented by drastic cuts in domestic wages to counterbalance the higher prices resulting from an

5. It should be reminded that the Marshall-Lerner condition states that a real devaluation of a currency will only lead to an improvement in the current account balance, if the sum of demand elasticities of imports and exports is greater than 1. Conversely, if the sum of demand elasticities is smaller than 1, then a devaluation would cause the current account balance to deteriorate. The price elasticities used in the estimation of the FEER model for Cyprus are shown in **Table 1** (p.104) of the Appendix.

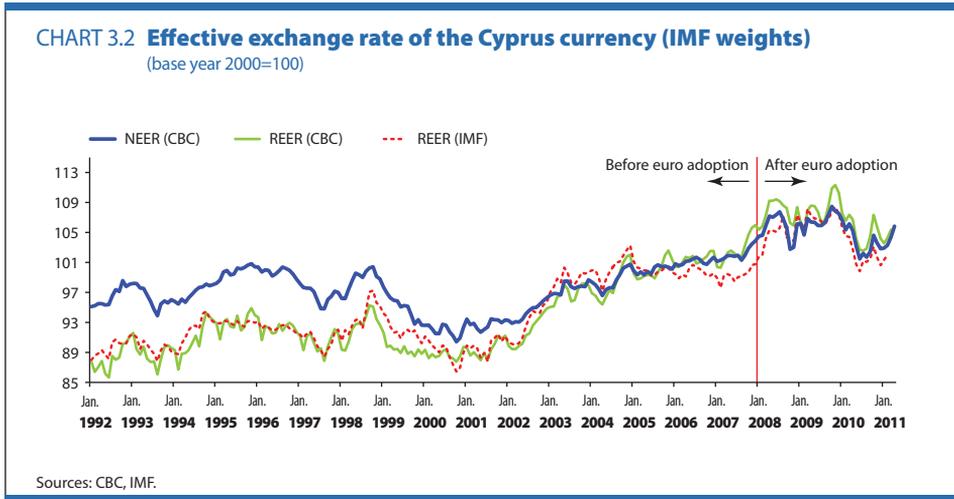
overvalued (expensive) domestic currency. A policy of wage cuts would however be difficult to accept or altogether unfeasible.

For all these reasons, quantitative and qualitative yardsticks have been developed, against which the appropriateness of the exchange rate is judged. Given the difficulty of the task, it is advisable to use multiple approaches and methods that help to look at the matter from different perspectives. Based on the available literature, we assessed the central equilibrium exchange rate of the Cyprus pound vis-à-vis the euro, examining its consistency with the economic fundamentals of the country in the run-up to euro area entry. The methods of assessment employed are outlined below.

3.4.1 The macroeconomic background

On the basis of the fundamentals of the Cyprus economy, the exchange rate of the Cyprus pound vis-à-vis the euro was considered as the appropriate irrevocable conversion rate to be locked before the adoption of the euro. As detailed below, the choice of this rate was supported by several studies of international organisations such as the IMF and the ECB. A host of macroeconomic indicators were examined and analysed. For example, the level of the current account deficit as well as its financing to a large extent by non-debt creating foreign direct investment (FDI) inflows, was a significant evidence that the central exchange rate of the Cyprus pound vis-à-vis the euro was at the appropriate level. Furthermore, the sustained high levels of foreign exchange reserves held by the central bank and the government's easy access to loan financing before the adoption of the euro both attested to confidence in the Cyprus economy, hence in its currency.

Apart from the above qualitative analysis, the assessment of the central equilibrium exchange rate relied also on an empirical analysis of a number of indicators and econometric models. One of the key measures in this respect was the effective exchange rate (EER). The EER is a useful tool for monitoring exchange rate variations, as it tracks



changes in the average value of the domestic currency vis-à-vis a group of other currencies, typically those of the country’s main trading partners. Also of importance is the selection of weights, which are based on total imports and exports of goods and services. The so-called third-country competition weights are commonly used, particularly in the construction of these indices. In the case of Cyprus, for example, even though there are no bilateral trade relations with Turkey, the double export weights for Cyprus include the Turkish lira, as Cyprus and Turkey compete in third markets, e.g. tourists from the UK market.

Chart 3.2 shows EER indices in real terms, deflated by the consumer price index (CPI). The best known real and nominal EER index is the one published by the IMF, which is CPI-deflated. The ECB compiles a similar index, but its weighting is based on a different method, detailed in Buldorini et al. (2002). The analysis of these indicators suggests that the nominal and real EER of the Cyprus pound was not subject to dramatic fluctuations. Since the 1990s the Cyprus pound had remained broadly stable, exhibiting some strengthening from 2001 onwards, following a weakening in 1999-2000. This pattern was broadly in line with changes in the value of the euro, the anchor currency of the Cyprus pound. Similarly, the marked appreciation of the index in the

early 2000s reflected the hike in inflation in Cyprus in 2002 and 2003 due to the harmonisation-induced increases in excise taxes during that period and the VAT increases from 10% to 13% in 2002 and from 13% to 15% in 2003. At the same time, it also represents a normal correction of the very low levels seen in 1999-2000 as a result of the significant weakening of the euro.

Real EER indices can be based on other deflators, such as unit labour cost (ULC). The ULC-deflated real EER index for Cyprus typically exhibited a steeper appreciation than its CPI-deflated counterpart, mainly because the former refers to unit labour cost in manufacturing, a sector in which Cyprus is not particularly competitive. Labour cost in tourism would be a more representative deflator, but it is not widely used in the construction of such indices, which impairs its relevance for international comparisons.

An overall assessment of the EER indices of the Cyprus pound suggests that, except for an appreciation between 2001-2006, which came after a significant depreciation in 1999-2000, the parity did not show strong fluctuations and was in line with economic fundamentals and historical averages.

3.4.2 Using econometric models for assessing the exchange rate

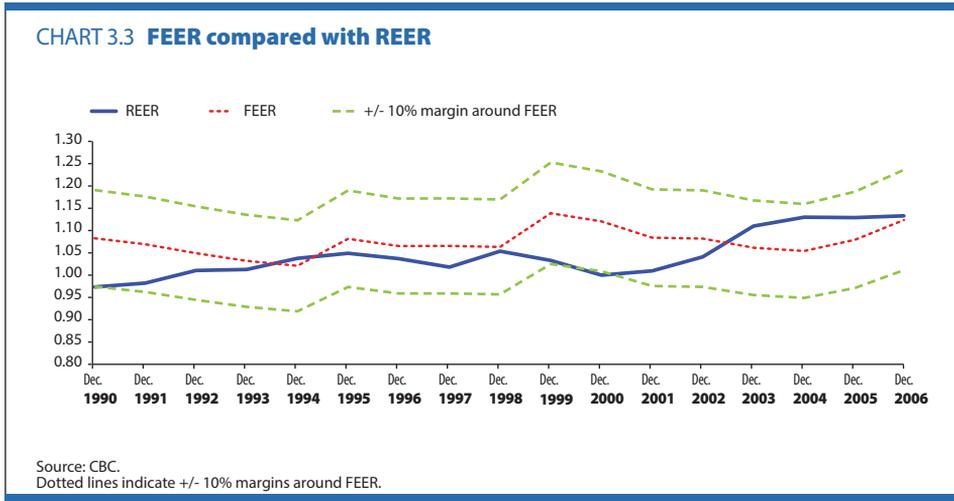
Apart from analyses based on macroeconomic indicators and qualitative data, there is a significant body of literature that uses econometric models to estimate the equilibrium exchange rate of a currency. Three concepts of exchange rate equilibrium are described, namely short-run, medium-run and long-run equilibrium (Driver and Westaway 2005). In order to assess the central exchange rate of the Cyprus pound, various models have been used, among which the medium-run models, such as the Fundamental Equilibrium Exchange Rate (FEER), are the most popular. A model of this type was estimated by the IMF (1998, 2000, 2002) and the CBC (Kyriacou and Papageorghiou, 2010) for the purpose

of determining the irrevocable conversion rate of the Cyprus pound vis-à-vis the euro.

The FEER model is a model that determines the equilibrium exchange rate in an economy that is characterised by internal and external balance. Internal balance is achieved when the economy operates at full capacity (full employment conditions) and demand is in line with the supply potential. External balance is achieved when the rest of the world is in internal balance. This definition of equilibrium does not necessarily imply that the current account of the domestic economy is balanced: it may run a deficit, as long as it is sustainable.

As already mentioned, the IMF assessed in 1998, 2000 and 2002 the central equilibrium exchange rate by estimating a FEER model and concluded that the exchange rate of the Cyprus pound was broadly in line with economic fundamentals, showing at times small fluctuations and remaining close to its central (equilibrium) rate. **Chart 3.3** (p.99) shows the central equilibrium exchange rate calculated by the FEER model, in comparison with the real EER. As can be seen in the chart, the divergence between the two indices has never exceeded the 10% margin. The model was estimated by the CBC in 2004, while an updated estimation in 2006 (Kyriacou and Papageorghiou, 2010) confirmed the IMF's results.

Besides the FEER model, which is a medium-run model, there are also short-run models, such as the Behavioural Equilibrium Exchange Rate (BEER), and long-run models, such as the Purchasing Power Parity (PPP). Models of these types were estimated for Cyprus and reached the same conclusion as the qualitative analysis of economic fundamentals, the EER indices and the FEER model. Pattichis et al. (2003) estimated a BEER model for the Cyprus pound. This is a purely statistical model which checks for cointegration between the real EER and a number of behavioural variables, including the terms of trade, the Balassa-Samuelson effect, net foreign assets, the price of oil and the real interest rate differential. The findings of the BEER-based analysis were corroborated by Kazandjian et al. (2006) as well as by a recent study by



Giannelis and Kouretas (2009), who use the synthetic Cyprus pound exchange rate vis-à-vis the euro during 1996-2007. The medium-run PPP model was estimated both by the CBC and by the ECB (Maeso-Fernandez et al., 2004); in both cases, the central equilibrium exchange rate is in line with economic fundamentals. Giannelis and Kouretas (2009) use bilateral exchange rates and the long-run monetary model for the determination of the exchange rate and confirm that the selected central exchange rate of the Cyprus pound against the euro is consistent with economic fundamentals.

To sum up, the central equilibrium exchange rate of the Cyprus pound has been assessed using three types of models, corresponding to three different time frameworks: short-run, medium-run and long-run. All models yield the same result, i.e. that the central exchange rate in question was in line with the fundamentals of the Cyprus economy before entry into the euro area.

3.5 Challenges implied by euro area participation

With the adoption of the euro on 1 January 2008, Cyprus became full member of the euro area, enjoying the long-term benefits of a single

currency that stem from an enlarged single market, the credibility of the ECB monetary policy, an environment of low inflation and interest rates, economic stability and reduced cost of foreign exchange conversions⁶. Of course, participation in the euro area implies that the country can no longer conduct a national monetary and exchange rate policy to address asymmetric country-specific shocks. In fact, the higher the asymmetry of the shocks to Cyprus relative to the rest of the euro area, the stronger the effect from the loss of the policy tool as a result of monetary union membership. Therefore, in the context of its euro area participation and in order to shield its economy, Cyprus should target maximum real convergence of its economy to the economies of other euro area member countries. An important tool available for this purpose is structural reforms aimed to increase flexibility in labour and goods markets. At the same time, it is necessary to make good use of the other macroeconomic tool that remains the responsibility of national authorities, i.e. fiscal policy. In general, prudent fiscal management and strong commitment to budgetary discipline are of the utmost importance.

Of course, the fiscal policies of individual euro area countries are subject to the broader EU governance framework, which includes the Stability and Growth Pact. The Pact provides a regulatory framework for the coordination of national fiscal policies in the European Union (EU). Its purpose is to ensure sound public finances, a necessary condition for the smooth functioning of the EU.

Another factor behind the need for fiscal discipline in Cyprus after its entry in the euro area is the demographic challenges, which although long-term are already visible and serious. The European Commission, the ECB and the IMF have repeatedly underlined the risk of further strains on the public finances of Cyprus in the future from the higher public expenditure implied by the country's adverse demographics. In particular, based on data currently available, ageing-related public costs are projected to show the highest growth relative to the other EU

6. Undeniably, the sovereign debt crisis in Europe in 2011 undermined economic stability and revealed weaknesses in the structure of the euro area that need to be addressed. However, especially in the case of Cyprus' small and open economy, it remains unclear if the country would have been able to do better during the international crisis as a non-participant in the euro area.

countries by 2050. According to the IMF (Hoffmaister et al., 2007), if no structural measures are taken, indirect taxes on consumption will have to increase by 10 percentage points to cover the higher expenditure of the Social Insurance Fund. This scenario is indicative of the severity and magnitude of the challenge.

The structural reforms that the economy needs to address in order to cope with future challenges within the euro area are not limited to fiscal discipline or the funding of the Social Insurance Fund, but expand to a number of other areas. Generally, in the context of monetary union participation, even greater emphasis must be placed on the competitiveness of the Cyprus economy, which calls for higher dynamism and flexibility in various sectors of the economy, including the public sector.

The challenge for the Cyprus economy is therefore to increase its productivity and competitiveness so that it can thrive within the single euro area market. It is often argued that wages must be linked to productivity. This would not necessarily imply low wage levels. If high productivity is achieved, wage growth can be similarly high, without affecting the competitiveness of domestic products. That is, wage growth will remain at sustainable levels, compatible with sustainable growth.

3.6 Concluding remarks

The transition from the Cyprus pound to the euro, although entailing the loss of the monetary and exchange rate tool, opened up new opportunities for the Cyprus economy and improved its prospects and those of its citizens. At the same time, it increased the challenges for the conduct of economic policy.

Unfortunately, post euro-adoption developments fell short of expectations. The ECOFIN decision of 10 July 2007 provided an impetus to the Cyprus economy, boosting consumer and investor confidence at home and abroad, leading to a surge in domestic demand mostly due to an overheated real estate sector. Against the backdrop of the inter-

national crisis, the growth performance of the Cyprus economy was reversed in 2009, entering negative territory for the first time since the Turkish invasion. In addition to the impact of the crisis on economic activity, Cyprus also experienced a significant deterioration of its public finances, as the crisis-related decline in government revenue was compounded by a surge in expenditure to higher levels than what the crisis would justify.

These developments underline the need for a radical change in the current economic environment, as the impact on the competitiveness of the economy will be significant (Kyriacou and Papageorghiou, 2010, and Flamini, 2010). In order to safeguard macroeconomic stability, all economic policies – particularly fiscal policy and structural reforms – need to be medium-term oriented and sustainable. This has become even more imperative since entry into the euro area.

Technical Appendix: Using the FEER model for estimating the equilibrium exchange rate of the Cyprus pound

The FEER model is an econometric tool commonly used for the assessment of the equilibrium exchange rate of a currency vis-à-vis other currencies. It was developed by IMF staff and has been applied to many countries, including Cyprus (IMF 1998, IMF 2000). The model attempts to estimate the current account excluding temporary deviations, the so-called “trend current account” (or underlying current account), which is compared with the sustainable current account (or equilibrium current account). Any divergence of the two indicates whether the current exchange rate is appropriate and consistent with economic fundamentals. The key question to be answered is essentially: what is the exchange rate at which the trend current account equals the sustainable current account? This of course implies that the Marshall-Lerner condition holds, i.e. that a weakening of the currency in real terms leads to an improvement in the current account balance. The FEER model was estimated for Cyprus by Kyriacou and Papageorghiou (2010) for the purpose of assessing the exchange rate of the currency prior to entry into the euro area.

The FEER model is based on the methodology developed by Wren-Lewis and Driver (1998), using a partial equilibrium approach. Initially we calculate the level of the current account net of temporary exchange rate effects, (or the trend current account as mentioned above); as a first step we use the following equations to calculate the volume of transactions:

$$CA = F(R, Y, Y^*) - IPD$$

where:

CA = current account balance

R = real exchange rate

Y = domestic income

Y' = foreign income

IPD = interest, profits and dividends

	Exports	Imports
Goods		
Price	0,90	1,40
Income	1,35	2,00
Services		
Price	0,50	1,40
Income	1,00	1,20

Source: CBC.

The flow equations for imports and exports are the following:

$$XG = a1 * R + a2 * S$$

$$XS = b1 * R + b2 * Y'$$

$$MG = c1 * R + c2 * Y$$

$$MS = d1 * R + d2 * Y'$$

where:

XG = exports of goods

XS = exports of services

MG = imports of goods

MS = imports of services

S = world trade volume

The elasticities (a, b, c, d) used are shown in **Table 1**.

The next step is the estimation of deflators. These are assumed to be a weighted function of commodity prices, domestic prices and world export prices. Commodities are divided into five categories: oil, food, beverages, agricultural non-food and metals and minerals. For trade in services, export prices were proxied by domestic consumer prices (CPI) and import prices were proxied by OECD consumer prices expressed in domestic currency (Wren-Lewis and Driver, 1998).

Exports

Goods

$$PXGA = (PCOMX * r)^{B1} * PXG^{1-B1}$$

$$PXG = (WPXG * r)^{B2} * PD^{1-B2}$$

$$PCOMX = WPO^{b1} * WPFDD^{b2} * WPBEV^{b3} * WPANF^{b4} * WPMM^{b5}$$

Services

$$PXS = PC$$

Imports

Goods

$$PMGA = (PCOMM * r)^{A1} * PMG^{1-A1}$$

$$PMG = (WPXG * r)^A * PD^{1-A2}$$

$$PCOMM = WPO^{a1} * WPFDD^{a2} * WPBEV^{a3} * WPANF^{a4} * WPMM^{a5}$$

Services

$$PMS = PCW * r$$

PXGA = total prices of exported goods

PCOMX = prices of exported commodity goods

r = exchange rate in nominal terms/nominal exchange rate

PXG = prices of exported industrial goods

WPO = world oil prices

WPFDD = world food prices

WPBEV = world beverages prices

WPANF = world agricultural non-food prices

WPMM = world metal and mineral prices

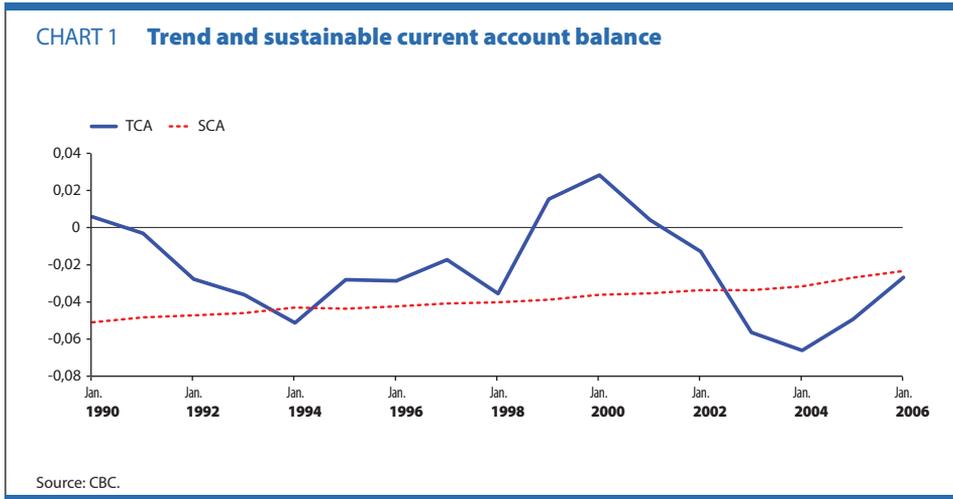
PXS = prices of exported services

PC = consumer price index

PMGA = total prices of imported products

PCOMM = prices of imported commodity goods

PMG = prices of imported industrial goods



WPXG = world prices of exported industrial goods

PD = producer price index

PMS = prices of imported services

PCW = consumer price index (OECD)

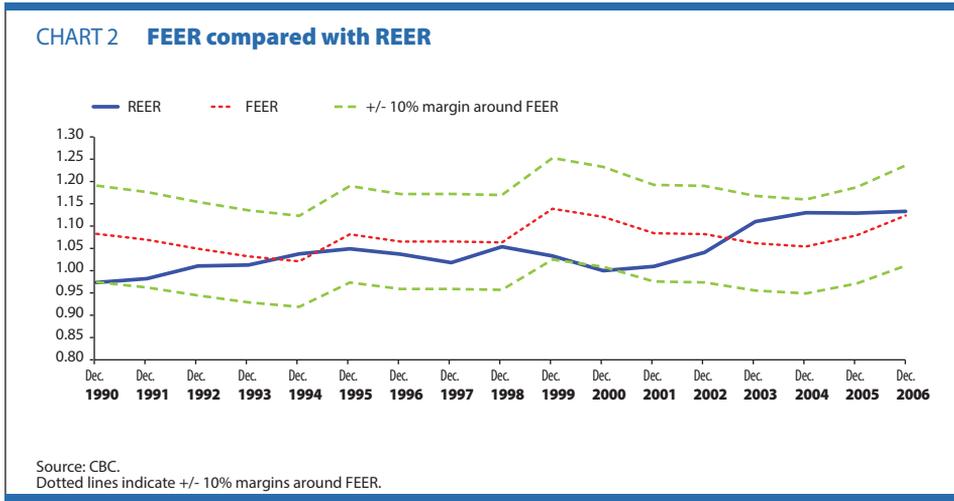
A1 and B1 = share of goods in total imports and exports, respectively

A2 and B2 = the elasticity of industrial imports and exports, respectively, to international prices.

In order to complete the calculation of the trend current account, we need to estimate IPD (interest, profits and dividends). The literature suggests several behavioural models for estimating the IPD, but in our case it was considered appropriate to approach it as a constant and a time trend, which better reflects the circumstances that are specific to Cyprus.

$$NTRAN = n_0 e^{n1T}$$

The sustainable current account was derived by using fundamentals such as the dependency ratio, GDP per capita and the cyclically adjusted budget balance for the major trading partners of Cyprus, namely Belgium, Cyprus, Egypt, France, Germany, Greece, Italy, Malta, Morocco, Portugal, Spain, Tunisia, Turkey and the UK. In the selection of countries account is also



taken of competitors that export similar products and services, as well as of neighbouring countries such as euro area members with which Cyprus shares common characteristics; the fundamentals of neighbouring countries enable us to extract useful information on the fundamentals of Cyprus.

Once we had estimated the trend current account and the sustainable current account, we compared them in order to estimate the “fundamental equilibrium exchange rate” (FEER), i.e. the exchange rate that is needed to restore equilibrium, (**Chart 1**, p.106). If their difference exceeds $\pm 10\%$, an adjustment of the exchange rate should be considered, but not necessarily warranted. In fact, since the FEER model is an effective exchange rate, it is not clear which economy is in disequilibrium: this could well be the domestic economy and/or any country in the group of trading partners used to derive the REER. Therefore, if the FEER model suggests that the exchange rate is not in line with economic fundamentals, this does not necessarily mean that measures have to be taken. Moreover, there is the risk that a structural break or a regime change is in progress at the time of FEER estimation, which would justify the disequilibrium.

In the case of the Cyprus pound, the FEER model presented in **Chart 2** suggests that the central exchange rate applied until that

moment is consistent with economic fundamentals and is thus considered to be the central equilibrium exchange rate. Specifically, as shown in the chart, the divergence between two indices never exceeded the range of $\pm 10\%$.

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CHAPTER 4 ABBREVIATIONS

- BEPGs: Broad Economic Policy Guidelines
CBC: Central Bank of Cyprus
EBA: European Banking Authority
EC: European Community
ECB: European Central Bank
ECSC: European Coal and Steel Community
ECU: European Currency Unit
EDC: European Defence Community
EEC: European Economic Community
EFSF: European Financial Stability Facility
EFSM: European Financial Stabilisation Mechanism
EIOPA: European Insurance and Occupational Pensions Authority
EMI: European Monetary Institute
EMS: European Monetary System
EMU: Economic and Monetary Union
ERM II: Exchange Rate Mechanism II
ESAs: European Supervisory Authorities
ESCB: European System of Central Banks
ESM: European Stability Mechanism
ESMA: European Securities and Markets Authority
ESRB: European Systemic Risk Board
EU: European Union
EURATOM: European Atomic Energy Community
IMF: International Monetary Fund
NCBs: National Central Banks
OCA: Optimum Currency Areas
SEA: Single European Act
SGP: Stability and Growth Pact

4. Economic and monetary policy in the EMU

Michalis Ghalanos, Petros Michaelides*

4.1 Introduction

The establishment of the Economic and Monetary Union (EMU) in the European Union (EU) represents the culmination of a highly ambitious endeavour in the context of European integration: the creation of a single currency for a group of EU Member States which, however, maintain their autonomy in several key policy areas, such as fiscal policy and macroeconomic and structural policies.

The need for a single currency became increasingly pressing in the course of European integration, as the benefits of the single market could not be fully reaped without a monetary union among EU Member States. These benefits included the elimination of exchange rate fluctuations and competitive devaluations, the fostering of price transparency, lower transaction costs, as well as financial integration. In addition, the single currency would be a symbol of the common identity of European citizens and of the unification of European nations. Thus it was decided to establish an independent supranational organisation, the European Central Bank (ECB), which would be responsible for the design and conduct of the single monetary policy in the EU Member States that would adopt the euro as their common currency. With a view to assessing the preparedness of EU

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Member States to adopt the euro, convergence criteria were introduced, which EU Member States are required to fulfill in order to join the EMU. Achieving and maintaining macroeconomic convergence prior to adopting the single currency and, thus, the preparedness to hand over the conduct of independent monetary policy is of paramount importance for the smooth functioning of the EMU.

In contrast to monetary policy, fiscal policies as well as macroeconomic and structural policies have remained the responsibility of EU Member States, with the rationale that this would enable them to best respond to country-specific circumstances. The EU Treaties lay down the framework for the conduct of economic policies in the EU, which broadly consists of the EU fiscal framework and the coordination of economic policies of Member States through multilateral surveillance, peer pressure and mutual support. Within a monetary union these policies and, primarily, fiscal policy are the key policy instruments available to national authorities, to be used in accordance with the aforementioned framework. Thus, apart from a sufficient degree of real and nominal convergence, the smooth functioning of a monetary union requires fiscal discipline and coordination of economic policies in general.

A brief review of the performance of the EMU demonstrates that, in contrast with the single monetary policy, which has been successful in maintaining price stability in the medium term, the weaknesses of the economic policy framework became obvious in the very first years of the functioning of the monetary union. The worst, since the 1930s, global economic and financial crisis exposed these weaknesses and posed significant risks to financial stability in the euro area as a whole and the sustainability of the EMU.

The EU's response to the crisis included, in addition to ad-hoc measures, changes to the economic governance framework of the EMU. These changes, several of which were introduced only recently and have not been implemented yet, aim to enhance fiscal discipline, expand the scope of economic surveillance by introducing a framework for the monitoring of macroeconomic imbalances and competitiveness developments, ensure

closer and wider coordination of economic policies, establish a robust framework for crisis management, as well as strengthen institutions at both the EU and the national level.

This chapter sets out the institutional framework for the conduct of economic and monetary policy in the EMU in the light of recent changes in economic governance. **Section 4.2** (p.113) provides a brief overview of the events leading to the monetary union of Europe. **Section 4.3** (p.122) outlines the convergence criteria, which are prerequisites for adopting the euro and joining the EMU, and discusses the strategic decisions that EU Member States are expected to make so as to meet the convergence criteria and adopt the single currency. **Section 4.4** (p.130) describes the key aspects of Cyprus's preparations for the euro. **Section 4.5** (p.132) discusses the monetary policy of the EMU, focusing on the theoretical and empirical underpinnings of the ECB's monetary policy strategy, geared towards the primary objective of maintaining price stability in the euro area. Lastly, **Section 4.6** (p.137) maps out the conduct of economic policy in the EMU in the light of the recent reform of the EU's economic governance.

4.2 Historical overview of the Economic and Monetary Union (EMU)

The European integration process started in the aftermath of World War II, with the aim to promote unity and cohesion among the recently battling countries and avert future conflicts. The need to design and implement common policies that would bring European nations together with a vision for peace and prosperity had become clear to European leaders, who had themselves survived the horror of two world wars. At the time, it was widely understood that the creation of common, supranational institutional organisations would act as a catalyst towards a robust and viable integration of Europe. The first concrete step in this direction was the establishment of the European Coal and Steel Community (ECSC) in July 1952 by a group of six countries¹, which created a common market for

1. Belgium, France, (West) Germany, Italy, Luxembourg and the Netherlands. Also known as "the Six", this group of nations has been the driving force behind European integration ever since (Baldwin and Wyplosz, 2004).

the main raw materials that had been used to produce weapon systems during the wars. The financial management of these materials was transferred from the national to the supranational level, thus contributing to reducing the possibility of a future armed conflict. At the same time, efforts were being made towards promoting the political integration of Europe, which however turned out to be premature as the ratification of the Treaty establishing the European Defence Community (EDC) was rejected by the French National Assembly in August 1954. Nevertheless, work towards European integration did not stall but continued with a distinct focus on economic aspects, in the hope that, apart from the theoretically expected positive effects on economic prosperity, the establishment of common economic interests would also help mitigate the possibility of a war conflict emerging. These initiatives were characterised by adamant political will and determination, and only a year later, in June 1955, the Messina Conference marked the beginning of negotiations that led to the signing, in March 1957, of the Treaty of Rome by the same group of these six countries, thus enacting the European Economic Community (EEC) in January 1958². The Treaty essentially established a customs union and laid the foundations for a common market based on the four freedoms of movement for goods, services, people and capital among Member States³ (**Box 4.1**, p.115).

In drafting the Treaty, the “founding fathers” of Europe were well aware of the fact that a sound monetary system is a sine qua non condition for the smooth functioning of the common market. Back then, the international monetary order was based on the post-war monetary system of Bretton Woods, the stability of which (at the time) acted as a disincentive towards advancing monetary integration⁴. This system was based on the convertibility of the US dollar to gold at a fixed parity and fixed but

2. Also signed was the treaty for the establishment of the European Atomic Energy Community (Euratom). Together with the ECSC and the EEC, their institutions were merged in July 1967 under the common name of European Communities, or simply, the European Community (EC).
3. The establishment of institutions with a view to propagating common economic interests was avidly considered as the key driver behind European integration. In the context of the process towards integration, Tommaso Padoa-Schioppa (1999) postulates in a lecture that “It was the idea of “sweet commerce”, to use the words of Montesquieu, which was to re-unite people after religious wars via the prosaic and concrete channel of human interest, as distinct from human passions. It is, in a similar vein, the idea of a single economy that was followed to re-unite the European people into a Community”.
4. This particularly refers to abandoning the quest for an economic and monetary union among the EEC Member States– as exemplified in the European Commission’s proposals in October 1962 (the Marjolin Memorandum)– since such endeavours were considered to be unnecessary in light of the smooth operation of the existing global monetary system.

Box 4.1 **What is economic and monetary union?**¹

Economic and monetary union is part of the process of economic integration. Independent states can integrate their economies to varying degrees in order to achieve the benefits of size, such as greater internal efficiency and more robustness to external events. The degrees of economic integration can be divided into six steps:

1. A preferential trading area (with reduced customs tariffs between certain countries).
2. A free trade area (with no internal tariffs on some or all goods between the participating countries).
3. A customs union (with the same external customs tariffs for third countries and a common trade policy).
4. A common market (with common product regulations and free movement of goods, capital, labour and services).
5. Economic and monetary union (a single market with a single currency and monetary policy).
6. Complete economic integration (all the above plus harmonised fiscal and other economic policies).

1. See European Commission (2007).

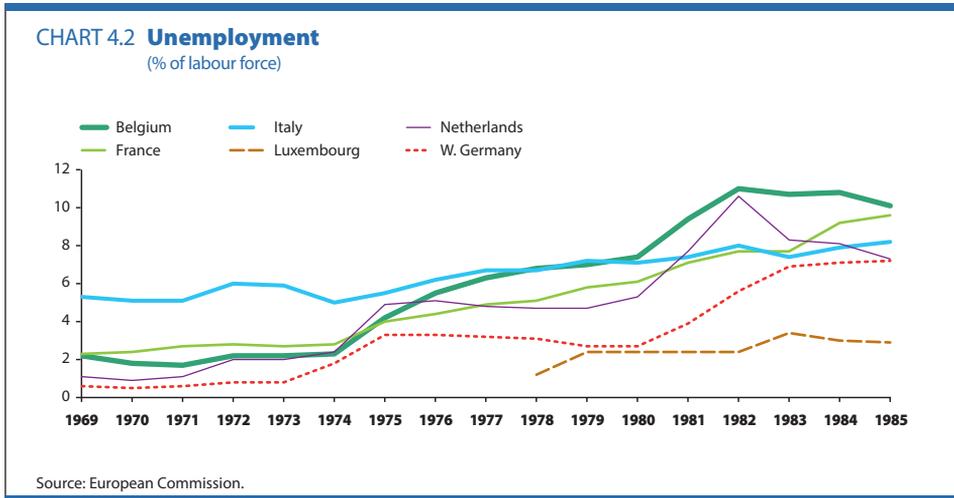
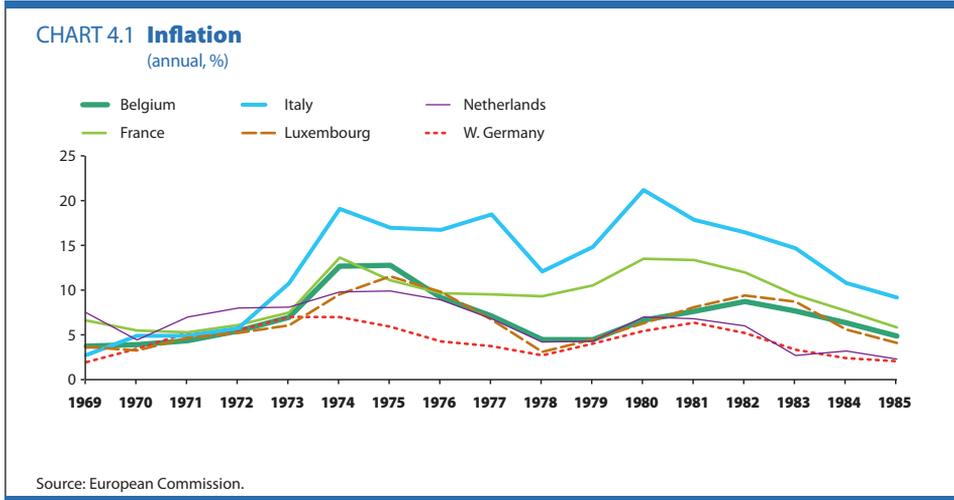
adjustable exchange rates of the US dollar vis-à-vis the currencies of all other participating countries, including those of all EEC Member States.

However, during the 1950s, a global macroeconomic imbalance was being nourished as a consequence of recurring and rising deficits on the US balance of payments. Although this contributed to a continuous flow of liquidity into the under reconstruction global economy and, thereby, supported global economic stability, the excessively high and prolonged deficits of the US could have nevertheless jeopardised the smooth functioning of the Bretton

Woods system and, by extension, global economic stability. The so-called Triffin dilemma (Triffin, 1960) was presumably a key factor that, in conjunction with the US monetary policy decision of printing money to finance the Vietnam War in the late 1960s to early 1970s, led to the eventual demise of this monetary system. Specifically, the above-mentioned US monetary policy set Hume's mechanism into motion (Hume, 1752)⁵, with the resulting surge in inflation and in the external deficit undermining the credibility of the US dollar as reserve currency in global markets. Concerns were in particular pertaining to the falling value of the dollar and the ability of the US to finance its enormous external deficit with its existing gold reserves so as to support the convertibility of their currency and, hence, the viability of the Bretton Woods system. Concurrently, inflation in the US spilled over to the global economy via the fixed exchange rate regime, thereby fuelling further market and political pressures. Collectively, these factors impeded the sustainability of the Bretton Woods system, leading to its collapse in February 1973.

Securing exchange rate stability continued to be a major task for Europe, especially as price and cost divergences across Member States spurred the adoption of protectionist measures, such as competitive devaluations, which could have obstructed the functioning of the customs union and the process towards a common market. These adverse conditions were particularly exacerbated in the 1970s when persistently high inflation and unemployment (**Charts 4.1** and **4.2**, p.117), largely associated with the oil price shocks of 1973-74 and 1979-80, encouraged countries to increasingly pursue national economic policies –including monetary policy– in order to address those mounting challenges at home. These practices posed significant problems to attempts for fixing exchange rates since, in accordance to Padoa-Schioppa's "inconsistent quartet" concept (1982), an economic environment characterised by free trade and an increasing degree of capital mobility, as envisaged in the Treaty of Rome, is not compatible with a fixed exchange rate regime if sovereign monetary policy is to be pursued.

5. See Friedman (2008) for the "quantity theory of money".



It is therefore not surprising why, in this “eurosclerotic”⁶ environment of adverse conjunctural developments, efforts to promote monetary integration failed to bear fruit. This was in particular the case with the Barre Plan, submitted by the European Commission to the Council of Ministers in February 1969, which called for closer economic and monetary coordination and integration in the light of the then incipient market disturbances

6. A term coined by The Economist in the context of the 25th anniversary of the Community, featuring on the front cover of its 20 March 1982 issue the tombstone of the EC with the epitaph “capax imperii, nisi imperasset” (It seemed capable of power until it tried to wield it) (Tsoukalis, 1998, p. 69).

stemming from the gradual dismantling of the Bretton Woods system. On the basis of these proposals, a high-level group of experts chaired by Pierre Werner, Prime Minister of Luxembourg at the time, presented the Werner Report in October 1970, which specified a three-stage process to achieve economic and monetary union by 1980. The Report was endorsed, in principle, by the EC Member States in March 1971 and envisaged, in the first stage, a progressive narrowing of exchange rate fluctuation bands. However, the continued volatility in the Bretton Woods system and the ensuing tensions pushing to its collapse were exerting upward pressure on the exchange rate of the German mark, thereby jeopardising European monetary stability. In response, the EC Member States modified the existing exchange rate arrangement in March 1972 by means of setting exchange rate fluctuation bands against each other EC Member State currency and allowing for slightly more flexibility vis-à-vis the US dollar. Known as the “Snake in the Tunnel”, this system was implemented for less than two years among the original composition of Member States, as the above-mentioned dire economic conditions and insufficient coordination among national economic policies led to its abandonment.

Despite the setbacks, the European endeavors to build an economic and monetary union were only postponed rather than discontinued, powerfully motivated by the desire to alleviate economic discrepancies and prevailing volatility in exchange rate fluctuations among EC Member States. Ultimately, restoring and maintaining an environment of economic stability would be conducive to trade, investment, employment and growth, thereby bolstering further integration. The establishment of the European Monetary System (EMS) in March 1979 marked an important step towards revitalising this process. This system was essentially a transformation of the “Snake” which aimed to maintain fixed but adjustable exchange rates against a newly introduced currency, the European Currency Unit (ECU), that was calculated as the weighted average of the

national currencies participating in the EMS. In contrast with its predecessor, the EMS was successful in containing exchange rate volatility⁷, brought about by enhanced coordination in implementing sound economic and monetary policies and by the ensuing convergence of inflation rates to lower levels. The path to European monetary integration was further smoothed with the adoption of the Single European Act (SEA) in July 1987, which contained the explicit objective of creating a Single Market by the end of 1992. The achievement of that objective opened the road to the removal of all remaining barriers to the aforementioned four freedoms of the single market, as initially laid down in the Treaty of Rome⁸.

Almost a year later, in June 1988, the European Council launched the Committee for the Study of Economic and Monetary Union, chaired by the then President of the Commission Jacques Delors, with the mandate to define the process towards economic and monetary union. Using the provisions of the SEA as a starting point, the Committee submitted the Delors Report to the European Council in April 1989, putting forward three discrete but evolutionary steps for the establishment of the EMU. The process started in July 1990, with Stage One focusing on completing the internal market and eliminating all obstacles to financial integration. Additional objectives pertained to reducing existing disparities through fiscal adjustment programmes in Member States facing fiscal problems, adopting more effective structural and regional policies, and enhancing cooperation and coordination in the conduct of monetary policy by Member States.

On the road to creating the EMU, while it was feasible to complete Stage One within the existing framework of the Treaty of Rome, the completion of subsequent stages required a revision of the Treaty to provide the legal foundation for the proposed institutional arrangements of a single central

7. According to Tim Bollerslev (1990), within the framework of a multivariate GARCH model with constant conditional correlation (CCC) restrictions, the degree of conditional correlation among weekly nominal exchange rates of major European currencies against the US dollar was significantly higher during the operation of the EMS compared with the respective preceding period.

8. Although the official deadline to complete the Single Market was the end of 1992, there still remains ground to be covered to attain this objective; for instance, the completion of the single market for financial services is still pending.

bank and of a single currency. To this end, the Treaty of Rome was amended by the Treaty on European Union –commonly known as the Maastricht Treaty– which was signed by the EC Member States in the town of Maastricht, Netherlands, in February 1992 and entered into force in November 1993. Among other things, the Maastricht Treaty introduced the macroeconomic convergence criteria that EC Member States are required to fulfill before they can join the EMU. Accomplishment of sustainable macroeconomic convergence prior to adopting the single currency and, thereby, waiving monetary as well as, to a significant extent, fiscal policy sovereignty, is considered of the utmost importance for the smooth functioning of the EMU⁹.

Pursuing economic convergence among Member States had also been one of the main objectives of Stage Two, which began in January 1994 with the establishment of the European Monetary Institute (EMI). The mandate of the EMI was to promote closer cooperation and monetary policy coordination among central banks, prepare the establishment of the European System of Central Banks (ESCB) and plan the transition to the single currency. In addition, in June 1997, the European Council adopted the Stability and Growth Pact (SGP), which aimed to ensure budgetary discipline in the EMU.

In June 1998, the ECB was established, signaling the conclusion of the tasks and responsibilities of the EMI, as provided for in the Treaty on European Union (**Box 4.2**, p.121).

In December 1995, the European Council reached an agreement on the name of the single currency in the EMU to be the “euro”. The introduction of the single currency, entailing the irrevocable fixing of the exchange rates of participating Member States’ currencies¹⁰, marked the beginning of Stage Three in January 1999. The ECB and the ESCB took over the responsibility for conducting the independent monetary policy, while the commitment of Member States to abide by the SGP provisions in the exercise of their fiscal policies became effective. Stage Three will be

9. The Maastricht convergence criteria are discussed in detail in the next section.

10. Austria, Belgium, France, Germany, Ireland, Spain, Italy, Luxembourg, Netherlands, Portugal and Finland were the initial participants. Greece joined in January 2001, a year before euro banknotes and coins were put into circulation.

Box 4.2 The structure of the European System of Central Banks and the Eurosystem¹

The **European System of Central Banks (ESCB)** was established in accordance with the Maastricht Treaty and the Statute of the European System of Central Banks and of the European Central Bank. It comprises the European Central Bank (ECB) and the national central banks (NCBs) of all EU Member States.

The **Eurosystem** comprises the ECB and the NCBs of the EU Member States which have adopted the euro (currently 17).

The **ECB** was established in June 1998 in Frankfurt am Main, taking over from its predecessor, the European Monetary Institute (EMI). It is a supra-national institution with its own legal personality.

The ECB's decision-making bodies are the Governing Council, the Executive Board and the General Council. The ECB's decisions on monetary policy and other Eurosystem-related tasks are taken by the **Governing Council**, which comprises the six members of the Executive Board and the governors of the NCBs of the EU Member States which have adopted the euro. The **Executive Board**, which comprises the President and the Vice-President of the ECB and four other members appointed from among persons of recognised standing and professional experience in monetary and banking matters by common accord by the Heads of State or Government of the countries that have adopted the euro, implements monetary policy decisions and manages the day-to-day business of the ECB. The third decision-making body of the ECB, the **General Council**, comprises the President and the Vice-President of the ECB and the governors of the NCBs of all EU Member States. It has taken over from the EMI those tasks which the ECB has to perform in Stage Three of the EMU as long as some EU Member States have not adopted the euro.

1. See European Central Bank (2011).

completed once all EU Member States –with the exception of Denmark and the United Kingdom that have been granted an EMU opt-out clause– adopt the single currency.

4.3 The convergence criteria and the path to the Exchange Rate Mechanism II (ERM II) and the adoption of the euro

During Stage Two (1994-1998), the EU Member States made considerable progress in achieving economic convergence. In May 1998, on the basis of the Convergence Reports prepared by the European Commission and the EMI in March 1998, the EU Council decided that 11 EU Member States would adopt the euro on 1 January 1999¹¹. With the adoption of the euro by Estonia on 1 January 2011, the euro area currently consists of 17 EU Member States. The UK and Denmark are the only EU Member States with an exemption status. They can join the euro area when they decide to, subject to their compliance with the convergence criteria. The remaining eight EU Member States, as well as future EU entrants, are “Member States with a derogation”¹² and, under Article 119 of the Treaty on the Functioning of the European Union, are expected to adopt the single currency.

The progress made by the Member States with a derogation is evaluated in terms of compliance with certain prerequisites (“criteria”) for the adoption of the euro. Those criteria, also known as the Maastricht criteria, are defined in Article 140 of the Treaty on the Functioning of the European Union and are elaborated further in a Protocol annexed to the Treaties¹³. They relate to the achievement by EU Member States with a derogation of a high degree of sustainable convergence (economic convergence) and the compatibility of national legislation (legal convergence) with Articles 130 and 131 of the

11. Greece was not satisfying the convergence criteria, while Denmark and the United Kingdom exercised their right (see Protocols No. 15 and 16 in the Treaty on the Functioning of the European Union) to opt-out from Stage Three of EMU. Sweden had not participated in the Exchange Rate Mechanism II and thus did not fulfill the exchange rate stability criterion, as is still the case today (see also footnote 10, p.120).

12. According to Article 139(1) of the Treaty on the Functioning of the European Union, “Member States with a derogation” are Member States in respect of which the Council has not decided that they fulfill the necessary conditions for the adoption of the euro.

13. The Treaty on European Union and the Treaty on the Functioning of the European Union.

Treaty on the Functioning of the European Union and the Statute of the ESCB and of the ECB.

The achievement of economic convergence is assessed on the basis of the following four criteria:

1. Price stability: the average inflation rate of a Member State over a period of one year before the examination (on the basis of the harmonised index of consumer prices) must not exceed by more than 1,5 percentage points that of the three best performing EU Member States in terms of price stability.
2. Government budgetary position:
 - (a) Government deficit. The government deficit must not be “excessive”, i.e. it must not exceed the reference value of 3% of gross domestic product (GDP).
 - (b) Government debt. The government debt must not exceed 60% of GDP (unless the ratio is sufficiently diminishing and approaching the reference value at a satisfactory pace).
3. Participation in the Exchange Rate Mechanism of the EMS: The criterion requires the observance of the normal fluctuation margins provided for by the Exchange Rate Mechanism for at least two years, without severe tensions and without a devaluation against the euro. In other words, the national currency must have completed two successful years of participation in the ERM II (**Box 4.3**, p.125).
4. Convergence of interest rates: The average long-term interest rate (i.e. the ten-year government bond yield) in the past 12 months must not exceed by more than 2 percentage points that of the three best-performing Member States in terms of price stability.

In addition to these nominal convergence criteria, other factors of relevance for the achievement of real convergence are also taken into account with the aim of assessing the degree of sustainable convergence, such as the integration of markets, the situation and development of the current account balance, and developments in unit labour costs and other price indices. Moreover, economic developments are reviewed from a

backward looking perspective, covering in principle the past ten years, in order to establish that any progress achieved is not accidental or attributable to exogenous factors but is the result of genuine structural adjustments. In the same vein, a forward-looking perspective is also adopted, focusing on the economic outlook and economic policy challenges facing each country.

Turning to legal convergence, Member States are obliged to adapt their legislation in order to remove any incompatibilities with the Treaty on the Functioning of the European Union and the Statute of the ESCB and of the ECB, in particular with respect to any provisions that violate the independence of the national central bank or its role as an integral part of the ESCB.

According to Article 140 of the Treaty on the Functioning of the European Union, at least every two years, or at the request of a Member State with a derogation, the Commission and the ECB shall report to the Council on the progress made by the Member States with a derogation in fulfilling their obligations towards adopting the single European currency. After consulting the European Parliament, the Council of the EU (meeting in the composition of Ministers of Finance, i.e. the ECOFIN), taking into consideration the convergence reports prepared by the European Commission and the ECB, shall decide whether Member States with a derogation fulfill the convergence criteria and may therefore adopt the euro as their national currency.

The economic rationale behind the convergence criteria relates to the functioning of any monetary union. In a monetary union, the single currency rules out by definition the design and implementation of independent monetary and exchange rate policy at the national level. A single monetary policy is conducted taking into consideration economic and monetary developments in the union as a whole. This set-up necessitates the achievement of a high degree of economic convergence among members: there should be no systematic divergences of inflation between the members of the monetary union, as this would imply changes in real exchange rates, i.e. competitiveness, and different real interest rates in individual countries.

Box 4.3 The Exchange Rate Mechanism II (ERM II)¹

The Exchange Rate Mechanism II (ERM II) was introduced at the start of Stage Three of the EMU, on 1 January 1999. On the one hand it acts as an arrangement for managing exchange rates between the currencies of Member States participating in the mechanism and the euro and on the other it forms part of the convergence criteria for joining the euro. According to the relevant Resolution of the European Council, the ERM II was introduced with the aim to promote the smooth functioning of the single market through exchange rate stability, the prerequisite for which is the convergence of economic fundamentals. During Stage Three all Member States must pursue sound fiscal and structural policies, as well as disciplined monetary policies directed towards price stability. Moreover, each Member State is required to treat its exchange rate policy as a matter of common interest.

The main features of the ERM II are the multilaterally agreed central rate against the euro and a standard fluctuation band of $\pm 15\%$, the conduct of automatic and unlimited intervention of the ECB or the NCBs at the margin, and the availability of very short-term financing between the ECB and the NCBs. As foreseen in the Resolution of the European Council on the ERM II, narrower fluctuation bands around the central rate can be set at the request of the Member State concerned. In this respect, the policy position of the Governing Council of the ECB on the ERM II stresses that such an arrangement will be assessed on a case-by-case basis, taking into account that the standard band is appropriate for Member States that are engaging in a convergence process.

The policy position of the Governing Council of the ECB on the

1. See European Central Bank (2004a); European Central Bank (2003a); and European Council (1997).

ERM II clearly states that entry into the ERM II is not subject to a set of pre-established criteria. To ensure a smooth participation in the ERM II, however, it would be necessary that major policy adjustments –for example with regard to price liberalisation and fiscal policy– are undertaken by the Member State concerned prior to participation and that a fiscal consolidation path is being followed, as well as the conduct of policies that are compatible with the participation in the ERM II (e.g. monetary, fiscal and structural policies). The central rate, chosen by mutual agreement of the various parties to the ERM II, should reflect the best possible assessment of the equilibrium exchange rate at the time of entry into the mechanism and should be based on a broad range of economic indicators and developments, while also taking into account the market rate. Realignments of the central rates should be made in a timely fashion, if equilibrium exchange rates evolve over time.

The preceding analysis of the features of the ERM II highlights its role as a guiding framework rather than a “waiting room” (see Policy position of the Governing Council of the ECB) for the conduct of sound economic policies on the road to adopting the euro. The merits of this framework refer to the discipline, credibility, adjustability and the multilateral nature of the ERM II. In conclusion, the above discussion shows that there is no single path leading to the adoption of the euro, and that the role of the ERM II should be assessed on a case-by-case basis, depending on the country under discussion. Each country has its specific structural characteristics and a different starting point. This fact has been repeatedly emphasised by European Commission and ECB officials, pointing out that each country is a different case and should therefore be assessed as such in order to determine the optimal strategy for participation in the ERM II and the adoption of the euro, which would minimise the adjustment costs to the economy, thereby allowing the country to reap the benefits of monetary integration.

Thus, countries participating in a union which tend to have higher inflation will experience a loss in competitiveness and lower than appropriate real interest rates, favouring excessive credit expansion and an overheating of domestic demand which, in turn, would lead to current account deficits. Fiscal policy in a monetary union is the key policy instrument available at the national level, in the absence of independent monetary policy. Fiscal discipline and the coordination of economic policies are of utmost importance, as the fiscal framework must be compatible with the single currency so as not to undermine the stability of the currency and, thereby, the monetary union itself. For this reason, it is important that member countries avoid excessive deficits and aim to achieve budgetary positions close to balance and that, as a general rule, there is a certain degree of coordination of economic policies remaining at the discretion of national authorities, i.e. macroeconomic and structural policies¹⁴.

4.3.1 EU Member States' strategies for joining the ERM II and adopting the euro

In connection to the above, even before accession to the EU, candidate Member States are required to design and implement a strategy for joining the ERM II and adopting the single currency, taking into account the specific features and circumstances of their economies as well as the institutional set-up of the EMU. This issue has attracted a lot of attention from both policy makers in accession countries and the academia. The theory of "Optimum Currency Areas" – OCA (Mundell, 1961; McKinnon, 1963; Kenen, 1969) provides a useful framework for assessing the preparedness of a country to abandon the exchange rate as a policy instrument and become part of an optimum currency area. The theory lays emphasis on the symmetry of exogenous shocks and the ability of individual countries to absorb such shocks, examining such criteria as the similarity of the structure of the economy, business cycle synchronization, the degree of trade and financial integration, and price and wage flexibility. However, it fails to answer crucial

14. See De Grauwe (2007) for a detailed discussion on the rationale behind the establishment of the convergence criteria.

practical questions referring to the kind of monetary and exchange rate policies that a country should pursue on its course to monetary integration, the optimal timing of joining the ERM II, the setting of the equilibrium exchange rate and of the fluctuation band, as well as the length of participation in the mechanism. This is partly attributable to the endogeneity of the above-mentioned criteria, as it is quite likely that accession itself into a monetary union promotes the fulfillment of the criteria. This eventuality is empirically supported by a stream of research (e.g. Frankel and Rose, 1997; 1998), finding that closer trade links in a currency union can lead, through lower transaction costs and market imperfections, to more closely correlated business cycles across countries. Another strand of the literature focuses on the benefits of economic integration itself. Risk sharing, through money and capital markets, among countries participating in a currency union may mitigate asymmetric shocks to output and income (Asdrubali et al., 1996; Kalemli-Ozcan et al., 2004). Moreover, significant gains in terms of trade and output can stem from monetary integration, as suggested by various studies (Rose and Van Wincoop, 2001; Melitz, 2001; Persson, 2001).

Beyond the findings of the above-mentioned literature on the design and implementation of a strategy for euro adoption by individual countries, the fulfillment of the exchange rate criterion itself, that is, participation in the ERM II and compliance with the standard fluctuation band in ERM II for at least two years, without significant tensions and, specifically, without a devaluation vis-à-vis the euro or the currency of any other EU Member State, is a crucial factor that is at the centre of discussions regarding the appropriate strategy to be followed. In this context, countries should carefully examine the features of the ERM II and how compatible with these features their economic policies are, in particular their monetary and exchange rate policy frameworks and their strategic objectives for joining the EU and adopting the euro.

This brief overview of the convergence criteria and the characteristics of the ERM II suggests that each Member State should design its own strategy for joining the ERM II and adopting the euro, taking into account the specific structural features of its economy, its starting position in relation to the

convergence criteria and, in particular, the attainment of real convergence, the monetary and exchange rate framework and the potential challenges ahead.

There are three questions that need to be answered regarding the participation of a country in the ERM II:

1. When to join the ERM II?
2. Which should be the central rate and the fluctuation band?
3. What should be the length of stay in the ERM II?

4.3.2 The adoption of the euro by Cyprus

The strategy of Cyprus for joining the ERM II and adopting the euro, which addresses the above questions, was designed by the Central Bank of Cyprus (CBC) in cooperation with the Ministry of Finance (MoF) and adopted by the Council of Ministers on 19 October 2004. At the same meeting, the Council of Ministers decided to authorise the Minister of Finance, in collaboration with the Governor of the CBC, to initiate the procedure for the participation of the Cyprus pound in the ERM II¹⁵.

With regard to the first question, i.e. when to join the ERM II, the assessment was that, given the monetary and, in particular, the exchange rate policy pursued by Cyprus, i.e. the peg of the pound to the ECU since 1992 and to the euro since 1 January 1999, at the same central parity, the participation of the Cyprus pound in the ERM II would not imply any change in the exchange rate regime, which was already shadowing ERM II; on the contrary, inside the mechanism, in the event of exchange rate tensions, the Cyprus pound could use the short-term financing facilities provided for by the ERM II. Therefore, as far as the first question is concerned, the strategy favoured and recommended the immediate participation of the pound in the ERM II.

Regarding the second question, the strategy pointed out that the existing exchange rate, which had been adopted unilaterally by Cyprus twelve years ago, was broadly in line with the fundamentals of the Cyprus economy. The same conclusion was reached in a relevant report by the International Monetary Fund (IMF)¹⁶. The introduction of a wider

15. The strategy of Cyprus for joining the ERM II and adopting the euro is discussed in **Chapters 3** (p.83) and **5** (p.159).

16. See International Monetary Fund (2003).

fluctuation band ($\pm 15\%$), mirroring that of the ERM II, in August 2001, together with a set of major structural reforms in the framework and instruments of monetary and exchange rate policies as well as in the movement of capital, made a strong case in favour of the current exchange rate as the central parity for entry into ERM II with the $\pm 15\%$ standard fluctuation band of the ERM II. The fact that the exchange rate, in practice, rarely exceeded the narrower fluctuation band of $\pm 2.25\%$ was another argument supporting the appropriateness of the existing exchange rate. However, as recognised by the strategy, the matter would be subject to detailed analysis and multilateral negotiation.

Lastly, as regards the length of stay in the ERM II, the strategy suggested that Cyprus should go for the minimum period of participation in the ERM II, i.e. two years. This position took into account the features of the ERM II, the high degree of nominal and real convergence with the euro area already achieved by the Cypriot economy, as well as the strong incentives ensuing from the participation in the ERM II for fiscal consolidation and the pursuit of a sound fiscal policy. A longer participation in the ERM II would not bring any advantages in terms of exchange rate policy, while the risk of speculative attacks would remain.

4.4 The changeover from the Cyprus pound to the euro: practical preparations

The adoption of the single European currency was a historic event for Cyprus, as it marked the final phase of its long European path. The changeover from the pound to the euro was a multi-faceted endeavour, and its success required sound technical preparations by the public and private sector, as well as a timely and effective information campaign.

The thrust of the practical preparations and public information on the introduction of the euro in Cyprus was borne by the MoF and the CBC. On 29 December 2004, the Council of Ministers entrusted the MoF and the CBC with

the overall responsibility for designing and coordinating the implementation of the Strategic Action Plan for the smooth accession of Cyprus to the euro area and approved the establishment of a National Advisory Committee for the introduction of the euro in Cyprus. The relevant proposal to the Council of Ministers was accompanied by an outline of the Strategic Action Plan, which described the main priorities and objectives for the successful adoption of the euro, the envisaged timetables for the implementation of the project, the bodies to be established and undertake the implementation of the Action Plan, as well as their composition, objectives, organisation and operational procedures. The objectives of the Action Plan were the following:

- Preparation of the Cyprus economy, in nominal and real terms, for smooth accession to the euro area.
- Technical preparation for the adoption of the euro (changeover of accounting systems and software).
- Preparation for the changeover of the public sector.
- Preparation for the changeover of the financial sector.
- Preparation for the changeover of the private business sector.
- Timely and adequate provision of information to the public.
- Negotiations with the European Commission and the ECB.
- Information campaigns in euro area Member States.
- Adaptation of the legal framework.

As regards the bodies that would undertake the implementation of the strategy for the accession of Cyprus to the euro area, the Action Plan proposed the establishment of the following committees¹⁷:

- National Advisory Committee.
- MoF – CBC Coordinating Committee.
- CBC Committees.
- MoF/Civil Service Committees.

The key technical aspects of the euro changeover were decided by the MoF – CBC Coordinating Committee during its first meetings in 2005. On

17. The MoF-CBC Joint Communication Committee and the Political Committee for the changeover to the euro were also established. In addition, the Council of Ministers decided that the Minister of Commerce, Industry and Tourism would also participate in the National Advisory Committee.

2 November 2005, the Council of Ministers set 1 January 2008 as the target date for the adoption of the euro in Cyprus¹⁸. On 10 July 2007, the Council of the EU took the final decision on the adoption of the euro by Cyprus and Malta on 1 January 2008. On the same day, the Council fixed the conversion rate of the Cyprus pound to the euro at 0.585274 pounds per euro, i.e. the rate that had been adopted unilaterally by Cyprus in 1992, which was also its central rate at which it had joined the ERM II in May 2005. The decision of the Council of the EU was based on the Convergence Reports published on 16 May 2007 by the European Commission and the ECB, which concluded that Cyprus had achieved a high degree of sustainable convergence to the euro area by fulfilling all criteria, both economic and legal, for the adoption of the euro¹⁹.

4.5 Monetary policy in the EMU

With the adoption of the euro on 1 January 2008, the CBC became a member of the Eurosystem and, thereby, ceded the conduct of the independent monetary policy at the national level to the Governing Council of the ECB²⁰.

According to Article 127 of the Treaty on the Functioning of the EU, the primary objective of the ESCB and, by extension, of the Eurosystem, is “to maintain price stability”, highlighting the key contribution that monetary policy can sustainably offer to economic welfare²¹. The choice of such a mandate represents an evolutionary process in monetary policy-making, tracing its roots to the negative experience from the pursuit of inappropriate policies in the decades preceding the creation of the EMU, as well as to advances in economic thought.

18. However, the final decision would obviously be made by the competent EU institutions.

19. Further useful information and related material can be accessed at the links below:

<http://www.euro.cy>

<http://www.centralbank.gov.cy>

http://ec.europa.eu/economy_finance/euro/index_en.htm

<http://www.ecb.europa.eu/euro/html/index.en.html>

20. According to Article 10.2 of the Statute of the ESCB and of the ECB, each member of the Governing Council –including the Governor of the CBC– shall have one vote. As from the date on which the number of members of the Governing Council exceeds 18, the voting rights shall be assigned on a rotation basis. See European Central Bank (2009) for further details.

21. According to the same Article, without prejudice to the objective of price stability, the ECB shall support the general economic policies in the Union.

Specifically, the commonly accepted approach to central banking practice in the 1960s and 1970s involved the adoption of activist monetary policies that aim to maintain output and unemployment close to their natural levels at any point in time. The rationale behind these discretionary policies pertains to the existence of a long-run trade-off between inflation and unemployment, as conveyed by the Phillips (1958) curve, suggesting that it is feasible to achieve a permanently low level for either of the aforementioned macro-variables at the expense of a somewhat higher level for the other.

However, the experience from concurrently rising unemployment and inflation (stagflation) during the 1970s marked the empirical break-down of the Phillips curve in its original form – as foretold by Phelps (1968) and Friedman (1968). In those studies, the authors introduced the expectations-augmented Phillips curve model, reviving the “classical dichotomy” according to which, although there can exist a short-term trade-off relationship between a nominal variable, such as inflation, and a real variable, such as unemployment, this relationship does not hold over the longer term²². In fact, according to Friedman (1977), it may as well be the case that excessively high rates of inflation incur higher long-run unemployment rates, in view of the distortionary effects on consumption, investment and production decisions. By contrast, price stability ensures the ideal conditions for promoting sustainable growth and, thereby, higher employment.

A further important breakthrough in the conduct of monetary policy relates to the establishment of central bank independence from short-sighted political considerations and other exogenous influences that are likely to exert inflationary pressures in the determination of monetary policy²³, hampering thereby the achievement of price stability²⁴. With a view

22. See **Chapter 9, Box 9.3** (p.378) for further analysis.

23. Known as the dynamic inconsistency problem, this is associated with the inherent temptation of government authorities to implement an expansionary monetary policy in order to boost the economy in the short run and thus gain short-term political benefits, without acknowledging the subsequent permanent increase in inflation. See Kydland and Prescott (1977) and Barro and Gordon (1983) for further details.

24. The granting of independence from political authority is one of the main characteristics of the German model of central banking, which is geared towards maintaining price stability, versus the Anglo-French model, which supports political dependence and aims to achieve stability in multiple areas, including prices, the business cycle and employment at a high level (De Grauwe, 2007).

to establishing and maintaining credibility as a means of addressing the inflation bias inherent in discretionary monetary policy, the independence of the ESCB is firmly and unambiguously enshrined in Article 130 of the Treaty on the Functioning of the EU, stating that “when exercising the powers and carrying out the tasks and duties conferred upon them by the Treaties and the Statute of the ESCB and of the ECB, neither the European Central Bank, nor a national central bank, nor any member of their decision-making bodies shall seek or take instructions from Union institutions, bodies, offices or agencies, from any government of a Member State or from any other body”^{25,26}.

The collective synergy between a well-defined mandate for central banks to maintain price stability and independence in working towards this goal is strongly correlated with low rates of inflation that do not compromise economic growth or increase unemployment, as documented by an array of empirical studies²⁷. It is nevertheless crucial that there exists a mechanism by which the central bank remains accountable to the public – particularly given that central bankers are not elected officials. An appropriate design of such a mechanism imposes discipline on the central bank, thereby enhancing its credibility towards conveying its commitment to fulfilling its mandate.

In this perspective, accountability is reinforced by the adoption of a transparent nominal anchor for price stability, on the basis of which the public can evaluate the performance of the central bank without necessarily resorting to technical knowledge. In addition, the presence of an explicit benchmark combined with an appropriate degree of transparency can help anchor inflation expectations around levels that are consistent with price stability²⁸. Such an outcome is highly supportive to the task of the central bank as it

25. Specifically, the concept of independence includes the institutional, functional and operational, and financial and organisational independence of the ECB and the NCBs, as well as the personal independence of the members of its decision-making bodies. For further details, see Scheller (2006, pp. 141-144) and Orphanides (2008).

26. The first President of the ECB, William F. Duisenberg, drew in a lecture in March 1998 an interesting analogy between the Odyssey and the political decision to grant political independence to the ESCB, which effectively raised a legal barrier against the ceaseless temptation of governments to adopt inappropriate monetary policies that aim to attain short-term electoral gains: “Politicians recognise the seductive call of these sirens and they want to avoid giving in to this powerful temptation. Therefore, they allow themselves, like Odysseus, to be bound to the mast by giving an independent central bank the task of ensuring price stability as its sole purpose”.

27. See Walsh (2008) and the sources cited therein. Also, see Syrichas (2008) on Cyprus.

28. See Bernanke et al. (1999) and Geraats (2002, 2006).

provides resilience against inflationary shocks and allows for greater room for manoeuvre in times of economic slack. In such circumstances, the central bank can conduct an expansionary monetary policy to stimulate economic activity without experiencing an analogous adjustment in inflation expectations, provided that the public retains confidence in the central bank's ability to preserve price stability. Consequently, no upward price pressures are manifested that could feed through the wage bargaining process or via upward price adjustments onto the economy, thereby leading to a permanent rise in inflation.

A crucial aspect in this regard is to define the time horizon over which it is considered feasible for monetary authorities to maintain price stability, such that the public can form appropriate inflation expectations. According to the monetarist critique of Friedman and Schwartz (1971), there exist significant and highly variable time lags in the transmission of monetary policy to inflation and economic activity. This highlights the inherent danger in cases where, for example, an expansionary monetary policy is being pursued to address a concurrent recession, with the full policy impact absorbed in the economy by the time the business cycle may have already reached an upturn, thereby aggrandizing further the existing inflationary pressures. This stresses the importance of conducting monetary policy with a forward-looking orientation.

The limitation in accurately quantifying the length of time lags in the monetary policy transmission mechanism constitutes only a part of the general phenomenon in conducting monetary policy within an environment of uncertainty. Such uncertainty additionally pertains to, *inter alia*, identifying the true model specification and parameters of the economy, as well as assessing the state of the economy in real time. These caveats pose further questions regarding the suitability of employing activist monetary policies, as they could induce destabilising shocks to the economy. For example, in the context of imprecise economic measurements in real time, the exercise of a loose monetary policy in the face

of a concurrently measured negative output gap would be ex-post judged as inappropriate in the (quite likely) event of subsequent revisions pointing to a considerably less negative, or even positive, output gap measure for that period^{29,30}.

By virtue of the above considerations for monetary policy, the Governing Council of the ECB announced on 13 October 1998 its decision to adopt a non-activist, stability-oriented monetary policy strategy, which consists of the interpretation for price stability to be “a year-on-year increase in the Harmonised Index of Consumer Prices (HICP) for the euro area of below 2%. Price stability is to be maintained over the medium term”. On 8 May 2003, following a thorough evaluation of the ECB’s monetary policy strategy, the Governing Council, while confirming the above quantitative definition, clarified further on its aim to “maintain inflation rates below, but close to, 2% over the medium term”, thereby providing a safety margin to guard against the risks of deflation³¹.

In addition to providing a quantified definition for price stability, the strategy is based on a two-pillar framework with the aim of incorporating the entire spectrum of information that is of relevance to assessing risks to price stability and deciding on monetary policy actions. Known as “economic analysis” and “monetary analysis”, these pillars are designed so as to complement each other and encapsulate a forward-looking perspective on maintaining price stability. Specifically, the former pillar is focused on evaluating economic and financial developments that span over the short to medium-term horizon, in view of the aggregate demand and supply interactions in goods, services and factor markets over such a period. On the other hand, the latter pillar is concerned with the examination of medium-to-long term monetary developments, in view of a positive long-term link between nominal money balances and

29. See Orphanides and van Norden (2002, 2005).

30. Collectively, as quoted by Issing (1999a) in a speech on monetary policy and uncertainty, “Since Brainard (1967) it is well-known, that this form of uncertainty provides a rationale for a prudent, gradualist approach to monetary policy-making”. Furthermore, as also noted in the same speech, a “thorough assessment of the current state of the economy is central to the formulation of monetary policy”, while “the sizeable measurement error derived from [...] real-time estimates leads to a significant deterioration of feasible policy outcomes and cause efficient policies to be less activist”.

31. See Issing (2003) for a particularly interesting lecture on the history of designing the ECB’s monetary policy strategy.

inflation³². Collectively, a cross-check of the indications from each pillar is performed so as to provide robust recommendations for monetary policy decisions³³.

A final element of the monetary policy strategy relates to enhancing transparency and accountability by means of utilising an array of communication devices directed at markets and the public at large³⁴. These include publications, such as the Annual Report and the Monthly Bulletin, press releases, press conferences and frequent interviews and speeches addressed to a variety of audiences. Through all these channels, the ECB informs the public about its assessment of economic, financial and monetary developments, as stemming from the two-pillar analysis, and explains its monetary policy strategy, decisions and operations.

In addition, to further promote transparency, the ECB seeks to foster both general and technical understanding of monetary policy by means of a variety of educational tools, ranging from numerous publications and research papers to cartoon videos and web games³⁵.

4.6 Economic policy in the EMU

In contrast with monetary policy in the EMU which had been transferred from the national to the EU level as a responsibility of the ECB, the fiscal and structural policies have largely remained the responsibility of individual Member States. The Treaty on the Functioning of the EU lays down the economic policy framework, which stipulates the coordination of the economic policies of Member States. According to the Treaty, "...Member States shall regard their economic policies as a matter of common concern" and "...shall coordinate them within the Council".

The shortcomings of the economic policy framework of the EMU, most

32. The Governing Council of the ECB adopted in December 1998 the reference value of 4.5% for the growth rate per annum of the broad monetary aggregate M3 over the medium term, highlighting the medium-term relevance of money in the monetary policy strategy of the ECB. See European Central Bank (2004b, Box 3.7, p. 64) for the rationale behind the selection of this key indicator for monetary expansion and the corresponding reference value, which still remains unchanged.

33. See European Central Bank (2010, 2011a) for additional information on the structure and monetary policy implications from the two-pillar strategy.

34. Also referred to as the "hidden" pillar of the monetary policy strategy. See, for example, Issing (1999b).

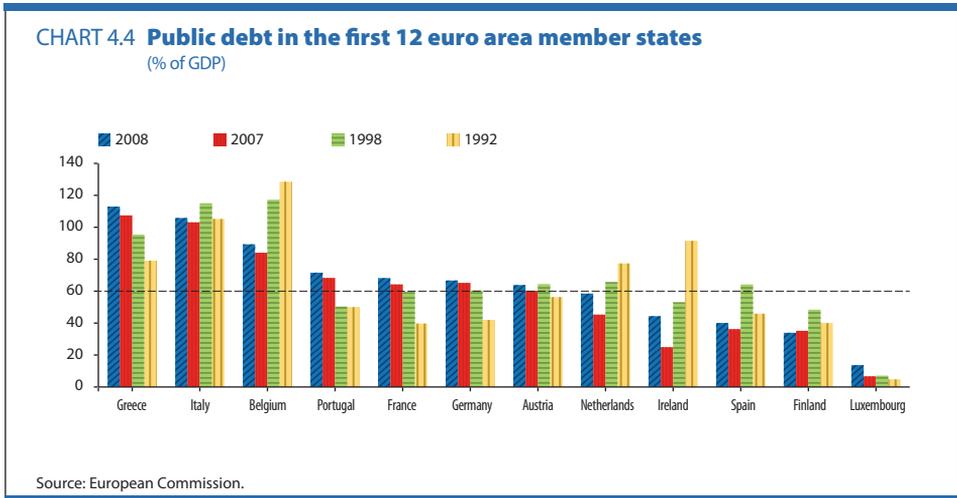
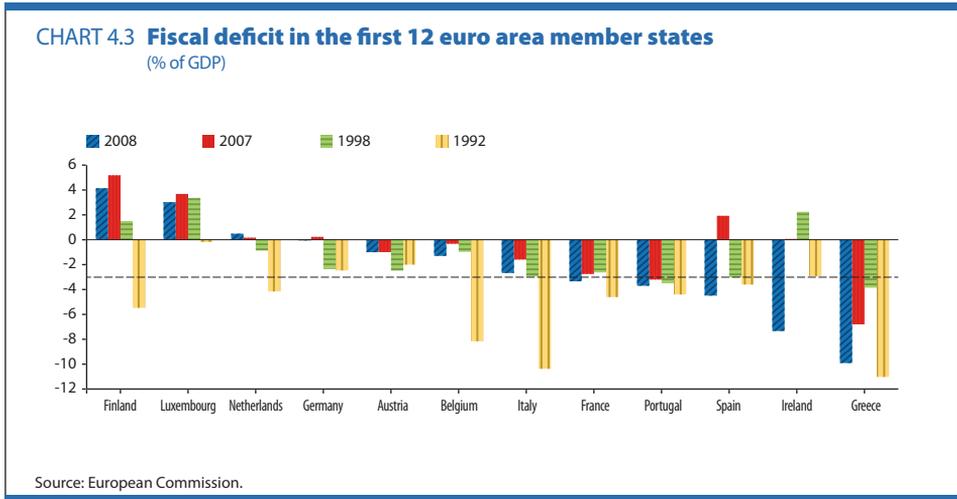
35. Publications and further educational material of the ECB can be accessed at: <http://www.ecb.europa.eu/pub/> and <http://www.ecb.europa.eu/ecb/educational/> respectively.

notably in the area of fiscal surveillance, became evident as early as in the first years of the single currency. As repeatedly noted by the former President of the ECB³⁶, Jean-Claude Trichet, the specific design of the EMU with its two pillars, i.e. the “economic” and the “monetary” pillar, is key to analysing and understanding the performance and challenges facing the EMU in its first ten years and, particularly, during the global economic crisis. As he points out, it is the “E” of the EMU where progress is needed; whereas the “M” of the EMU has performed well: even amid adverse conditions and exogenous shocks, the ECB managed to achieve its primary objective, which is to maintain price stability over the medium term.

Insufficient and often discretionary implementation of the SGP, as well as the lack of incentives for fiscal consolidation, gave rise to serious fiscal imbalances in good times. The global financial and economic crisis, the worst since the 1930s, led to a dramatic deterioration in the fiscal positions of EU Member States, owing to the budgetary impact of the automatic stabilisers, the fiscal stimulus packages introduced by governments to counteract the economic downturn and the support provided to the financial sector (European Central Bank, 2011b). Developments in the fiscal deficit and public debt in the first 12 euro area countries are depicted in **Charts 4.3** and **4.4** (p.139).

Other macroeconomic imbalances that the crisis brought out –often in quite a challenging manner– such as the erosion of competitiveness in certain Member States, low productivity and excessive wage increases, as well as unsustainable current account deficits and strong credit expansion, demonstrate the weaknesses of the loose economic policy coordination framework of the EMU. In addition, as a result of delays in the implementation of the necessary structural reforms, the benefits of the single market could not be fully reaped, while the growth potential of the EU and the euro area showed little improvement. According to the European Commission, the main reasons for the inadequate implementation of structural reforms was the lack of support by European citizens, reform resistance from well-organised interest groups, deficiencies in the level of technical and administrative competence of the

36. See, for example, Trichet (2011).



Member States, as well as policy makers’ perception of the short-run political cost often associated with carrying out the necessary reforms³⁷.

The EU’s response to the crisis and the weaknesses of the economic policy framework in the EMU was comprehensive and multi-faceted and included, apart from the adoption of ad-hoc measures, the reform of the EU economic governance framework. To this end, the European Council in March 2010 assigned its President, Herman Van Rompuy, the task of setting up a Task Force on economic governance, in cooperation with the

37. See European Commission (2008) for a further discussion on these factors.

European Commission, and with the participation of Member States' representatives, the rotating Presidency, and the ECB. The Task Force was mandated to report to the Council on measures to improve crisis resolution and budgetary discipline by the end of that year. The Van Rompuy Task Force report on economic governance was approved by the European Council in October 2010 and included recommendations for strengthening fiscal discipline, broadening economic surveillance with the introduction of a new mechanism for the surveillance of macro-economic imbalances and developments in competitiveness, deepening and broadening the coordination of economic policies, a robust framework for crisis management and stronger institutions for more effective economic governance both at the European and at the national level³⁸. Based on the findings of the Van Rompuy report, the European Commission prepared a package of six legislative proposals, known as the "Six-Pack", which was adopted by the European Parliament on 28 September 2011 and endorsed by the Council (ECOFIN) on 8 November 2011³⁹.

4.6.1 Fiscal policy

The fiscal framework of the EMU aims to ensure the conduct of prudent fiscal policies, which do not undermine the single monetary policy in the euro area and the Eurosystem's primary objective of maintaining price stability.

Article 126 of the Treaty on the Functioning of the EU states that Member States shall avoid excessive government deficits, while the excessive deficit

38. For the online version of the report see:

http://www.consilium.europa.eu/uedocs/cms_data/docs/pressdata/en/ec/117236.pdf

39. The package (also known as "Six Pack") consists of the following six legislative acts:

- 1) Council Regulation (EU) No 1177/2011 of 8 November 2011 amending Regulation (EC) No 1467/97 on speeding up and clarifying the implementation of the excessive deficit procedure;
- 2) Council Directive 2011/85/EU of 8 November 2011 on requirements for budgetary frameworks of the Member States;
- 3) Regulation (EU) No 1173/2011 of the European Parliament and of the Council of 16 November 2011 on the effective enforcement of budgetary surveillance in the euro area;
- 4) Regulation (EU) No 1174/2011 of the European Parliament and of the Council of 16 November 2011 on enforcement measures to correct excessive macroeconomic imbalances in the euro area;
- 5) Regulation (EU) No 1175/2011 of the European Parliament and of the Council of 16 November 2011 amending Council Regulation (EC) No 1466/97 on the strengthening of the surveillance of budgetary positions and the surveillance and coordination of economic policies;
- 6) Regulation (EU) No 1176/2011 of the European Parliament and of the Council of 16 November 2011 on the prevention and correction of macroeconomic imbalances.

procedure is detailed in a relevant protocol annexed to the Treaties. More specifically, the existence of an excessive deficit is decided on when the fiscal deficit exceeds 3% of GDP or when the public debt exceeds 60% of GDP, unless the ratio is sufficiently diminishing and approaching the reference value at a satisfactory pace.

Fiscal discipline is further reinforced by two additional important provisions of the Treaty on the Functioning of the EU. The Treaty explicitly prohibits the monetary financing of fiscal deficits and any privileged access of the public sector to financial institutions. Furthermore, it includes a no-bail-out clause, implying that the EU and any Member State shall not be liable or assume commitments of governments of other Member States. Therefore, Member States may not pursue debt-increasing fiscal policies with the expectation that they will be able to repay their debts in the future through an inflation tax or the assumption of their liabilities by other Member States.

The coordination of fiscal policies in the EMU and the implementation of the excessive deficit procedure are laid down in the SGP⁴⁰, which consists of a preventive and a dissuasive arm. The preventive arm of the SGP enhances multilateral surveillance and establishes the preparation of annual stability programmes (or convergence programmes, for the non-euro area countries) by each Member State. These programmes review economic and fiscal developments and report on the progress achieved, as well as on the measures taken to achieve the medium-term objective of a fiscal position close to balance or in surplus. The rationale behind adherence to the medium term objective of a fiscal position close to balance or in surplus is that this should allow Member States to deal with normal cyclical fluctuations through the operation of automatic stabilisers, while keeping the government deficit below the 3% of GDP reference value. In addition, if the Council of the EU (ECOFIN)

40. The SGP consists of the European Council Resolution on the Stability and Growth Pact adopted on 17 June 1997, the Council Regulation (EC) No 1466/97 of 7 July 1997 on the strengthening of the surveillance of budgetary positions and the surveillance and coordination of economic policies and the Council Regulation (EC) No 1467/97 of 7 July 1997 on speeding up and clarifying the implementation of the excessive deficit procedure, as amended. Council Regulation No 1466/97 is the preventive arm, while Council Regulation No 1467/97 is the dissuasive (or corrective) arm of the SGP.

identifies a significant divergence from the medium-term budgetary objective or the adjustment path towards this objective, it addresses an early warning with a view to preventing the occurrence of an excessive deficit and can issue a policy recommendation asking the Member State concerned to take the necessary adjustment measures to prevent that from occurring.

The dissuasive arm of the SGP specifies the excessive deficit procedure. Among other things, it stipulates the conditions under which the breach of the reference value for the fiscal deficit is extraordinary and temporary, i.e. when it has occurred in exceptional circumstances beyond the control of the Member State which have a significant impact on public finances, or when it has resulted from a severe economic downturn. Furthermore, it defines the stages and the time-frame for the correction of the excessive deficit and provides for the imposition of sanctions on non-compliant Member States.

Although the SGP is a significant component of economic policy in the EMU underpinning the single currency, its corrective arm in particular has not yielded the expected results, as demonstrated by the fiscal slippages of Member States in the early years of the EMU⁴¹. The reform of the SGP in 2005 included changes to both the preventive and the corrective arms. Changes to the preventive arm concerned the method of calculation of the medium-term budgetary objective and a specification of the required annual structural adjustment in order to achieve this objective. As regards the corrective arm, changes also concerned the required annual adjustment for countries subject to the excessive deficit procedure, the possibility of extending the deadlines for correcting the excessive deficit in cases of unexpected adverse economic events that have major negative effects on public finances, as well as the definition of a “severe economic downturn” and of “other relevant factors” taken into consideration in the reports prepared by the European Commission. Moreover, the reformed SGP underlined the importance of enacting national numerical rules and institutions, stronger involvement of national parliaments in the EU

41. See European Commission (2004).

budgetary surveillance process and the availability of accurate and reliable fiscal data.

The SGP reform of 2005 attracted criticism from various observers, market participants as well as EU institutions and bodies, including the ECB, whose officials often advocated a framework that would be based on simple numerical rules and would thus be less open to subjective interpretation by Member States. According to the former Vice President of the ECB Lucas Papademos on the corrective arm of the SGP “...The reform of the SGP’s corrective arm makes decisions on the existence of excessive deficits and on the setting of deadlines for correcting them less automatic and more explicitly conditional on discretion in the assessments of the underlying economic and budgetary situations” (Papademos, 2005).

Unfortunately, the aforementioned concerns were confirmed as deviations from budgetary targets persisted in the years following the reform of the SGP in 2005, while fiscal discipline was severely undermined by the global economic and financial crisis. Four out of the six legislative proposals prepared on the basis of the Task Force report on economic governance and adopted by the Council of the EU on 8 November 2011 aimed to achieve better coordination and stronger fiscal surveillance by reinforcing the preventive and the corrective arms of the SGP.

The main changes to the preventive arm refer to the establishment of a link between expenditure growth and medium-term economic growth, and the requirement of faster progress on the adjustment path towards the medium-term objective for Member States faced with a debt level exceeding 60% of GDP. Furthermore, the European Commission may issue a warning to a Member State, which may be followed by a recommendation by the Council of the EU, while, in the case of euro area countries, a sanction in the form of an interest-bearing deposit of 0,2% of GDP is envisaged as an enforcement mechanism under Article 136 of the Treaty on the Functioning of the EU.

Regarding the corrective arm of the SGP, namely the excessive deficit procedure, Member States with a public debt level exceeding 60% must reduce their debt by at least one twentieth per annum for three years,

otherwise they will be subject to the excessive deficit procedure. In addition, euro area countries under the excessive deficit procedure are required to place an interest-bearing deposit of 0,2% of GDP, which is converted to a fine if the Member State fails to comply with the Council's recommendation for corrective measures. Stricter sanctions, including a higher fine, may be imposed on euro area countries repeatedly failing to comply with Council recommendations.

Moreover, according to Article 8a(4) of Regulation (EU) No 1173/2011 of the European Parliament and of the Council on the effective enforcement of budgetary surveillance in the euro area, the Commission was asked to present before the end of 2011 a report to the European Parliament and to the Council on the possibility of introducing euro-securities. The issuance of a euro bond had actually been suggested by several Member States, including France, and European Commission and ECB officials much earlier, when the debt crisis began to escalate, specifically after Ireland's recourse to the support mechanism. However, this suggestion was strongly objected by other Member States, most notably Germany that insists on first achieving a deeper fiscal union.

4.6.2 Coordination and surveillance of macroeconomic and structural policies

According to Article 121 of the Treaty on the Functioning of the EU, Member States shall regard their economic policies as a matter of common concern and shall coordinate them within the Council. The Broad Economic Policy Guidelines (BEPGs) play a pivotal role in the coordination of macroeconomic and structural policies within the EMU, which, as is the case with fiscal policy, remain the responsibility of Member States. The employment policies of Member States are also coordinated within the Council, on the basis of the employment guidelines which are consistent with the BEPGs⁴².

42. In the early years, the BEPGs were supplemented with additional coordination processes, in particular the "Luxembourg Process" on the coordination of national employment policies, the "Cardiff Process" on the monitoring and reviewing of structural reforms, and the "Cologne Process" on the macroeconomic dialogue between social partners, national governments, the European Commission and the ECB.

The loose coordination of macroeconomic and structural policies is governed by a multilateral surveillance framework with peer pressure and mutual support being the key elements. While the SGP, especially its corrective arm, is legally binding upon euro area Member States, the BEPGs are rather policy recommendations from the Council to EU Member States, issued after a relevant discussion within the European Council. According to Article 121(4), the European Commission may address a warning to a Member State if its economic policies are not in line with the BEPGs or risk jeopardising the smooth functioning of the EMU, while the Council addresses the necessary recommendations to the Member State concerned. The Council may decide to make its recommendations public.

The rationale behind this loose coordination is that macroeconomic and structural policies need to reflect the specific supply conditions prevailing in each Member State. As mentioned in **Section 4.3** (p.122), apart from a sufficient degree of real and nominal convergence, the smooth functioning of a monetary union requires fiscal discipline and coordination of overall economic policies. The latter requires competitive and flexible markets, which can operate as shock-absorbing mechanisms both in cyclical fluctuations and in external shocks. Clearly, since Member State economies have different structural characteristics and varying degrees of adaptability, supply-side policies need to be customised to the specificities of each Member State's economy and should merely be subject to loose and open coordination at the European level.

The Lisbon Strategy, agreed upon during the special meeting of the European Council on 23 and 24 March 2000, was an ambitious structural reform agenda through which EU leaders set the target for the EU to become by 2010 the most dynamic and competitive knowledge-based economy in the world, capable of sustainable growth with more and better jobs and greater social cohesion. This Strategy, which served as the EU structural policies umbrella, rested on the principle of the open method of coordination, peer pressure and best practice sharing. Despite

the efforts to reactivate the strategy in 2005⁴³, the European Commission's assessment, as set out in its Lisbon Strategy Evaluation Document (European Commission, 2010a), was that "...the strategy should have been organised better to focus more on critical elements which played a key role in the origin of the crisis, such as robust supervision and systemic risk in financial markets, speculative bubbles (e.g. in housing markets), and credit-driven consumerism which in some Member States, combined with wage increases outpacing productivity gains, fuelled high current account deficits. Macro-economic imbalances and competitiveness problems were at the root of the economic crisis, and were not adequately addressed in the surveillance of Member States' economies carried out through the Stability and Growth Pact and the Lisbon Strategy, which tended to operate in parallel rather than complementing one other".

Other major stumbling blocks to the achievement of the objectives of the strategy were the slow and uneven pace of implementing reforms; the insufficiently recognised importance of interdependence in a closely integrated economy; inefficient links between the Lisbon Strategy and other EU policies, such as the SGP, the Sustainable Development Strategy and the Social Agenda; the relatively unclear role of the European Council and of the European Parliament; and weak governance structures.

In June 2010, the European Council finalised and adopted "Europe 2020", the new EU strategy for employment and smart, sustainable and inclusive growth (see **Box 4.4**, p.147). To tackle the challenges and achieve its goals, "Europe 2020" utilises all the tools available in the EU, in particular the single market, the EU budget and private finance, as well as external policy instruments. Regarding the governance of the strategy, the European Council has full ownership and is responsible for steering the new strategy. Among other things, its tasks include annual overall assessments of

43. After a relevant progress report, prepared by the High Level Group under the former Dutch Prime Minister Wim Kok, in the context of the interim review of the Lisbon Strategy during the Spring 2005 European Council meeting, it was decided to reactivate the strategy, focusing on growth and employment. In addition, the Council of the EU was invited to adopt a set of integrated guidelines consisting of the BEPGs and the guidelines on employment. On the basis of those integrated guidelines, EU Member States prepare national reform programmes on an annual basis and submit to the European Commission monitoring reports on the implementation of the Lisbon Strategy, specifically on measures taken in the past twelve months regarding the implementation of national programmes.

Box 4.4 The “Europe 2020” strategy: priorities and objectives¹

The “Europe 2020” strategy is the economic policy agenda of the EU up until 2020 and sets three mutually reinforcing priorities:

- smart growth, by developing an economy based on knowledge and innovation;
- sustainable growth, by promoting a more resource efficient, greener and more competitive economy; and
- inclusive growth, by fostering a high-employment economy delivering social and territorial cohesion.

To achieve these priorities, “Europe 2020” sets five primary goals in the areas of employment, research and development (R&D)/innovation, climate change/energy, education, and poverty/social exclusion, as follows:

- 75% of the population aged 20-64 should be employed;
- 3% of the EU’s GDP (public and private) should be invested on R&D and innovation;
- greenhouse gas emissions should be reduced by 20% (or even 30% if conditions allow for it) compared with 1990, 20% of energy consumption should come from renewable energies, and 20% increase in energy efficiency;
- reducing school drop-out rates below 10%, and at least 40% of 30-34 year-olds completing third level education;
- at least 20 million fewer people in or at risk of poverty and social exclusion.

These targets are set at the EU level to be achieved by 2020; however, depending on the specificities of each Member State, they are translated into national targets and included in the national reform

1. See European Commission (2010b).

programme that each Member State submits to the European Commission once a year in April. To achieve progress towards the achievement of Europe 2020 goals, seven flagship initiatives are utilised: “A digital agenda for Europe”, “Innovation Union”, “Youth on the move”, “Resource efficient Europe”, “An industrial policy for the globalisation era”, “An agenda for new skills and jobs” and “The European platform against poverty”.

progress at EU and national level, horizontal policy guidance for the EU and the euro area as a whole on the basis of the Annual Growth Survey prepared by the European Commission, discussions on economic developments and priorities for the strategy, and endorsement of country-specific recommendations on the basis of a proposal by the Commission. The European Parliament also plays an important role, not only as a co-legislator, but also as a driving force for mobilising citizens and national parliaments.

As mentioned at the beginning of **Section 4.6** (p.137), the global financial and economic crisis that erupted in the summer of 2007 and intensified in the autumn of 2008 aggravated not only fiscal but, more generally, macroeconomic imbalances in EU Member States. More specifically, the crisis revealed macroeconomic imbalances and competitiveness problems in EU Member States, the detection and most notably the correction of which could not be adequately ensured by the existing macroeconomic surveillance framework and the loose coordination of economic policies, through the BEPGs, the Integrated Guidelines and the “Europe 2020” strategy. For this reason, one of the proposals of the Task Force on economic governance, chaired by the President of the European Council Herman Van Rompuy, was to broaden economic surveillance by introducing a new framework for the surveillance of macroeconomic imbalances and developments in competitiveness. Two of the legislative proposals forming part of the so-called “Six Pack” adopted by the Council of the EU aimed at establishing this new framework.

The main new element in the macroeconomic surveillance framework is the introduction of an early warning system, based on a scoreboard of a set of macroeconomic indicators and alert thresholds, covering both the external and the internal sector of the economy. When macroeconomic imbalances or potential risks of macroeconomic imbalances are identified in a Member State, the Commission will provide a broad-based, in-depth review of economic, financial and public finance developments in the Member State concerned, issue recommendations and, where appropriate, propose the initiation of the excessive imbalance procedure by the Council of the EU and the adoption of a Council recommendation to the Member State, inviting it to take measures within a specific time frame. Euro area Member States that fail to comply with Council recommendations will be subject to sanctions, including a fine of 0,1% of GDP.

Even before the preparation of the final report of the Task Force on economic governance, on the basis of its President's progress report, the June 2010 European Council agreed to implement the proposal for the European Semester as of 1 January 2011. The European Semester, which is a time-window in the first half of each year, deepens coordination and allows for the parallel assessment of all economic policies of the Member States, i.e. fiscal, macroeconomic and structural, which ensures that the European dimension of those policies is better integrated into national budgets and reform programmes. Although the EU surveillance procedures remain legally and procedurally independent, the European Semester promotes consistency under a single agenda, the "Europe 2020" strategy, which sets priorities and objectives at the EU level for strengthening growth by 2020, and the Euro Plus Pact, which determines additional commitments for the participating Member States⁴⁴. The European Semester starts with the presentation of the Annual Growth Survey by the European Commission, which sets priorities for the next 18 months, serving as guidance for the targets and measures to be set at a national level. The National Reform Programmes

44. The Euro Plus Pact as agreed by the euro area Heads of State or Government during the Spring European Council on 24-25 March 2011, and joined by Bulgaria, Denmark, Latvia, Lithuania, Poland and Romania, is a renewed effort for stronger economic policy coordination for competitiveness and convergence. The Member States that have signed up to the Pact are committed to achieving four objectives: fostering competitiveness, fostering employment, contributing further to the sustainability of public finances and reinforcing financial stability.

TABLE 4.1 The European Semester: Who does what and when?

	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	
European Commission	Annual Growth Survey (AGS) pre-sented				Assessment of NRPs and SCPs	Recommendations to Member States based on NRPs and SCPs		THROUGHOUT THE YEAR: Peer review of Member States' compliance with recommendations including consideration of possible further / enforcement measures (Excessive Deficit Procedure / Excessive Imbalance Procedure) AUTUMN: Governments present draft budgets to national parliaments for debate in line with established national practice
Council of the European Union		AGS debated ahead of European Council					Recommendations to Member States formally adopted	
European Parliament		AGS debated ahead of European Council						
European Council			Endorsement of reform priorities for EU Member States			Debate and endorsement of recommendations to Member States		
Member States				National Reform Programmes (NRPs) and Stability / Convergence Programmes (SCPs) sent to Commission				

Source: European Commission.

and the Convergence and Stability Programmes, which include those targets and measures, are assessed by the European Commission, which addresses policy recommendations to Member States. Following the adoption of the recommendations by the Council of the EU, Member States integrate those recommendations in their next-year budgets in autumn. Thus, through the new coordination instrument, i.e. the European Semester, the setting of targets, the design of specific measures or programmes, their assessment

and their integration into the EU Member States' budgets exhibits a rational sequence and coherence, with a clear separation of the responsibilities of EU bodies and institutions, but also better ownership, since the European Council itself plays a crucial role in the process. **Table 4.1** (p.150) outlines the European Semester and the milestones in each month.

4.6.3 Regulation and supervision of the financial sector - Safeguarding financial stability and a permanent crisis management framework

“The financial crisis has severely challenged the stability of the international financial system and revealed major weaknesses in the architecture and the implementation, until today, of financial regulation and supervision” (Orphanides, 2010a). In order to enhance financial supervision in the EU, by addressing weaknesses both at the microprudential and the macroprudential level, the European Commission prepared legislative proposals based on the report of the high level group chaired by Jacques de Larosière⁴⁵. Following the adoption of the relevant regulations by the Council of the EU on 17 November 2010, the European Systemic Risk Board (ESRB) and three new European Supervisory Authorities (ESAs) were established on 1 January 2011. The ESRB monitors and assesses risks to the financial system as a whole (macroprudential supervision). It provides early warnings on systemic risks that may be building up and, where necessary, recommendations for action to deal with these risks. The three new ESAs are the European Banking Authority (EBA), the European Insurance and Occupational Pensions Authority (EIOPA) and the European Securities and Markets Authority (ESMA). They are responsible for the supervision of individual financial institutions (microprudential supervision) and have replaced the respective existing committees for banks, securities, and insurance and pensions, respectively.

The crisis, coupled with the weaknesses of the economic governance of the EMU and specific developments in EU Member States, triggered market

45. The de Larosière Report can be accessed at:
http://ec.europa.eu/internal_market/finances/docs/de_larosiere_report_en.pdf

concerns about the sustainability of public debt in some euro area countries. Given the high degree of integration and interdependence of economies and financial markets, these concerns translated into substantial risks to financial stability, as well as to the viability of the EMU itself. Admittedly, the EU and the euro area in particular were not prepared to cope with the enormous challenges posed by the financial and economic crisis. In these circumstances, the adoption of ad-hoc measures became necessary.

Greece was the first euro area country to ask for financial support, and on 2 May 2010 an ad hoc mechanism was established to deal with the imminent threat of a Greek default. The euro area Member States and the IMF agreed to jointly provide Greece with financial assistance of €110 billion, in the form of bilateral fixed-rate loans to be disbursed over a period of three years. The financial assistance is conditional on the implementation of a strict fiscal adjustment programme and structural reforms, agreed by the Hellenic Republic on the one hand, and the Commission, the ECB and the IMF on the other. The Commission monitors progress on a quarterly basis and submits reports to the Ministers of Finance of the euro area.

In May 2010, the euro area Member States and the European Commission decided to establish two temporary mechanisms for providing support to euro area Member States in financial difficulties: the European Financial Stabilisation Mechanism (EFSM), which is based on EU budget guarantees up to an amount of €60 billion, and the European Financial Stability Facility (EFSF), a private company owned by euro area Member States that provides up to €440 billion in guarantees by euro area Member States. The IMF decided to supplement the two mechanisms with a stand-by arrangement for financial support to euro area countries in the amount of up to €250 billion. Greece was followed by Ireland in November 2010 and Portugal in May 2011, which asked for support of €85 billion and €78 billion, respectively, through the above temporary mechanisms and the additional financing provided by the IMF.

One of the recommendations of the Task Force under Herman Van Rompuy referred to the establishment of a permanent crisis management

framework for the euro area to provide financial support to Member States in a way that can avert the risk of contagion to other Member States, which would have adverse implications for financial stability in the euro area as a whole, and, at the same time, address the moral hazard problem associated with financial crises. It is worth mentioning that this recommendation on the creation of a permanent crisis management mechanism for the euro area followed the adoption of extraordinary measures and the establishment of the EFSM and the EFSF.

The rationale behind the need to establish a permanent crisis management mechanism is that even after the completion of reforms in the economic governance framework of the euro area, the probability of exogenous asymmetric shocks in a Member State and of market failures in the financial sector, such as the recent self-fulfilling trends in the pricing of sovereign risk, cannot be ruled out; thus, there is always a probability of conditions arising that could undermine financial stability in the euro area as a whole. Furthermore, a reliable permanent crisis management mechanism would help in the formation of stability-oriented expectations and appropriate incentives among the private sector and countries alike.

On the basis of these considerations, the Heads of State or Government agreed at the European Council of 28-29 October 2010 to set up the European Stability Mechanism (ESM), an intergovernmental organisation established under public international law, mandated to safeguard financial stability in the euro area as a whole. It was decided at that meeting of the European Council that the new mechanism would replace the two temporary mechanisms as from 1 July 2013 and provide loans up to the amount of €500 billion. The European Council of 16-17 December 2010 also agreed to add a new paragraph to Article 136 of the Treaty on the Functioning of the EU via the simplified revision procedure, which in effect lays down the conditions under which the mechanism is activated: "...if indispensable to safeguard the stability of the euro area as a whole. The granting of any required financial assistance under the mechanism will be made subject to strict conditionality". The rationale behind this amendment

is the need to minimize the moral hazard problem inherent in any crisis management mechanism and to avoid creating disincentives in the pursuance of prudent fiscal and macroeconomic policies in the euro area.

4.6.4 Recent developments

As mentioned in **Section 4.6** (p.137), following intensive negotiations, the European Parliament, the European Commission and the ECOFIN reached an agreement on the content of the six legislative proposals on economic governance; the final decisions were adopted by the Council of the EU on 8 November 2011, with many amendments to the original proposals submitted by the European Commission on 28 September 2010. It is worth noting that in its opinion⁴⁶, the ECB took the view that “...the Commission proposals represent an important broadening and strengthening of the EU economic and budgetary surveillance framework and go some way in improving enforcement in the euro area. However, they fall short of the necessary quantum leap in the surveillance of the euro area, which the ECB deems necessary to ensure its stability and smooth functioning...”

The developments that followed, still ongoing as this chapter is being written, largely confirmed the concerns expressed by the ECB as well as by economists and financial analysts of international acclaim. The measures taken, such as the decision to apply a haircut on the Greek debt held by private lenders on a “voluntary” basis, but without a clarification of the details of the private sector’s involvement, not only failed to address, but actually heightened market concerns. In the absence of a single fiscal policy (or due to the particularly inadequate coordination of fiscal policies in the EMU) and given the relatively limited role of the ECB in the government bond markets of euro area Member States and its inherent inability –under the Treaty and its Statute– to act as a lender of last resort, the yields on the government bonds of the most vulnerable euro area Member States soared. Ultimately, the sustainability of public debt, even in core euro area countries

46. The ECB Opinion can be accessed at:
http://www.ecb.europa.eu/ecb/legal/opinions/html/act_11239_amend.en.html

such as Italy and Spain, was called into question, which resulted in a generalised debt crisis jeopardising the single currency itself, with potentially disastrous consequences for the world economy. The precarious situation of the euro area as this chapter is being written is aptly described in the article entitled “The euro zone really has only days to avoid collapse”, published on 27 November 2011 in the *Financial Times* (Münchau, 2011). However, the situation remains extremely fluid, as –at least at the level of official statements– the divergence in views between Germany and France regarding further integration of fiscal policy in the euro area seem to have been bridged.

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CHAPTER 5 ABBREVIATIONS

CBC: Central Bank of Cyprus

COLA: Cost of Living Adjustment

CPI: Consumer Price Index

CSE: Cyprus Stock Exchange

CYSTAT: Statistical Service of Cyprus

ECB: European Central Bank

ECU: European Currency Unit

EMU: Economic and Monetary Union

ERM: Exchange Rate Mechanism

ESA: European system of national and regional accounts in the Community

ESCB: European System of Central Banks

EU: European Union

HICP: Harmonised Index of Consumer Prices

IMF: International Monetary Fund

MFI: Monetary and Financial Institutions

NEER: Nominal Effective Exchange Rate

PPP: Purchasing Power Parity

REER: Real Effective Exchange Rate

5. Monetary policy strategy of the Central Bank of Cyprus (CBC)*

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5.1 Introduction

The design of appropriate monetary and exchange rate policies largely depends upon a country's specific economic characteristics and the challenges it faces in the international environment. Following the establishment of the Central Bank of Cyprus (CBC) in 1963, and for about 45 years until Cyprus's accession to the euro area, monetary policy was conducted under a fixed exchange rate regime. Policymakers believed that the establishment of an unambiguous objective anchor for economic policy, such as pegging the Cyprus pound to a currency or a basket of currencies, would induce greater discipline in the conduct of monetary policy and instil confidence in the domestic currency and thus help to establish credibility for measures to bring down inflation. A number of other characteristics of the Cyprus economy, such as its size and trade openness, COLA and, in the past, the rigidity of interest rates and the existence of capital controls, made a strong case for a monetary strategy of exchange rate targeting as a tool for containing domestic inflation.

* This chapter draws heavily on the paper by Syrichas (2008) and the publications of the Central Bank of Cyprus (1964-2000) in English and (2001-2010) in Greek.

The experience of Cyprus exemplifies that, the pursuit of a credible pegged exchange rate strategy aimed at maintaining price stability through exchange rate stability, may well lead to the smooth and successful monetary integration of a country and, thus, can be considered as a potential strategy for euro area candidates. This is plausible in the case of such a strategy being reinforced and enriched by the systematic and prudent monitoring of developments in the current account balance.

The conduct of monetary policy in Cyprus can be divided into three phases: the first phase begins with the establishment of the monetary authority in the mid-1960s; the second phase starts in the 1990s, whereby the country's aspiration to become a member of the EU led to the ensuing gradual liberalisation of the financial sector. The adoption of the euro in 2008 marks the start of the third phase. Ever since the CBC is a member of the European System of Central Banks (ESCB) and participates in the design and implementation of the Eurosystem's monetary policy.

The purpose of this chapter is twofold. First, to examine the historical evolution of the monetary policy strategy in Cyprus aimed at delivering price stability under a fixed exchange rate regime. Particular attention is given to the conditions that were required under a fixed exchange rate regime, in order to achieve a credible and sustainable policy. Secondly, to provide an explanation as to how it achieved low inflation and, at the same time, strong economic growth in Cyprus, and, consequently, led the economy into the euro area. Emphasis is also placed on the choices made and the challenges faced by the domestic monetary authorities in the run-up to European Union (EU) accession and the adoption of the single currency.

As a background to this discussion, **Section 5.2** (p.161) of this chapter provides an overview of alternative monetary policy strategies for achieving price stability. **Section 5.3** (p.171) explains the rationale behind the choice of a fixed exchange rate monetary policy strategy by the Cyprus authorities. **Section 5.4** (p.175) discusses the factors that

contributed to the successful monetary policy strategy and implementation in Cyprus. **Sections 5.5** (p.181) and **5.6** (p.186) describe the various challenges that tested the specific policy settings under exceptional circumstances during the run-up to EU accession and the subsequent participation in the Exchange Rate Mechanism II (ERM II). **Section 5.6** (p.186) refers to the challenges faced by the Cyprus economy after the adoption of the euro and in the context of Eurosystem membership. At the end of the chapter, conclusions and policy lessons are being derived.

5.2 Alternative monetary policy strategies

Over the past 30 years, inflation has fallen dramatically in several industrialised as well as developing countries, to the point where currently many of them have reached price stability (Mishkin, 1997, 2006). According to Mishkin (2006), the main reason which contributed to the worldwide reduction in the level and fluctuation of inflation relates to the acceptance of the following six points, by almost all monetary and government authorities of the world: 1) there is no long-run inverse relationship between output (employment) and inflation; 2) public expectations are critical to monetary policy outcomes; 3) inflation has high costs; 4) monetary policy is subject to the time-inconsistency problem of Kydland and Prescott (1977); 5) central bank independence improves the efficiency of monetary policy; and 6) a strong “nominal anchor” is the key to producing optimum monetary policy outcomes. The recognition of the importance of those six points for the effectiveness of monetary policy marked a paradigm shift to the prevailing conditions of that time.

Specifically, until the 1970s a view widely shared among economists was that there is an inverse relationship between inflation and unemployment (see **Chapter 9, Box 9.2**, p.370) and that the existence or pursuit of some degree of inflation is necessary in order to maintain unem-

ployment at low levels. They argued that the cost of inflation was less than the cost of unemployment; therefore, reduced unemployment, would give a boost -- via the multiplier effect -- to the aggregate demand for goods and services, thus leading to a higher growth rate. Underlying this view was essentially the Keynesian School. Based on Keynes (1936), inflation is unjust and recession is a nuisance. Of the two, recession is worse: in a world where the majority of people are poor, it is worse to provoke unemployment than to disappoint the wealthier. As a result, Keynesians supported the use of discretionary monetary policy in order to limit cyclical swings, since “in the long run, we are all dead”. In this vein, in their effort to promote economic growth, central banks should increase the money supply in the economy to stimulate aggregate demand and thereby support employment and output growth, even if this implied higher inflation. Keynesian economic theory was strongly criticised in the 1970s, in the context of global stagflation, whereby many countries across the world experienced stagflation, i.e. very high inflation on the one hand, rising unemployment and subdued economic growth on the other.

One of the most prominent critics of this theory was Friedman (1968), who argued that “inflation is always and everywhere a monetary phenomenon”. The monetarist school, which developed around Milton Friedman’s ideas, states that money supply is, in the long run, neutral with respect to the real GDP, as long as markets adjust by absorbing any shocks. Hence, an increase in money supply will only lead to a rise in the price level.

In short, the decrease in inflation and the elimination of stagflation came about gradually, as monetary authorities realised that maintaining low and stable inflation over the medium term, irrespective of the strategy pursued, can increase productivity in the economy, and might even help increase the rate of economic growth (Mishkin, 2006). As Ben Bernanke put it in a 2003 speech about the stagflation of the 1970s, “...the Fed’s¹ credibility as an inflation-fighter was lost and inflation expectations began to rise”. The severity of the 1981-82 recession, the worst of the post-war period, clearly illustrates the implications of the ineffective monetary

1. Federal Reserve System.

policies of the preceding fifteen years, which failed to anchor inflation expectations², thus squandering the credibility of the monetary authorities and letting inflation get out of control. The heavy costs endured by most countries in their effort to reduce inflation indicate the implications of the loss of credibility suffered by central banks (Bernanke, 2003).

In the light of the above, the different monetary policy strategies followed since the mid-1980s have shared a common objective, i.e. to maintain price stability over the medium term. The primary objective of price stability was regarded as an appropriate goal, because, firstly it increases the transparency of monetary policy and, secondly, provides guidance for forming expectations about future price developments, thus helping the economy to stabilise. Specifically, as noted by Mishkin (1997) and the European Central Bank (2011), price stability is associated with the long-run neutrality of money, whereby any change in the quantity of money in the economy will be eventually reflected, over the medium to long term, in a change in the general level of prices without inducing any permanent changes in real variables, such as real output or employment. Besides, any changes in monetary policy can affect price developments with a significant time lag, which is highly uncertain. Thus, monetary policy needs to act in a forward-looking manner, since it can only maintain price stability over longer periods of time (European Central Bank, 2011).

The objective of price stability can be achieved either directly through inflation targeting or indirectly through an intermediate target such as monetary targeting (Mishkin, 2006). Alternatively, in a small open economy, such as the Cyprus economy, price stability can be achieved through exchange rate targeting. The advantages and disadvantages of these strategies are discussed below.

5.2.1 Inflation targeting

This strategy was first introduced in New Zealand in 1990 and was, subsequently, adopted by an increasing number of central banks

2. See Lucas (1972).

worldwide. In particular, between 1990 and 2010, inflation targeting was adopted by more than 25 industrialised and non-industrialised countries (Svensson, 2010), including the UK, Sweden and Poland in Europe, Chile, Mexico and others, in Latin America, Israel in the Middle East, and Thailand, the Philippines and other countries in the Far East. This strategy focuses directly on a pre-announced inflation target, rather than using intermediate monetary objectives and is based on the fact that a credible inflation target can reduce the level and the cost of inflation, as well as any potential risks to price stability stemming from inflationary expectations. A key element of this monetary framework is the selection of the price index to measure inflation.

Inflation targeting as a monetary policy strategy is characterised by: (1) an announced numerical inflation target, (2) an implementation of monetary policy that gives a major role to an inflation forecast and has been called 'inflation-forecast targeting', and (3) the high degree of transparency and accountability which characterises the strategy of inflation targeting (Svensson, 2008). Analytically, this strategy is associated with medium to long-term targets and some flexibility over the short term. Another important advantage of this strategy is the effective communication and proper interaction with the public, as the inflation target is typically announced as a deviation from or achievement of the targeted inflation rate over a specified time horizon. The resulting transparency of the monetary authority aims at anchoring inflation expectations at low levels. In this respect, the monetary authority should clearly explain how its current actions relate to the future path of the economy and should be explicit about how precisely it can control inflation (Sims, 2003). A consistent and systematic approach to monetary policy makes it more predictable, increasing its ability to influence inflation expectations. The fact that the numeric inflation target is typically determined either by the government jointly with the central bank or by the monetary authority alone reinforces the independent status of the central bank in its mandate to ensure price stability. According to papers by Kydland and Prescott

Box 5.1 The Taylor rule

Taylor rule is a simple monetary policy rule, which stipulates the level of interest rates in response to changes in inflation and economic activity. According to the original Taylor rule, the deviation of the short-term nominal interest rate i from the equilibrium real interest rate i^* depends on (i) divergences of the actual inflation rate π from the target inflation rate π^* and (ii) divergences of the nominal gross domestic product (GDP) q from potential output q^* . The equation is shown in logarithmic form below:

$$i - i^* = \theta_{\pi}(\pi - \pi^*) + \theta_q(q - q^*)$$

Taylor (1993), after whom this rule was named, developed a hypothetical but illustrative policy rule about the federal funds rate in the US, as presented in the equation below:

$$i = 2 + \pi + \frac{1}{2}(\pi - 2) + \frac{1}{2}(q - q^*)$$

Taylor noted that if the divergence of actual quarterly output from its linear trend is used to calculate the output gap ($q - q^*$) and if inflation is measured by the annual rate of change in the GDP deflator, then this specification can successfully describe the Fed's behaviour in the late 1980s and early 1990s (Taylor, 1993), as well as the decisions of the European Central Bank (ECB) between the fourth quarter of 2004 and the third quarter of 2008 (Cleanthous and Karamanou, 2011).

Although several economists have criticised the usefulness of this rule, given that the associated calculations cannot be accurate and the speed of the growth of an economy is not certain, the positive aspects of the rule should not be ignored. For instance, this rule can be adjusted to accommodate different inflation targets, as it mainly serves as a

potential guidepost, e.g. an increase/decrease in the nominal interest rate should be greater than the increase/decrease in inflation, in order to lead to the required increase/decrease in the real interest rate and thereby influence the real economy. If this general strategy is pursued over the long term, the credibility of the central bank is enhanced, which allows it to deviate, if necessary, over the short term from this strategy without jeopardising its control over inflation. Overall, the Taylor rule can be applied in practice in the context of a more general monetary policy strategy (Dougekos, 2008).

(1977) and Barro and Gordon (1983) on the “rules versus discretion” literature, inflation targeting would fall within the first category, although Mishkin (1997) argued that it is very far from a rigid rule (see **Box 5.1**, p.165). The increased accountability of the central bank limits the scope for discretion, which in turn can help avoid the time-inconsistency problem (Mishkin, 1999, 2006).

These considerations have led an increasing number of countries to adopt this strategy, although the policy of inflation targeting, being forward-looking in its nature, requires an adequate inflation forecasting framework and a relatively well developed financial market (Jonsson, 1999).

Despite the fact that a number of central banks have adopted inflation targeting as their monetary policy strategy, there are several reasons for which direct inflation targeting could provide an imperfect policy framework. Some of the disadvantages described in the literature (Mishkin and Posen, 1997; Cecchetti, 1998; Debelle and Lim, 1998; Mishkin, 1999; Bernanke et al., 1999), which however are not seen as serious objections to a properly designed inflation targeting framework, are the following: (i) the inflation target, if interpreted as a rule, might prove to be too rigid; (ii) the determination of the numeric target is, to a great extent, left to discretion; and (iii) inflation targeting in the short run may cause financial and output instability or lower economic growth (of course, once the target

has been achieved, economic growth is expected to return to normal levels). Furthermore, according to the ECB (European Central Bank, 2011), focusing entirely on an inflation forecast figure does not provide a comprehensive and reliable framework for identifying the nature of risks to price stability. The appropriate monetary policy response generally depends on the source of these risks. Therefore, as a minimum, it requires a deeper analysis of the underlying economic situation and behaviour than is captured in an inflation forecast alone. Besides, the forecast horizon taken into account is arbitrary and in many circumstances does not appear to be optimal (e.g. two-year forecast horizon), as certain factors that may affect inflation beyond the chosen horizon, such as asset price imbalances, should be taken into account in current monetary policy decisions. The strategy of inflation targeting is a complicated choice, since the central bank must have access to both a decent inflation forecasting model and policy instruments that affect the inflation forecast with reasonable precision (Johnsson, 1999). In addition, it is difficult to integrate the information contained in monetary aggregates into inflation forecasts that are based on conventional macroeconomic models (European Central Bank, 2011).

Finally, in the particular case of the Economic and Monetary Union (EMU), the reliance on a single forecast would not be an appropriate policy for the ECB, given the heterogeneity of the structure of the euro area economy. For this reason, the ECB has adopted a diversified approach to the analysis of economic data based on a variety of indicators and methodologies.

5.2.2 Monetary targeting

The selection of an intermediate monetary target should rest on some generally accepted conditions: the target should be stable, predictable and clear to the general public in order to ensure maximum transparency and credibility.

Money supply does constitute an intermediate target instrument, given that, as it is widely accepted, it fulfils all of the above criteria and, at the same time, contains information about future price developments. The relationship of money supply and inflation is given by the Quantity Theory of Money, which can help to derive an intermediate monetary target compatible with price stability. This relationship is represented in log-form by the following equation:

$$\Delta m = \Delta y + \Delta p - \Delta v$$

where Δ = rate of change, m = money supply, v = velocity of money, y = real gross domestic product (GDP) and p = domestic price level. Over the medium term, the velocity of money in an economy is constant, and output grows at its potential rate. Money supply growth can thus be defined on the basis of the inflation target. Any deviations of money supply from the target are monitored and monetary policy responds accordingly, with a view to maintaining inflation at the desirable levels.

The most typical example of a country that has pursued this strategy is Germany. It should be noted that monetary targeting rests on two premises (European Central Bank, 2011 and Hammond, 2007):

1. the presence of a stable relationship between money and the price level, in the form of a money demand equation over the medium term, as discussed above; and
2. the presence of a short-run relationship between the price of money, interest rates and quantity of money, so that monetary policy monitors and, therefore, influences the quantity of money within a short period of time.

One advantage of this strategy is that it allows the conduct of an independent monetary policy, since the monetary authority has full control over money supply. Second, it enables timely decision-making, as monetary data are published regularly and in a timely fashion, typically with a lag of only a few weeks. Thus, monetary authorities can

send almost immediate signals to markets about the stance of monetary policy and the intentions of policymakers to keep inflation in check (Mishkin, 1999).

On the downside, this strategy chiefly focuses on the monetary target, while in fact there are important variables other than money, which may influence price stability. Another important downside factor relates to the several definitions of money. This implies that the targeted definition has to be specified in advance, despite the fact that money is difficult to control – especially against the background of ongoing financial liberalisation. Furthermore, over the medium term, the attainment of the inflation target is based on the assumption that the economy will continue to grow at its potential rate, while the required stable relationship between inflation and monetary aggregates, as mentioned above, is almost impossible to maintain, particularly in the context of financial liberalisation and structural changes in the economy. Finally, in terms of communication, it is difficult to explain the concepts of this strategy to the general public.

5.2.3 Exchange rate targeting

The analysis of the relationship of the quantity of money, under the theory of Purchasing Power Parity, (PPP) with free movement of capital and free trade may be also represented by the following equation:

$$MV = eP^* Y$$

where $P = eP^*$, e = nominal exchange rate and P^* = level of import prices.

In this context, a central bank can choose e , i.e. the nominal exchange rate, as its intermediate target, especially in the case of small open economies, whereby movements in the exchange rate may have a strong impact on the general level of domestic prices, through their impact on import prices (Dougekos, 2008). According to the PPP theory, exchange

rate changes are determined by domestic and foreign inflation. The relationship $P = eP^*$ implies that any change in the nominal exchange rate must be equal to the differential between domestic and foreign inflation rates. In a fixed exchange rate environment, whereby the PPP theory collapses into an “inflation rate equality” theory, this implies that changes in foreign inflation must be proportionally reflected in changes in domestic inflation for the nominal exchange rate to remain unchanged (Carolina, 2006).

This strategy has been long used and has traditionally taken the form of fixing the exchange rate of the domestic currency vis-à-vis another currency or a commodity such as gold. In its more recent versions, this strategy has sought to contain exchange rate fluctuations within a specified band or to peg the domestic currency to another currency (or a basket of currencies), normally of a country (or countries) with a history of low inflation. The production and consumption of internationally traded goods represent a large share in GDP, and exchange rate developments can have a significant impact on the price level, through their impact on import prices (Mourmouras and Arghyrou, 1999).

Examples of countries that adopted this strategy in the past include France, with its well-known policy of “francfort”, the UK as well as several emerging economies. Also, many euro area candidate countries, including Cyprus, participated in the ERM, with defined fluctuating margins against the ECU³/euro.

Among the advantages of exchange rate targeting is the setting of a nominal anchor for monetary policy, which limits foreign exchange risk in the economy. Furthermore, it can act as a constraint on discretionary policy and has the advantage of simplicity, clarity and credibility. This helps anchor inflation expectations if the domestic currency is pegged to the currency of a traditionally low-inflation country (or to a basket of currencies), thus keeping the inflation rate for internationally traded goods under control (Mishkin, 1999). Furthermore, it helps weaken the time-inconsistency problem, as monetary policy has no longer the

3. ECU = European Currency Unit. It refers to an artificial basket (weighted average) of national currencies participating in the European Monetary System (the predecessor of the ECB), and was used as a unit of account by the European Community prior to the creation of the euro.

discretion to pursue an expansionary policy to obtain employment gains (Mishkin, 1999).

On the other hand, exchange rate targeting has a number of limitations. In particular, it leaves little room for conducting domestic monetary policy. Furthermore, shocks to the country/countries with which the domestic currency is pegged are directly transmitted to the targeting country. To alleviate this problem, it is imperative for the domestic economy to be flexible enough and have similar characteristics as the economy of the anchor country (e.g. in terms of inflation rates and trade openness). Otherwise, the targeting country loses the ability to use monetary policy tools to respond to domestic shocks that are independent of those affecting the anchor country with which the domestic currency is pegged (Mishkin, 1999), implying a loss of independent monetary policy. If, for instance, world inflation is stable, an increase in domestic interest rates aimed at containing domestic inflation will, inevitably, drive the nominal exchange rate down, which would however be inconsistent with the target being set by the monetary authority. In addition, the central bank's capability to act as a lender of last resort is limited, given that its main priority is to maintain liquidity at levels which are in line with the fixed exchange rate regime. Furthermore, the new exchange rate may not be the optimal one under the given economic conditions, and as a result this strategy may create conditions of financial instability, particularly if monetary policy lacks credibility, leaving the country open to speculative attacks on its currency. Lastly, an exit strategy should be envisaged, in the event that the threat of speculative attacks appears to be inevitable.

5.3 Exchange rate policy and price stability in Cyprus

5.3.1 Salient features of the Cyprus economy

As extensively discussed in **Chapter 3** (p.83), Cyprus traditionally followed a fixed exchange rate regime, whereby the Cyprus pound was pegged to a

currency or a basket of currencies. This choice is closely related to the country's characteristics (Syrichas, 2010). In particular, as extensively analysed in **Chapter 1** (p.1), Cyprus has a small, open and services-oriented economy. Its tertiary sector now accounts for approximately 80% of total gross value added, and has been growing steadily in the past two decades. Cyprus's real GDP growth has been historically robust, averaging 6%, and consistently above the average trend of the euro area and the EU as a whole. Over time, on the other hand, unemployment has remained at low levels. As a result, by the time of its accession, Cyprus had already achieved a satisfactory degree of real sustainable convergence with the EU. In 2010, Cyprus's GDP per capita in Purchasing Power terms accounted for 99% of the EU average. Traditionally, private consumption, exports of services and, to a lesser extent, investment have served as main drivers of growth for the Cyprus economy.

In the light of the above, one could reasonably argued that the appropriate and prudent monetary and exchange rate policy followed by the CBC since its establishment contributed to the smooth transition of Cyprus to the euro area on 1 January 2008 and, consequently, to the adoption of the euro as the official currency of the Republic of Cyprus.

5.3.2 Keeping inflation at bay

Overall, the fixed exchange rate arrangement has been instrumental in containing inflation in Cyprus. Specifically, domestic inflation as measured by the Consumer Price Index (see **Box 5.2**, p.173), has remained under control, averaging between 2%-3% over most of the past 40 years, with the most notable exception being the experience of the 1970s. Even during that decade, however, the increase in inflation was not driven by the pursue of an expansionary monetary policy, but largely reflected the surge in inflation in Cyprus and its trading partners, as a result of the international oil crisis (see **Chapter 9, Chart 9.1**,

Box 5.2 Focusing on the Consumer Price Index for monetary policy purposes

In the context of monetary policy and price stability, the CBC used to monitor the Consumer Price Index (CPI) rather than the Harmonised Index of Consumer Prices (HICP), which the ECB monitors. The main reason for its selection was the greater familiarity of the general public to the former index at the time, as for many years the CPI, together with its sub-components, was the only index that was released in a timely manner and on a regular basis by the Statistical Service of Cyprus (CYSTAT). This added to the credibility and reliability of the CPI at the international level. Another important factor behind the choice of the CPI was its association with the COLA indexation system, which takes place twice a year (namely, in January and July), and may have implications for price stability. At the same time, emphasis was also given on the HICP to ensure that upon adoption of the euro the public would become familiar with the ECB's new quantitative target.

At times, it has been argued that the CBC should place greater emphasis on structural or core measures of inflation, or even specify its target in terms of a measure of core inflation. These arguments rested on the fact that the Cyprus economy is strongly influenced by exogenous factors, which cause temporary fluctuations in prices and consequently in the CPI. The CBC believed that such an index would not fully meet the aforementioned requirements for credibility, reliability and timeliness, as its use would lead to another criticism, given that its calculation was not straightforward or unambiguous. At the same time, the medium-term oriented monetary policy strategy ensured that the Monetary Policy Committee of the CBC would look beyond short-term price volatility in its decision-making. Similarly the ECB, as argued by Bini

Smaghi (2011) a member of the Executive Board of the ECB, core inflation is not a good predictor of medium-term inflationary pressures, since, among other things, food and energy prices have a lasting impact on other items included in the aggregate measure of consumer prices. Rich and Steindel (2005) argue that, in general, core inflation indices do not lead to better inflation forecasts. According to Berg (2005), it is also indicative that 18 out of 20 central banks, which follow an inflation targeting strategy, use the overall index of consumer prices to conduct monetary policy. Notwithstanding this, it should be noted that core inflation indices have not been overlooked by the CBC. In contrast, the importance of these indices had long been recognised and had, thus, been contributing to the effective conduct of monetary policy¹.

1. To illustrate the importance of core inflation in the CBC's monetary policy decisions, an excerpt from the announcement of the Monetary Policy Committee of the CBC on 4 April 2003 is given: "[...] Concerns have also been expressed about a surge in inflation, to 4,84% in the first quarter of the year, although this increase was mainly due to temporary and conjunctural factors, with core inflation remaining at relatively appropriate levels".

p.360). The positive performance of domestic inflation in Cyprus, especially in the second half of the 1970s, is all the more remarkable in the light of the devastating effects of the Turkish invasion in 1974, and the occupation of more than a third of its territory by Turkey. The pegging of the Cyprus pound to anchor currencies with a long track record of price stability, helped to keep domestic inflation at bay on the back of cheaper imports. In other words, the high degree of trade openness of the Cypriot economy and, in consequence, the relatively high weight of cheaper imported products in the CPI basket, contributed to the overall containment of the general level of prices in Cyprus (see **Chapter 9**, p.357). The experience of Cyprus, thus, highlights the long-term benefits of a monetary policy focused on price stability, even in the presence of shocks that might have been seen as justifying looser, less responsible monetary policy in other contexts (Orphanides, 2008).

Box 5.3 The safeguarding of the CBC's independence

An important step towards harmonisation with the EU acquis, was the enactment of the new *Central Bank of Cyprus Law of 2002 (Law 138(I)/2002)* by the Parliament on 5 July 2002. The new law established the CBC's independence and prohibited the direct financing of the public sector by the CBC. With a view to safeguarding the CBC's institutional independence, the relevant articles of the Constitution of the Republic of Cyprus were amended with the adoption by the Parliament of the *Central Bank of Cyprus Law of 2002, Fourth Amendment (Law 104(I)/2002)*.

According to the new CBC law, and the amendment of the relevant articles of the Constitution of the Republic of Cyprus, the CBC acquired full independence. This is in line with the EU acquis, as provided for in the Treaty on European Union and in the Statute of the ESCB and of the ECB. The primary objective and the main goal of the CBC, according to the *Central Bank of Cyprus Law of 2002-2003*, was to ensure price stability, as clearly designated in the EU acquis.

5.4 Critical elements to the success of the CBC's monetary policy strategy

As mentioned in the previous section, since the establishment of the Republic of Cyprus, the performance of the country in terms of inflation over a period of more than forty years has been impressive, all the more so in the context of strong economic growth and full employment conditions. This achievement can primarily be attributed to the monetary policy strategy of a fixed exchange rate regime, which was based on the clear and unambiguous pegging of the Cyprus pound to a currency or basket of currencies. The strict adherence of the CBC to this policy was

confirmed during the Turkish invasion and its aftermath, as well as during the ERM crisis in 1992. During these two critical periods, the pound remained firmly pegged, even though there were significant competitiveness losses resulting from the successive devaluations of Cyprus's major trading partners' currencies.

The success of the CBC's monetary policy strategy could be attributed to four key elements. The first element of this strategy was the safeguarding of the credibility of the fixed exchange rate policy, even during periods of quite adverse economic conditions. The commitment of the CBC, and the testing of this simple monetary rule in times of distress, reinforced public confidence in the appropriateness of this strategy and anchored inflation expectations. The success of the policy also rested on the fact that the CBC's decisions were taken independently from any political interference. Although CBC independence was only officially granted in 2002 (see **Box 5.3**, p.175), the government's representatives on the CBC's Board of Directors very rarely, if ever, vetoed the monetary decisions.

Apart from the credibility factor, however, the economic conditions prevailing in Cyprus at the time, and especially in critical periods, excluded the use of the exchange rate as a means of restoring competitiveness. Analytically, the dependence of the Cyprus economy on imports meant that any short-term benefits accruing from a devaluation would have been offset by the higher cost of imports and the subsequent rise in prices due to the prevalence of COLA (cost of living adjustment) in wage contracts. In other words, full employment conditions, the existence of COLA and low price elasticities of the demand for exports and imports of goods implied that a currency devaluation in Cyprus would have brought about a worsening of the trade account, with the higher demand for exports completely offset by the resulting higher increase in expenditure on imports. Using an econometric model, Asseery and Perdakis (1991) estimated the sum of price elasticities of exports and imports of goods in Cyprus to be less than unity. As a result,

they argue that according to the Marshall-Lerner⁴ condition the trade deficits cannot be corrected by devaluations of the domestic currency due to the inelastic trade prices.

The resolve, credibility and independence of the CBC were necessary but not sufficient conditions for ensuring the success of the exchange rate targeting strategy. The authorities recognised the well-established “impossible trinity” theorem (see **Box 5.4**, p.178) in international economics. They, therefore, needed to ensure that monetary conditions were consistent with economic fundamentals.

In light of the above, the second element that contributed to the success of this policy was the close monitoring of monetary aggregates and credit, particularly credit to the private sector, with a view towards reigning in excessive rates of credit expansion that might threaten price stability. The third element was the close monitoring of the current account deficit, both as an indicator of inflationary pressures and as a warning signal to avoid external imbalances (Orphanides, 2008). The theoretical underpinnings of this strategy can be found in the balance of payment crises literature (Krugman, 1979 and Flood and Garber, 1984). Using a simple monetary model, Flood and Garber have shown that in a small country with purchasing power parity and free capital mobility, excessive credit growth will lead to a gradual draining of foreign reserves. Agents anticipating the eventual exhaustion of reserves and the collapse of the fixed exchange rate regime will launch speculative attacks on the regime. These self-fulfilling expectations will almost inevitably lead more rapidly to the collapse of the regime. Therefore, one might infer from Flood and Garber the importance of closely monitoring the expansion of credit and the state of the current account (i.e. the level of foreign reserves) for the sustainability of the parity. This is exactly what the Cypriot authorities had been doing.

In spite of the above, there were some instances where economic behaviour (as reflected in monetary aggregates) was not consistent with economic fundamentals. The trinity was violated and, consequently, the sustainability of the fixed exchange rate regime was threatened.

4. See Lerner (1944) and Marshall (1923).

Box 5.4 The impossible trinity theorem

According to the impossible trinity theorem by Obstfeld and Taylor (1998, 2002) and Obstfeld, Shambaugh and Taylor (2005), a country cannot, simultaneously, have an independent monetary policy, a fixed exchange rate regime and free capital movement. Any violation of the above theory would simply imply a total collapse of the fixed exchange rate regime. In other words, a macroeconomic policy regime can include, at most, two elements of the three aforementioned policy goals. As a result, a country's priorities in terms of these goals determine its choice of monetary system.

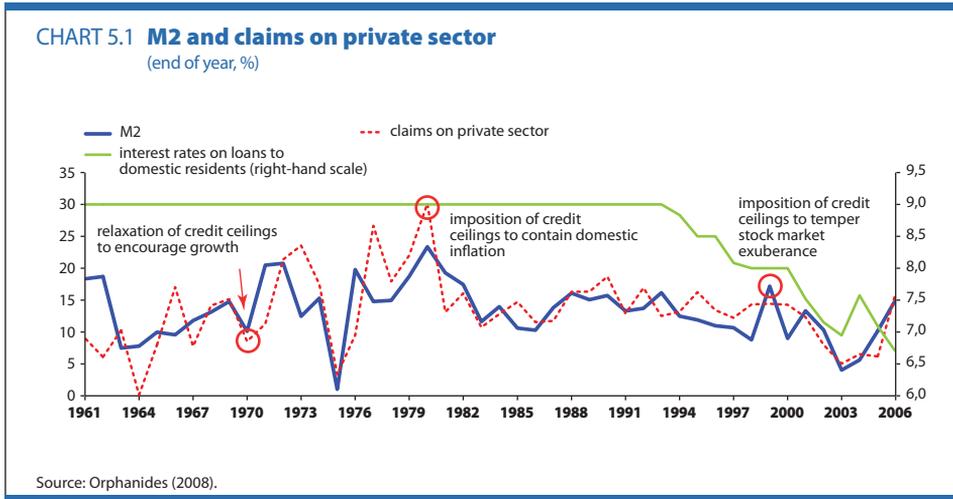
In cases where an economy has a fixed exchange rate, capital inflows will result in the monetary authority intervening in the market to prevent an appreciation of the domestic currency. Given the impossible trinity theorem, in an environment with fixed exchange rate regime and free capital movements, the central bank should, therefore, specify fluctuation margins for the exchange rate, to allow for some independence of monetary policy. Consequently, in the event of an increase (or decrease) in interest rates, the exchange rate can fluctuate within the set margins, and monetary decisions can be effective. In this way, the monetary authority maintains the use of the interest rate tool to the extent allowed by the set fluctuation margins, as was the case of Cyprus.

At the same time, monetary policy can be partly effective when domestic and foreign assets are seen by investors as imperfect substitutes for one another, which means that the central bank can increase its policy rates up to a certain level, before foreign capital starts flowing into the country. In the context of a fixed exchange rate, this provides the monetary authority with some flexibility, depending on the risk premium that foreign investors require for investing in the domestic economy. In the context of a fixed exchange rate with set fluctuation margins, the degree of imperfect substitution of assets will

simply increase the level of efficiency of the monetary authority. In both cases, the nominal exchange rate may remain unchanged following an increase in interest rates, while the real exchange rate may increase through the effect of domestic prices.

Nevertheless, the rational use of conventional and non-conventional tools helped mitigate any consequent potential negative effects. Capital controls prevailing in Cyprus for most of the period under consideration, certainly helped authorities to overcome the impossible trinity problem and contributed to the sustainment of the fixed exchange rate regime. Nevertheless, the importance of capital controls must not be overemphasised. The literature (e.g. Wyplosz, 1986) and international experience have shown that capital restrictions might delay a speculative attack but cannot prevent the eventual collapse of a fixed exchange rate regime, if inconsistent policies are followed for a sufficiently long period of time. The longevity of the Cypriot regime should primarily be attributed to the fact that for most of the time the authorities and the CBC in particular, followed prudent policies. In periods when undesirable economic developments arose, the authorities pursued a flexible strategy, which adapted to the prevailing economic environment.

The deployment of non-traditional monetary policy tools, such as capital restrictions and quantitative credit controls, proved useful supplements to the more traditional tools – and indeed sometimes the crucial main tools – for controlling threats towards imbalances. These tools were, thus, considered to be the fourth element of the success of the CBC's monetary policy strategy. Non-traditional tools were, however, used with caution, in order to control and correct imbalances in the short term, and not to obscure or prolong them. Care was certainly needed, because it was well understood that, when improperly used, controls and restraints can easily engender unsustainable imbalances, thus increasing the risk of economic collapse at a later stage (Orphanides, 2008).



An illustrative example of the use of non-traditional tools in the implementation of monetary policy was the imposition of credit ceilings to the private sector. **Chart 5.1** shows the timing of imposition or relaxation of credit ceilings in specific periods of time. Namely, in 1970 the CBC decided upon the relaxation of credit ceilings to encourage growth, following the adverse economic impact of the conflicts between the island's two ethnic communities in the 1960s. Conversely, in 1980 and 2000 the CBC imposed credit ceilings in its effort, in the former case, to control an inflation spike and, in the latter case, to temper an episode of stock market exuberance (Orphanides, 2008). From 1961 to 2006, the average growth rates of M2 and credit to the private sector stood at 13,3% and 2,9%, respectively.

The effectiveness of monetary policy in Cyprus was tested on several occasions, amid the various challenges and structural and institutional reforms that the EU accession process entailed. Such reforms included the liberalisation of certain prices, interest rates, as well as the liberalisation of capital movement and the further development of financial intermediation. These changes called for swift adjustments and an active policy response by the CBC in order to maintain effective monetary stability, which it successfully carried out (Orphanides, 2008).

5.5 Accession to the European Union: financial liberalisation and policy challenges for the CBC

Most accession countries are faced with the challenge of designing an appropriate exchange rate strategy that will eventually lead to the adoption of the euro. The EU position holds that in the pre-accession phase no single strategy is prescribed and accession countries are free to choose any regime they consider appropriate, ranging from currency board arrangements to free floating. Upon accession, exchange rate policy will have to be treated as a matter of common interest, refraining from competitive devaluations. Accession countries will still have the flexibility in selecting an exchange rate regime, but they are expected to join ERM II before adopting the euro. ERM II can accommodate several exchange rate arrangements, including euro-based currency boards, crawling pegs and pegging to currencies other than the euro.

Focusing on Cyprus, the appropriate exchange rate strategy for accession to ERM II and adoption of the euro had been in place as early as 1992, twelve years before accession to the EU. Preparations were not confined to exchange rate policy only, but were extended to other areas, most notably the monetary and banking sectors. This aimed at ensuring that the transition to a new liberalised environment was based on a well thought-out and encompassed programme. In the middle of the 1990s, specifically on 1 January 1996, the CBC launched a new operational framework for conducting monetary policy (see **Box 5.5**, p.183) through open market operations. These changes paved the way for the introduction of two important structural reforms in Cyprus. First and foremost, there was the abolition of the long-lived (of more than 50 years) statutory interest rate ceiling, which was accompanied by a relaxation of all restrictions on medium and long-term foreign currency borrowing by Cypriots. The second reform related to the new legal framework for banking prepared by the CBC, with the aim of

strengthening banking supervision and prudential regulation. This reform was essential in order to enable the banking system to cope in an environment of free capital flows and was finally completed in 2004 upon Cyprus's accession to the EU.

Heading for EU membership and ERM II participation, financial liberalisation was unavoidable. Consequently, the authorities could no longer rely on capital restrictions to sustain the parity. Following the abolition, in January 2001, of restrictions on medium-term (with maturities over two years) and long-term borrowing by domestic residents, capital inflows rose significantly, as private individuals and firms increased their borrowing in foreign currency, mostly in euro, taking advantage of the interest rate differential between euro-denominated and Cyprus pound-denominated loans. This exerted an upward pressure on the exchange rate, and it also exposed borrowers to increased exchange rate risks. These developments prompted the CBC to abolish the narrow margins of $\pm 2.25\%$ on 13 August 2001, so that only the $\pm 15\%$ margins remained, in line with ERM II. It is worth noting that, despite the abolition of the $\pm 2.25\%$ bands, exchange rate fluctuations remained within these narrow margins, which in general terms can be attributed to investors' confidence in the exchange rate policy of the Cypriot authorities.

On the other hand, the decrease in foreign borrowing by domestic residents could be, partly, attributed to the concurrent reduction of 50 basis points in the CBC interest rates, on 13 August 2001, as well as on the ensuing narrowing of the interest rate differential between euro-denominated and pound-denominated loans. The decision to lower interest rates in Cyprus was deemed necessary in view of the anticipated negative impact of the global economic slowdown on the Cyprus economy. Against this background, the CBC proceeded with two further cuts in interest rates, namely in September and November 2001, by 50 basis points on each occasion.

In addition, the significant capital inflows that were recorded in the

Box 5.5 **Introduction of the new monetary policy framework as of 1 January 1996**

Liquidity requirement/minimum reserve requirement ratio

The liquidity requirement ratio was abolished at end-December 1995. A proportion equal to 20% of the average weekly deposits during 1995 was frozen as at 1 January 1996. This frozen stock consisted of Treasury bill holdings, which the CBC automatically renewed upon maturity. These bills borne a fixed interest rate of 6% per annum and were not tradable. The frozen stock of Treasury bills held by banks (accounting for 20% of their deposits) was gradually phased out over a period of 5-7 years.

A proportion equal to 7% of average weekly deposits during the first three weeks of December 1995 was transferred to a new minimum reserve account. Any additional increase in deposits (from January 1996 onwards) was subject to the new minimum reserve requirement of 7% per annum. The minimum reserve account has been the only operational account of Monetary and Financial Institutions (MFIs) with the CBC. The average daily balances in this account, up to the required proportion of 7%, were remunerated at an interest rate of 6% per annum. Any deposits in excess of the required proportion were not remunerated.

Repurchase agreements of government securities (repos and reverse repos)

As from 1 January 1996, the main monetary policy instrument was the repurchase and reverse repurchase agreements of government securities between MFIs and the CBC. Operations of liquidity injection or absorption in the money market were conducted in the form of repos/reverse repos of government securities using auctions, whenever the CBC deemed it necessary. Their maturity did not exceed 15 days, and the underlying securities used were Treasury bills.

Short-term facility to commercial banks against collateral (Lombard type facility)

The CBC's interest rate on short-term refinancing to commercial banks against collateral was designed to provide an upper end to the fluctuations of the interbank interest rates. Changes in the CBC's policy rate signalled changes in the stance of monetary policy. Credit granted to banks under the Lombard facility had an overnight maturity and was collateralised against government securities (Treasury bills).

Overnight deposit facility

As a temporary measure, the CBC introduced a special overnight deposit facility to absorb short-term excess liquidity, with an interest rate of 5% per annum. This instrument was only applicable for 1996.

Cyprus economy were difficult to manage and were largely responsible for the excess market liquidity observed since early 2001, thus undermining the effectiveness of monetary policy. The CBC intervened regularly in the market to mop up excess liquidity, in order to prevent monetary policy from becoming too lax. The operations conducted by the CBC, at the time, were facilitated by the fact that demand for credit remained subdued in 2002 compared with the previous year, therefore commercial banks were willing to surrender their excess liquidity to the CBC. The financial dimension of these operations should not be ignored, as sterilised interventions were depleting the CBC's profits. The problem was further complicated by the fact that limited exchange rate flexibility caused the build-up of unhedged foreign liabilities by domestic firms. Under these circumstances, in the event of a successful speculative attack on the

peg, an ensuing devaluation of the domestic currency would have resulted in a significant cost to the balance sheets of firms, the banking system and, in general, the whole economy.

The aforementioned experience highlights the difficulty, which the authorities faced when using the exchange rate as a nominal anchor. As for the sustainability issue, there is much debate among economists, with some opting for the “bipolar view” and others for the “corner solutions view”⁵. According to the latter one, only the two extreme types of exchange rate regimes, i.e. a credible hard peg, such as euro-based currency boards, or a free float, are viable. Intermediate regimes, such as soft pegs, are considered to be crisis-prone and increasingly less feasible in an environment of more integrated markets.

In 2004, the conduct of monetary and exchange rate policy by the CBC was further complicated by adverse fiscal conditions, in conjunction with political uncertainty surrounding the prospects for a solution of the Cyprus problem and unfounded rumours of an imminent devaluation of the Cyprus pound. The severe capital outflows and the concomitant currency depreciation pressures in the aftermath of these developments, obliged the CBC to support the exchange rate. At an extraordinary meeting on the eve of the EU accession, the CBC’s Monetary Policy Committee decided to increase its interest rates by 100 basis points and at the same time to send a strong signal supporting the Cyprus pound. As a result, markets stabilised and capital flows returned to their normal seasonal pattern.

Another challenge faced by the Cyprus economy in the period under review relates to the real estate market. Specifically, the strong increase in house prices was already underway in the run-up to EU accession and was mainly fuelled by increased foreign and domestic demand. The high pace of house price increases and the exposure of the banking sector to the real estate market, through the granting of mortgage loans, raised concerns about possible negative repercussions for household debt and servicing, as well as for banks’ loan portfolios, especially in the case of tighter

5. See Fischer (2001).

monetary conditions. With a view to safeguarding financial stability and protecting deposits, the CBC issued a circular to banks requiring them to assess more thoroughly the creditworthiness of loan applicants and to strictly adhere to the set loan to value ratio. At the same time, the CBC communicated extensively to the public the risks inherent in mortgage borrowing.

5.6 Participation of the Cyprus pound in ERM II

Despite the new challenges that the economy faced after the accession of Cyprus to the EU, the prudent mix of interest rate policy and exchange rate flexibility⁶ facilitated considerably the Cyprus pound participation in ERM II. Yet, a number of key policy questions, which all acceding countries were faced with, needed to be addressed prior to ERM II entry: (1) what was the appropriate time for joining? (2) what would be an appropriate central parity rate? and (3) what is the optimal length of time within ERM II, before officially adopting the euro?

Given the unilateral peg of the pound to the ECU since 1992, and essentially the successful shadowing of ERM II throughout these years, it was decided that the pound would join ERM II at the current parity, immediately upon accession of the country to the EU. This parity had been tested over the years and it therefore provided a natural policy orientation, provided of course economic policies remained prudent and consistent. The issue of the appropriate central parity had to be jointly addressed with the ECB, as well as with the central bank governors and finance ministers of the EU Member States. Apart from the successful long track record of the Cypriot currency, the prevailing central parity of €1,7086 per Cyprus pound was found to be consistent with Cyprus' macroeconomic fundamentals⁷.

Both the ECB and the European Commission view the participation in the ERM II as a meaningful economic policy framework, within which the

6. Historically, the parity of the Cyprus pound vis-à-vis other currencies was administratively determined by the CBC. As of 1 January 2001, the fixing rates of the Cyprus pound against the euro, the US dollar and the pound sterling were determined through an auction process during daily meetings between the CBC and the commercial banks.

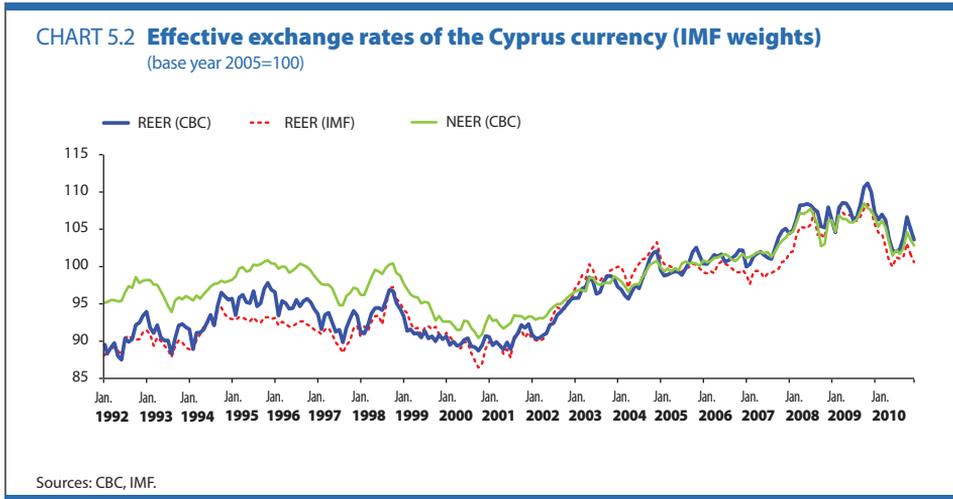
7. See, for instance, Kyriacou and Papageorgiou (2007), Pattichis et al. (2003), and International Monetary Fund (2005).

accession countries can achieve further real and nominal convergence and prepare for monetary integration. A relatively long but successful convergence period prior to the eventual adoption of the euro is of paramount importance for successful membership in the euro area by candidate member countries. Not only had Cyprus achieved price stability, but by the time of its accession to the EU, it had also achieved both significant nominal and real convergence⁸. In turn, this placed the Cyprus economy in a strong position to enter ERM II and adopt the euro after participating in the mechanism for a minimal period only. Besides the adherence to a stable parity of the Cyprus pound against the anchor currency over the years, another argument in favour of not delaying the adoption of the euro was the fact that the loss of the exchange rate tool would not impose any problems in the case of Cyprus. As already explained, the exchange rate in Cyprus had never been used as a tool to restore competitiveness, even in times of turbulence, such as in 1974, or during the 1992 ERM crisis.

During the ERM II period, the Cyprus economy continued to be confronted with some old and some new challenges. On account of the prevailing interest rate differential between Cyprus and the euro area, capital continued to flow into the island partly in the form of foreign currency borrowing, which was mostly used for the purchase of property and consumption. Fast credit growth, coupled with the brisk pace of economic activity, further exacerbated inflationary pressures. Inflation, particularly in the second half of 2007, followed an upward trend on account of rising oil and food prices. The current account deficit increased to 16,8% by the end of 2007, reaching its highest level since 1978.

The widening of the current account deficit in recent years could also be attributed to the appreciation (in nominal and real effective terms) of

8. One of the main concerns that should be taken into account in the design of the appropriate exchange rate policy is the fact that, during the convergence process, a country may experience higher inflation, through the so-called Balassa-Samuelson (BS) effect. However, evidence from acceding countries suggests that only a small fraction of the inflation differential vis-à-vis the euro area (1%-3% on an annual basis) is due to the BS effect. In the case of Cyprus, the BS effect could be much weaker, given (i) that the per capita income in Cyprus in PPP terms was approximately 80% of the euro area average in 2005; and (ii) the high trade openness of the Cyprus economy, implying that the manufacturing sector was not a significant part of the total economy.



the exchange rate of the Cyprus pound⁹, as illustrated in **Chart 5.2**. The sharp rise in the nominal effective exchange rate NEER (CBC) broadly mirrored the movements of the Cyprus pound's anchor currency, i.e. the euro. After 2002, the appreciation in real effective terms REER (CBC) was even more pronounced. The divergence between the nominal and the real effective exchange rate initially stemmed from an increase in domestic inflation, driven by harmonisation-induced increases in excise taxes. Over the last years, on account of rising international oil and food commodity prices, inflation in Cyprus has remained considerably above the respective euro area figure.

The CBC reacted to these developments in terms of its communication to the public, by providing frequent reminders about the exchange rate risk associated with borrowing in foreign currency. In the area of macroprudential supervision, the CBC issued guidelines reducing the maximum loan-to-value ratio for the purchase or construction of secondary residence from 70% to 60% of the property's value and delayed decreases in the minimum reserve ratio to euro area levels. The prevailing conditions prevented the CBC from fully aligning interest rates and the minimum reserve ratio to euro area levels prior to the adoption of the euro.

9. The effective exchange rate of the Cyprus pound in real terms "REER IMF" is calculated by the International Monetary Fund (IMF) and takes into account third country competition (19 countries). The deflator used is the national CPI. However, due to the time lag in publishing this index, the CBC calculates a simplified index using 8 instead of 19 countries, namely the "REER CBC". The same index is also calculated by the CBC in nominal terms.

5.7 The adoption of the euro and the associated challenges

The irrevocable fixing of the exchange rate, i.e. the setting of the conversion rate of the Cyprus pound to the euro, essentially meant the relinquishment of the conduct of monetary policy by the CBC (see **Box 5.6**, p.191). Consequently, as from 1 January 2008, setting domestic interest rates to contain inflation at the national level was no longer possible, since monetary policy decisions were now taken by the Governing Council of the ECB, based on the prevailing conditions at the euro area level.

At the time of relinquishing domestic monetary policy, however, pronounced inflationary pressures and signs of overheating had already started mounting in the Cyprus economy. In particular, HICP-based inflation surged to 5,4% in August 2008, which was the result of both domestic and exogenous factors, as well as policy decisions precipitated by the accession of Cyprus to the euro area. On the domestic front, fast credit expansion was fuelling domestic demand, which added to higher inflation in the context of already robust economic activity (i.e. above the potential rate). The required reduction in the key policy rates of the CBC by 50 basis points in December 2007 and in the minimum reserve ratio to the level applied in the Eurosystem on 1 January 2008, as dictated by the entry into the euro area, were two key factors behind the rapid credit expansion. The surge in oil and food prices further exacerbated domestic inflationary pressures. Moreover, heightened inflation expectations, linked to higher inflation perceptions formed in the run-up to euro adoption, appear to have also played a role, albeit a limited one, in aggravating price pressures through wage and price-setting behaviour. It should also be noted that, excessive credit growth was also reflected in the widening of the current account deficit in 2007.

In the light of Cyprus's accession to the euro area, it soon became evident that monetary policy could no longer address the aforementioned challenges. The burden of tackling these challenges would mainly fall on

other policy areas, such as banking supervision and communication policy of the CBC. Indeed, as most of the credit growth was channelled to the real estate and construction sectors, the CBC took macroprudential measures. Among other things, the CBC reduced the loan-to-value ratio associated with loans for the purchase or construction of secondary residence from 70% to 60% of the property's value, as a means of curtailing excessive credit growth and, hence, moderating the exposure of the banking sector to risks associated with these sectors. In terms of communication policy, the CBC made frequent reminders to the public about the exchange rate risk entailed in foreign currency borrowing. These were, in fact, the only measures that the CBC could take, which were relaxed at end-May 2008 in light of some deceleration in key credit aggregates.

In addition, following euro area accession, it was imperative to ensure that domestic inflation remained close to the euro area average, as it is well-established that in the context of a monetary union, adverse inflation differentials are detrimental to competitiveness and, thus harm employment and eventually economic growth. Therefore, sound fiscal policies and the implementation of structural reforms aimed at fostering productivity and enhancing the labour market's flexibility and adaptability are essential tools for containing inflationary pressures and preserving competitiveness. Fiscal policies should also be oriented towards tackling the problem of long-term sustainability of public finances, which is particularly acute in Cyprus owing to an ageing population and the viability problem of the Social Insurance Fund (Syrichas, 2008).

However, the considerable increase in the fiscal deficit in 2009 and 2010, to 6,1% and 5,3% of GDP respectively, breached the fiscal condition of the Treaty, for a fiscal deficit of up to 3% of GDP and, as a result, Cyprus was subject to the excessive deficit procedure (EDP). This development, coupled with the linkage of the domestic banking sector and, in general, of the Cyprus economy with the course of the Greek economy, triggered a series of downgrades of the Cyprus economy and domestic banks by

Box 5.6 The role of the CBC following Cyprus's entry into the euro area

On 15 March 2007, the Parliament passed a new law (*Law No. 34(I)/2007 amending the Central Bank of Cyprus Laws of 2002-2003*). In doing so, the CBC legislation was fully harmonised with the euro area acquis, while legal convergence was achieved, a necessary requirement for the adoption of the euro. The relevant draft law was prepared by the CBC, in accordance with the instructions of the ECB and the European Commission. Specifically, with effect 1 January 2008, certain provisions of the existing legislation were amended or annulled. These provisions, which fall within the responsibility of the ECB, mainly referred to monetary policy, exchange rate policy, the issuance of banknotes and coins, accounting principles for the CBC's financial statements to be submitted to the ECB, and the auditing of the CBC's financial statements.

Cyprus's accession into the euro area has brought about some important changes in the CBC's functions and role. As of 1 January 2008, the CBC has become member of the Eurosystem, i.e. the system of central banks of the euro area which comprises the ECB and the national central banks of EU Member States which have adopted the euro. This independent system of central banks is responsible for managing the single currency and for conducting the euro area monetary policy, with the primary objective of price stability, which constitutes an essential precondition for smooth and sustainable growth.

The Governor of the CBC participates in the Governing Council of the ECB as an equal member, and has the possibility to intervene in monetary policy or other policy issues which arise. The task of all Governing Council members is to contribute to the formation and conduct of the single monetary policy in the euro area.

The new role of the CBC, in the context of the Governing Council of the ECB, implies a closer monitoring and analysis of euro area

economic developments. Naturally, the Governor of each participating national central bank is better able to monitor domestic economic developments. Thus, the CBC, apart from the overall responsibility for monitoring, analysing and assessing developments in the euro area, also has a keen interest in comparing euro area developments with the indicators of the Cyprus economy, such as economic activity, inflation, fiscal position and domestic competitiveness. In the context of its new role, the CBC continues to provide its guidance and opinion to relevant economic agents in Cyprus, engaging in all necessary policy recommendations that will help ensure macroeconomic stability at the national level.

In conclusion, the loss of monetary policy tool at the national level has upgraded the role of fiscal policy. In particular, the need for a disciplined fiscal policy and the implementation of structural reforms in the Cyprus economy becomes all the more urgent after the country's entry into the euro area. This course of action constitutes the only policy mix to improve productivity and competitiveness, with a view to ensuring, over time, the progress and increase of the standard of living in Cyprus.

international rating agencies. Eventually, in 2011, Cyprus was excluded from international markets. The above challenges, in conjunction with further deterioration of the already low competitiveness of the Cyprus economy and the persistent current account deficits, whose foreign investment financing became all the more uncertain, have questioned Cyprus's role as a financial hub and have seriously undermined the growth prospects of its economy.

Nevertheless, it should be noted that the fiscal consolidation measures which were enacted by the Parliament in the second half of 2011, especially those aimed at containing government expenditures, put fiscal policy back onto a sustainable track. As noted in the CBC's *Economic Bulletin* in December 2011, the achievement of the government's target

for a fiscal deficit of below 3% of GDP in 2012 is considered attainable, subject to an immediate and full implementation of the whole set of measures, as defined in the budget for 2012 endorsed on 16 December 2011, and of the additional measures passed by the Parliament on 14 December 2011. In connection with the above, an analysis by the European Commission released on 11 January 2012¹⁰ assessing the budgetary situation of Cyprus, also deems the fiscal target of less than 3% of GDP in 2012 to be feasible. At the same time, the government's announcements to press ahead with fiscal consolidation and to design and implement development measures to boost economic growth, along with the CBC's efforts to best manage financial risks and to further reinforce the banking supervision framework, are expected to have a positive impact on the recovery and robustness of the Cyprus economy.

5.8 Conclusions and policy lessons

The preceding analysis has shown that adherence to a simple monetary rule, such as an exchange rate target, particularly for a small open economy like Cyprus, can confer credibility on a central bank and deliver price stability. Indeed, the long history of price stability in Cyprus provides a clear evidence of the policy's success. Maintaining a clear and unambiguous policy stance, even under strain, can boost policy credibility and facilitate future policies. This hard-earned credibility requires that a central bank enjoys some degree of independence. This is especially important during phases of economic downturn or instability, the strategy pursued by the central bank might be tested, as political pressure for devaluation increases. Succumbing to these pressures, could seriously undermine the credibility of a central bank. Another important lesson, drawn from the Cyprus case is that this strategy needs to be supplemented by additional measures. Capital controls can be effective, though they are not an option within the European Union. Monetary aggregates, and in particular credit, should be closely monitored and controlled, if necessary.

10. See European Commission (2012a and 2012b).

The current account also warrants close monitoring. This indicator, along with monetary indicators, reveals latent inflationary pressures and indicates the sustainability of the exchange rate regime.

Accession to the EU and preparation for entry to the euro area, would render many of the supplementary measures either invalid or very difficult to apply. The eventual abolition of all capital movement restrictions requires that the authorities have well in advance prepared a comprehensively thought-out plan for the introduction of the necessary structural reforms and the abolition of any obstacles on the monetary and exchange rate fronts. Experience has shown that in Cyprus, as well as in almost all of the new entrants to the EU, in their run-up to ERM II and the adoption of the single currency, capital flows may be influenced by higher domestic interest rates compared with those in the euro area, while at the same time markets may speculate about the exchange rate of domestic currencies versus the euro upon accession. Countries may also be faced with asset booms and higher inflationary pressures. In order to mitigate these challenges, it is important for any candidate country to achieve a high degree of nominal and real convergence with the EU economy before joining the ERM II. Once in ERM II, differentials between domestic and euro area interest rates should be kept to a minimum, providing less incentive for capital inflows. A country might also contemplate widening the margin of fluctuations in its exchange rate, thus increasing the exchange rate risk to potential speculators. This path was also followed by Cyprus, although the wider margins were only used as a deterrent to speculation. In practice, the Cyprus pound continued to fluctuate within the narrow bands of $\pm 2.25\%$.

Finally, joining the euro area should not be perceived as the end of the road. Having gone through a difficult convergence process, governments tend to relax their efforts upon adoption of the euro. Such trends should be avoided and fiscal consolidation should be more ambitious, given that monetary policy can no longer address imbalances at the national level.

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ABBREVIATIONS CHAPTER 6

CBC:	Central Bank of Cyprus
CCI:	Co-operative Credit Institutions
CPI:	Consumer Price Index
CSE:	Cyprus Stock Exchange
CYP:	Cyprus pound
ECB:	European Central Bank
ECU:	European Currency Unit
EMU:	Economic and Monetary Union
ERM:	Exchange Rate Mechanism
ESCB:	European System of Central Banks
ESP:	Economic Stabilisation Plan
ESRB:	European Systemic Risk Board
EU:	European Union
GDP:	Gross Domestic Product
IMF:	International Monetary Fund
MFI:	Monetary and Financial Institutions
MPC:	Monetary Policy Committee
SDW:	Statistical Data Warehouse
FFPP:	Fund for Financing Priority Projects
SMEs:	Small and Medium Size Enterprises
VAT:	Value Added Tax

6. Implementation of monetary policy in Cyprus

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6.1 Introduction

As discussed in the previous chapter, following the establishment of the Central Bank of Cyprus (CBC), monetary policy strategy was geared towards maintaining macroeconomic stability through a fixed exchange rate regime. Adherence to this strategy, even in adverse economic conditions, ensured credibility and at the same time delivered low inflation coupled with fast economic growth.

This chapter aims at describing and assessing the implementation of monetary policy over time. The following sections provide a thorough analysis of the various monetary policy decisions adopted by the CBC since its establishment, as well as their impact on the financial sector and, in general, the domestic real economy. Moreover, they review the monetary policy tools used by the monetary authority and their evolution over time, in line with the growth of the Cyprus economy and its development in the run-up to EU accession.

The implementation of monetary policy in Cyprus can be divided into three distinct phases: (a) the period 1963-1995, when the CBC conducted its monetary policy under the framework of a well-protected and controlled regime, as detailed in **Section 6.2** (p.200); (b) the period

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1996-2007, when the CBC initiated and completed the process for the harmonisation of monetary policy in Cyprus with the *acquis communautaire*, with a view to achieving full euro area membership, as discussed in **Section 6.3** (p.211); and (c) from 2008 onwards, with the CBC implementing the single monetary policy of the euro area as part of the Eurosystem, as outlined in **Section 6.4** (p.244).

6.2 The implementation of the CBC's monetary policy under a protectionist regime, 1963-1995¹

Over the greater than thirty-year period under review in this section, the economy functioned under a protectionist regime characterised by a statutory credit ceiling, a broadly stable exchange rate of the Cyprus pound and the existence of capital controls, for both capital flowing in and out of the country, with an exception during the time when Cyprus was a member of the “sterling zone”. All of the above, strengthened the CBC's control over the value of the Cyprus currency.

The main tools available to the CBC for implementing monetary policy were the following:

- **Foreign exchange controls** (regarding both inflows and outflows) and restrictions on exports of domestic currency. Under the 1968 Foreign Assets Regulations², which stipulated that no bank, except for specific cases, was allowed to hold any foreign assets, the monetary authority could control supply of foreign exchange, while at the same time demand for foreign exchange was also regulated by law. This mitigated the risk of demand-supply imbalances in the market and the associated negative implications for the value of the domestic currency. Capital controls were abolished upon the accession of Cyprus to the European Union (EU), on 1 May 2004.
- **Cost of credit**, i.e. the discount rate. The CBC was empowered by law³ to set the maximum level of bank lending rates, in the context of

1. Main sources: Central Bank of Cyprus (1964-2000), Central Bank of Cyprus (1964-1995) and Phylaktis (1995).
 2. The above-mentioned regulations were published on 16 February 1968 under Articles 32 and 38 of the *Central Bank of Cyprus Law*, 1963.
 3. See the *Central Bank of Cyprus Laws*, 1963 and 1979, Article 36.

a 9% interest rate ceiling in place since November 1944. The statutory interest rate ceiling was eventually abolished by the Liberalisation of the Interest Rate and Related Matters Law of 2001.

- **Reserve requirements/minimum reserve ratio**, introduced on 2 January 1968. This tool enabled the CBC to require from banks and other authorised financial institutions to hold minimum reserves with the CBC in a proportion that at times reached 20% of their deposit liabilities⁴. Following the country's entry into the euro area, the minimum reserve ratio is determined under Article 19 of the Statute of the European System of Central Banks (ESCB)⁵.
- **A minimum liquidity ratio**⁶, which was initially introduced on a voluntary basis in the mid-1960s and which became mandatory in 1971. This tool refers to the percentage of total deposits that financial institutions were required by the CBC to maintain as net liquid assets.
- **Quantitative credit restrictions**, i.e. the CBC could determine the amounts and the maturities of loans granted by financial institutions.

6.2.1 Rapid growth in money supply and fears of inflationary pressures, 1965-1969

The existence of a statutory interest rate ceiling significantly reduced the effectiveness of monetary policy tools. In fact, the maximum interest rate of 9% virtually eliminated the use of the discount rate as a monetary policy tool. Furthermore, the interlinkages between Cyprus banks and foreign banking institutions in the form of foreign asset holdings put a constraint on the monetary policy transmission mechanism, and effectively no use was made of the discount rate as a policy tool.

In 1965, the CBC jointly with the Ministry of Finance introduced a set of measures, with a view to creating a domestic money and capital market. Meanwhile, the recovery of economic activity observed after the events of 1963 had led to increased liquidity in the banking system.

4. The minimum reserve ratio was defined in terms of the average end-of-week balances of deposits and was calculated for a maintenance period of 15 days after the end of the reference period.

5. See Regulation (EC) No 2818/98 of the European Central Bank on the application of minimum reserves (ECB/1998/15).

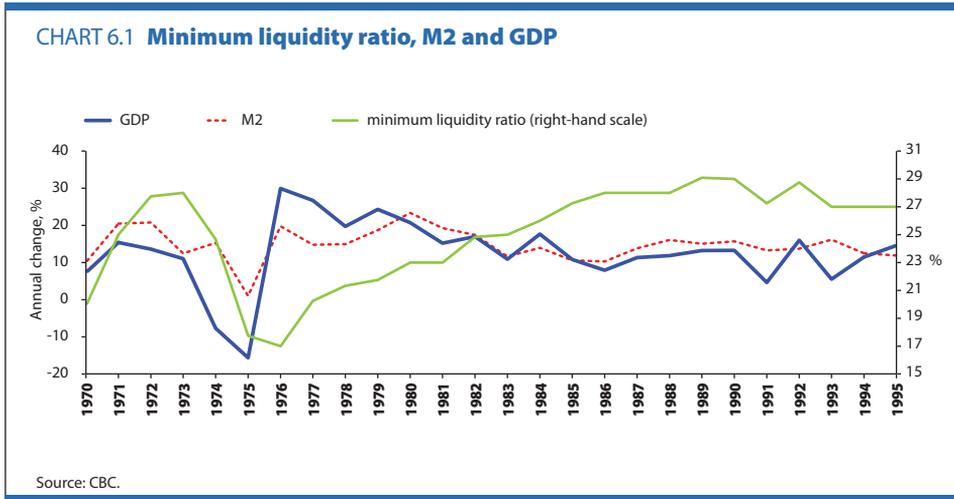
6. The minimum liquidity ratio was defined in terms of the net liquid assets of banking institutions as a percentage of their total deposit liabilities.

Against this background, the government adopted a number of monetary and fiscal measures in order to avert potential inflationary pressures, safeguard monetary stability and maintain a strong foreign exchange position. Under these measures, among other things, the government would increase its deposits abroad even at a cost of lower interest rate than the domestic rate and would offer Treasury bills to banks.

The period 1965-1969 was generally marked by a rapid growth in credit to the private sector and government expenditure, which bolstered economic growth, and led to a considerable increase in imports, despite the weakening of the Cyprus pound vis-à-vis the sterling pound. This sharp increase in credit growth to the private sector was mainly due to the new CBC Directive issued in February 1968 regarding holdings of foreign assets by Cyprus banks. Under that Directive, banking institutions in Cyprus were no longer allowed to maintain foreign assets other than working balances with foreign banks. As a result, the repatriation of funds brought about an increase in domestic assets, from 14,1% of total assets in December 1967 to 52% in March 1968. The above developments, coupled with an 18% rise in wages under a law enacted by the House of Representatives at the time, led to an overheating of the Cyprus economy and heightened domestic inflationary pressures; as a result, the current account registered a deficit for the first time after 1963. In an effort to contain inflationary pressures, the CBC decided to impose, effective from July 1969, credit controls, i.e. a lending ceiling on the basis of loans granted in the previous three years.

6.2.2 The oil crisis and the adoption of more flexible liquidity margins, 1970-1973

Notwithstanding the above measures, domestic inflation began to rise sharply from the end of 1969 onwards, on account of the international oil crisis and its direct impact on import prices. In the second half of



1970, inflation declined, and the CBC decided to adjust the credit ceiling upwards in order to ensure that the borrowing needs of the Cyprus economy could be met and to support certain economic sectors, such as agriculture, which was facing serious problems due to unfavourable weather conditions at the time.

In January 1971, the monetary authority decided to replace credit controls with a more flexible system of liquidity margins, with a view to regulating credit expansion (see **Chart 6.1**). Increased competition among banking institutions, seeking to raise liquidity in order to expand their lending business, led to higher deposit rates. Moreover, massive foreign capital inflows created conditions of excess liquidity, which reasonably gave rise to concerns about the future path of credit expansion. In an effort to contain a surge in credit growth, the CBC decided to raise the minimum liquidity ratio from 25% to 28%, effective from 1 February 1972.

During the period 1972-73 an increase in M2 was observed, albeit of a lesser extent in 1973 (12,5%) than in 1972 (20,8%) (see **Chart 6.1**). The year 1973 was marked by the prolonged draught that hit the island and which, compounded by an increase in both the prices and the imports volume of cereal commodities, higher prices of domestic manufacturing

goods and, to a lesser extent, a surge in international oil prices in the fourth quarter of the year, exerted strong domestic inflationary pressures and caused the current account deficit to widen substantially.

The surge in the current account deficit in 1973 absorbed a large part of the banking system's liquidity; as a result, banks were faced with serious liquidity constraints by the beginning of 1974. Against this background, and despite the existence of inflationary pressures, the monetary authority relaxed liquidity margins by 2 percentage points, to 26%, launching at the same time a scheme of special liquidity margins to priority sectors, under which funds amounting to 4% of the liquid assets ratio were allocated to them. With this measure, the CBC sought to stimulate growth in key sectors of the economy, such as agriculture, manufacturing and tourism.

6.2.3 The Turkish invasion, 1974

The Turkish invasion in 1974 inflicted a serious blow to the Cyprus economy, as 70% of its Gross Domestic Product (GDP) was generated at the northern part of the island that had been occupied by the Turkish army. Monetary policy had therefore to adjust once more to the new context amid uncertainty and lack of trust in the banking sector. The CBC's contribution to a swift economic rebound and the subsequent visible improvement of economic conditions was crucial. The central bank played an active role in the reconstruction of the Cyprus economy, by pursuing an expansionary monetary policy and by facilitating the financing of refugees' housing needs and the rebuilding of capital stock and related infrastructure. Some of the measures adopted by the CBC towards a further easing of monetary policy were the following:

- Lending and deposit rates were to be determined at such a level as to ensure that the total borrowing costs incurred by customers would not exceed the statutory interest rate ceilings set under Article 36 of the

Central Bank of Cyprus Law of 1963; the measure was aimed to boost the provision of bank credit to the economy.

- Abolition of the special liquidity margins and establishment of a special Fund for Financing Priority Projects (FFPP). This measure involved the use of 3% of liquid assets for the financing of priority projects, such as construction of houses or projects in the sectors of manufacturing, tourism and agriculture.
- Reduction of the minimum reserve ratio from 15% to 12% for those banking institutions that participated in the FFPP.
- Reduction of the minimum liquidity ratio from 26% to 20% in 1974 and further to 17% in 1975.
- Non-remuneration of banking institutions' reserve holdings in excess of reserve requirements, thereby providing an incentive for banks to use such excess reserves for lending.
- Establishment of a special scheme of government guarantees for 25%-75% of loans to borrowers who were unable to provide an adequate guarantee.

6.2.4 The recovery of the Cyprus economy, 1975-1979

By 1976, the measures adopted by the Cyprus authorities to underpin economic activity appeared to bear fruit. Real GDP growth accelerated to 29,9%, mainly on the back of reconstruction works, foreign capital inflows, domestic investment demand, the build-up of inventories and foreign demand for domestic manufacturing and agricultural products. The relaxed credit policy enabled banks to increase loan supply, although credit expansion, weighed down by subdued demand for loans, grew by 9,5%, which was rather modest compared with real GDP growth. On the back of these developments, the measure of non-remuneration of excess reserve holdings was seen as being no longer necessary and was thus temporarily abandoned during the second half of the year, and completely abolished in early 1977.

The rapid credit expansion, the abolition of a law enacted following

the Turkish invasion concerning a temporary cut on wages, the restoration of the wage indexation system (COLA) and the higher cost of raw materials, led to an intensification of inflationary pressures in 1977. Monetary policy remained expansionary throughout the year, with a view to encouraging the full restoration of economic activity in Cyprus, even though in the second half of 1977, in response to inflationary pressures, it was somewhat tightened. Specifically, the minimum liquidity ratio was raised gradually to 20% in March, from 17% formerly, and further to 23% in September, which helped moderate M2 growth to 14,8%, from 19,8% one year earlier. The objective was to contain the annual growth rate of M2 below the corresponding rate of GDP growth.

Until the end of the decade, full employment conditions prevailed and monetary policy was further tightened in order to avert inflationary pressures. The CBC raised the liquidity ratio by 2 percentage points relative to 1978 and increased the contribution to the FFPP from 3% to 6%, while credit controls continued to apply. At the same time, the CBC issued Directives imposing restrictions on lending to certain trade sectors, in particular hire purchases. Nevertheless, the government continued to pursue an expansionary fiscal policy, thereby offsetting the impact of tight monetary policy and causing domestic demand to increase sharply. In this context, credit growth to the public and the private sectors surged and reached 106,1% and 22,0%, respectively, in 1979, compared with a fall of 8,3% and an increase of 9,5%, respectively, in 1976.

6.2.5 Inflationary pressures and the introduction of credit ceilings, 1980-1990

The effectiveness of monetary policy was partly undermined by the lack of an appropriate fiscal policy. In the early 1980s, the economic conjuncture on the island warranted the pursuit of tight economic policies by the Cyprus government, aimed at containing domestic

demand. Towards this direction were, among others, the tightening of monetary policy and the introduction of various tax measures, such as the capital gains tax and the immovable property tax, the substantial revenues of which were to be realised only over the medium term, as well as targeted cuts in government expenditure. However, despite these policies, the fiscal deficit increased to 6,9% of GDP in 1980, from 6,6% in 1979 and 5,7% in 1978, mainly due to the delayed adoption of fiscal consolidation measures, which under the circumstances were not sufficient to achieve the required fiscal adjustment.

Furthermore, renewed inflationary pressures, mainly, on account of increased labour cost and higher prices of oil and imported raw materials, coupled with the vulnerability of the Cyprus economy to exogenous shocks via the trade channel, forced the CBC to tighten its monetary policy. In the absence of a short-term interest rate as an effective anti-inflationary tool, given the statutory interest rate ceiling, in March 1980 the CBC decided to enforce credit ceilings⁷ and to raise the minimum liquidity ratio. These credit ceilings mostly referred to the maximum amount of loans granted by monetary and financial institutions. Credit ceilings were adjusted in August 1980 in line with the Economic Stabilisation Plan (ESP)⁸, which had been agreed with the International Monetary Fund (IMF) and lasted until June 1981. During the second half of 1980 the initial credit ceiling was partly eased⁹, while under the ESP a tightening of fiscal policy was agreed for the next years. The government's objective was to reduce the fiscal deficit in order to limit credit to the public sector. In addition, the Social Insurance legislation was amended and an earnings-related scheme was introduced. The new legislation, which required higher contributions and absorbed part of the disposable

7. These ceilings were calculated as 12% on banks' outstanding balances as at 31/12/1979 or 8% on outstanding balances as at 29/02/1980, whichever was more favourable for the banking institution. Loans under the auspices of the FFPP were excluded from this ceiling so as to ensure that investment in manufacturing, tourism and agriculture would not be affected. Furthermore, there was flexibility in the case of loans to the sectors of external trade and investment (Central Bank of Cyprus, 1964-2000, and Central Bank of Cyprus, 1964-1995).

8. This Plan was consistent with the 3rd Emergency Action Plan and its main objectives were to reduce the current account deficit, to maintain foreign currency reserves and to develop an economic framework for reducing inflation (Central Bank of Cyprus, 1964-2000, and Central Bank of Cyprus, 1964-1995).

9. The ceiling was raised to 20,5% of banks' outstanding balances as at 31/12/1979 for a period of 18 months until June 1981. Alternatively, the ceiling was set at 14,5% of banks' outstanding balances as at 30/06/1980 for a period of 12 months until June 1981 (Central Bank of Cyprus, 1964-2000, and Central Bank of Cyprus, 1964-1995).

income, had a negative effect on domestic demand and a positive one on savings.

An additional challenge to the effective implementation of monetary policy was the fact that co-operative credit institutions (CCI) were not supervised by the CBC, therefore their functioning was not governed by its Directives. In particular, they were not subject to the CBC's minimum liquidity requirements or credit ceilings. As a result, the CBC had to follow a stricter policy than what would have been the case with the CCI under its supervision, in an effort to attain its targets for credit expansion and M2 growth rates.

The signing of the Customs Union agreement between Cyprus and the European Economic Community in 1987 created a climate of euphoria among investors and, subsequently, provided a boost to economic activity. At the same time, mainly on the back of rising tourist arrivals, increased export volumes to Libya, as well as lower oil prices and the ensuing current account surplus, bank liquidity and credit expansion increased. In 1988, faster economic growth, coupled with the monetary policy relaxation of the previous year, resulted in a sharp increase in credit growth to 16,3% compared with 11,7% in 1987, as well as in M2 growth which reached 16,1% in 1988 from 13,8% in 1987. Inflation had been following an upward path since 1986 and although it moderated to 3,8% in 1989, it was a major source of concern for the authorities, given also the wage indexation system (COLA). In 1989, taking into account the risks entailed by a continued overheating of the economy, the CBC tightened its monetary policy in an effort to rein in domestic demand growth. Initially, the minimum liquidity ratio was raised, on average, by 1 percentage point compared with both the first half and the second half of 1988. At the same time, the target for credit growth was revised upwards in the second half of the year (to 12%, from 9,6% in the first half of 1989), with a view to averting a severe restriction in credit growth, given the higher economic growth of the Cyprus economy, but at the same time ensuring that it remained subdued

relative to economic growth. Moreover, the FFPP ceased to operate in 1989, as its mission had been accomplished.

6.2.6 The Gulf War and the application of Cyprus for membership in the European Union, 1990-1995

Since the 1990s, the CBC had intensified its efforts towards the liberalisation and reform of the financial sector. This was necessary both for the further expansion of the Cyprus economy and for the harmonisation of domestic economic structures and policies with those of the European Union. Having recognised the importance of these considerations, the CBC adopted as early as 1989 a position for abolishing the interest rate ceiling and the minimum liquidity ratio and, consequently, for using its key interest rate alongside open market operations in the implementation of its monetary policy. In 1990, the Republic of Cyprus officially applied for EU membership.

In 1991 the Gulf war also impacted on the Cyprus economy, mostly on account of reduced tourist arrivals. Early in the year, in anticipation of a decline in credit expansion, the CBC decided to lower the minimum liquidity ratio to 26%, from an average of 31% in the fourth quarter of 1990. The measure was aimed to support the affected industries of the private sector. To this end, the CBC managed to successfully bolster the domestic banking system.

After the end of the Gulf war, the Cyprus economy showed signs of overheating as a result of a sharp rise in domestic demand. The CBC responded promptly by raising the minimum liquidity ratio to 28% in the third quarter and to 29% in the fourth quarter of 1991. Furthermore, the CBC imposed a credit ceiling on each bank on the basis of its end-1990 market share in total outstanding loans.

In 1992, the Cyprus pound was unilaterally pegged to the ECU (European Currency Unit) at a central parity of 1,7086 ECU/CYP and fluctuation margins of $\pm 2,25\%$. The Cyprus authorities sought to

strengthen the country's links with the European Community and to reiterate its determination to become a member of the European family. The introduction, for the first time, of the Value Added Tax (VAT) in July 1992 resulted in a rise in inflation, which led the CBC to raise the minimum liquidity ratio to 31% by the end of the year. The Exchange Rate Mechanism (ERM) crisis¹⁰, the weakening of the sterling and its subsequent exit from the ERM together with the Italian lira, undermined the competitiveness of Cypriot products. Nevertheless, the authorities of Cyprus shunned a currency devaluation, since this would jeopardise their aspiration to contain domestic inflationary pressures. Although Cyprus lost in competitiveness over the short term, the fact that the Cyprus pound was not devalued, enhanced public confidence and preserved the credibility of the authorities as regards their commitment to the harmonisation of the Cyprus economy with the *acquis communautaire*.

In June 1993, the European Commission approved Cyprus's application for accession to the EEC, and in October this decision was endorsed by the European Council. In 1994, although the targets set under the financial programme called for a higher liquidity ratio, the CBC, taking into account the prevailing economic conditions and the outlook for the following year, decided to keep the ratio unchanged. The CBC opted for maintaining excess liquidity in the banking system to create the necessary conditions that would contribute to a reduction in interest rates, both deposit and lending rates. This choice aimed to reduce financing costs for enterprises and increase investment, thereby improving their productivity and boosting their competitiveness abroad, but which was not closely related to the overall objective of the interest rate liberalisation. Against this background, the CBC cut the deposit rate by 1% in May 1994 and the lending rate by 0,5% in September of the same year.

Economic policy was now geared towards the harmonisation of Cyprus with the *acquis communautaire*. Monetary policy was an integral part of a broader vision that extended beyond national borders. The years that followed would bring critical changes in the structure of the economic system.

10. See **Chapter 3** (p.83) for a more detailed discussion of the ERM.

6.3 Implementation of the CBC's monetary policy under the new monetary policy framework, 1996-2007

6.3.1 The process of financial liberalisation, 1996-1999¹¹

The year 1996 was a milestone in the history of the CBC's monetary policy-making. In the context of accession talks and full harmonisation with the EU acquis, the CBC established a new monetary policy framework, in line with EU standards. Specifically, the CBC replaced its tools of direct liquidity control with market-based instruments. The minimum liquidity ratio, which was the main monetary policy tool, was abandoned. Open market operations conducted on the basis of tenders became the primary tool of liquidity management and were key to achieving goals, such as steering interest rates, managing liquidity conditions in the market and signalling the monetary policy stance. Under the general heading of open market operations, the CBC introduced repurchase operations (repos), i.e. liquidity-providing or liquidity-absorbing reverse operations between the CBC and monetary and financial institutions. In more detail, repurchase/resale transactions of government securities, with a maturity of not more than 15 days, were carried out between the CBC and monetary and financial institutions to provide or absorb liquidity in the market. Thus, interest rates were determined in the context of the CBC's anti-inflationary policy.

Furthermore, the CBC launched two standing facilities to provide and absorb overnight liquidity, signal its monetary policy stance and steer overnight market interest rates. Under the first facility, known as the Lombard facility, commercial banks obtained short-term financing against collateral of government securities to cover any liquidity shortages at the close of a business day. The Lombard rate provided a

11. Main sources: Central Bank of Cyprus (1964-2000) and Central Bank of Cyprus (1964-1995).

ceiling for money market interest rates, while changes in the Lombard rate signalled changes in the monetary policy stance. The rationale behind the selection of this rate as the CBC's key policy rate was that it was closer to prevailing interest rates and, unlike other facilities, Lombard short-term financing was used on a daily basis, thus quotations were available every day. Under the second facility, known as the overnight deposit facility, the CBC accepted banks' short-term remaining surpluses at the close of a business day, which were deposited in an overnight account at an interest rate that provided a floor for overnight money market rates.

A development connected with the above was the introduction of a new minimum reserve account, which was the only operational account of commercial banks with the CBC. A proportion equal to 7% of average bank deposits in the first three weeks of December 1995 was frozen and transferred to the new account, whilst new deposits (from January 1996 onwards) were subject to the new minimum reserve requirement ratio of 7% and were remunerated at an annual interest rate of 6%. Deposits in excess of the required amount of reserves were not remunerated.

Between 1996 and 2001, in response to liquidity shortages in the banking system, the CBC would intervene in the money market through auctions of repos. The CBC's quantitative target for credit expansion continued to serve as a tool for controlling money supply, although its role had started to diminish with increasing emphasis given on inflation targeting as a monetary policy strategy. Price stability was still pursued and achieved indirectly, through the pegging of the exchange rate of the Cyprus pound vis-à-vis the ECU and later the euro.

As part of its efforts to reform the financial sector and achieve harmonisation with the EU acquis, the CBC also embarked on its plan to gradually abolish capital controls (in place since the British colonisation period) ahead of Cyprus's accession to the EU.

It should be noted that the CBC was often faced with serious difficulties in using the new monetary policy framework, because of the continued existence of the statutory interest rate ceiling. Although the IMF¹² in a relevant report had recommended that the abolition of the interest rate ceiling should be made prior to the introduction of the new monetary policy framework and the removal of capital controls, for political reasons it was decided to proceed the other way round. Moreover, the adoption of the new framework coincided with the start of the liberalisation of capital movements, a gradual process which took place in three stages and was completed upon the country's entry into the EU.

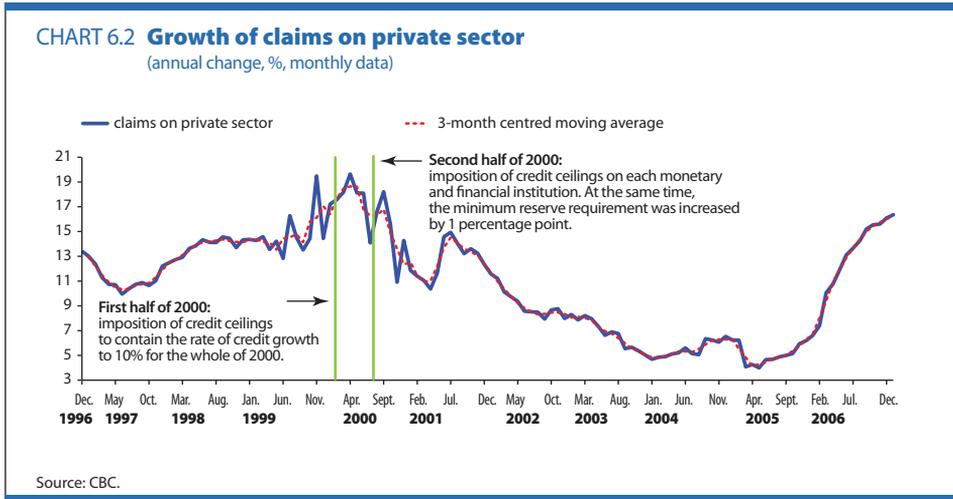
6.3.2 The Cyprus Stock Exchange (CSE) crisis in 2000¹³

In 2000, also in view of the interest rate liberalisation, monetary policy was formulated on the basis of expectations that the economy would continue to grow at satisfactory rates against a backdrop of buoyant domestic and foreign demand. Inflation was expected to pick up, mainly reflecting an upcoming increase in the VAT rate from 8% to 10% in July 2000, as well as higher oil commodity prices. The current account deficit was expected to rise, primarily due to strong domestic demand at the time, while the fiscal deficit would range between 4,0% and 5,0% of GDP, depending on the tax measures that were still pending for approval by the House of Representatives.

Taking into account the above economic outlook, and particularly the need to contain the current account deficit, inflationary pressures and excessive speculation as a result of the Cyprus Stock Exchange (CSE) asset price boom (see **Box 6.1**, p.215), the monetary policy stance was relatively tight during 2000. Specifically, in an effort to rein in the sharp rise in credit growth, the CBC enforced credit ceilings on personal loans – excluding loans for housing, health and educational purposes.

12. International Monetary Fund (1994).

13. Main sources: Central Bank of Cyprus (2000a και 2000b) and Central Bank of Cyprus (1964-2000).



At the same time, the CBC set as a guideline a 10,0% ceiling on credit growth for 2000 as a whole. However, as credit expansion remained extremely high in the first five months of that year (**Chart 6.2**), the CBC imposed individual credit ceilings on each monetary and financial institution, with a view to limiting total credit expansion to 12% by the end of 2000. Moreover, during the second half of 2000, the CBC raised minimum reserve requirements by 1 percentage point. Despite the abovementioned measures, credit growth reached 14,8% in 2000, which forced the CBC to impose sanctions on those banks that had exceeded their ceilings by more than 20,0%.

Liquidity shortages prevailed during most of the year, mainly as a result of strong demand for borrowing and of the restrictive measures adopted by the CBC in the form of higher minimum reserve requirements and the discontinuation of liquidity-providing repo operations. In particular, the growth rate of primary liquidity¹⁴ declined to 5,1% in 2000, compared with 42,4% in 1999, while a smaller decline was observed in the growth of secondary liquidity¹⁵, from 10,9% in 1999 to 7,8% in 2000. The reduction in liquidity supply led to a rise in money

14. Primary liquidity, which corresponds to money supply (M1), comprises currency in circulation and demand deposits.

15. Secondary liquidity (quasi-money, M2) comprises savings deposits, deposits redeemable at notice/with an agreed maturity, and foreign exchange.

Box 6.1 The stock market bubble of 1999-2000

A stock market bubble refers to a phenomenon whereby investors' exuberance and irrational behaviour drive demand for traded stock excessively upwards, resulting in a surge in trading volumes and an overpricing of stocks far beyond what could be considered as the rational economic value or expected return. Thus, emotional and cognitive biases cause asset, and therefore stock, prices to move rapidly upwards, only to fall steeply afterwards as soon as the bubble bursts. Seeing the value of their shares plummet, the vast majority of investors seek to dispose of their stockholdings, thereby causing sharp declines in prices and severe losses on their portfolios. Subsequently, in their effort to avoid worse losses they resort to mass sell-offs, which inevitably leads to the collapse of the stock market (Cyprus Securities and Exchange Commission, 2007).

Before the emergence of the financial crisis in 2007, an influential view among the literature (Greenspan, 2002, 2004, 2005, Bernanke, 2002, Kohn, 2006, Ferguson, 2003, Posen, 2006, Blinder and Reis, 2005) emphasised that central banks should not consider "leaning against the wind" of asset price bubbles in their conduct of monetary policy. While containing short to medium-term inflationary pressures stemming from positive wealth effects on spending decisions was considered justified during the boom phase, it was widely believed that central banks should let asset price bubbles burst naturally, rather than acting to contain them. According to the literature, the appropriate approach was to support the economy with accommodative monetary policy during the bust, but not to attempt to dampen the initial boom (European Central Bank, 2010).

Proponents of this view would acknowledge that rising asset prices often have expansionary effects on the economy, and

might sometimes also provide a signal for incipient inflationary pressures, so that some tightening of monetary policy might be appropriate. According to this view, however, monetary policy should only respond to observed changes in asset prices to the extent that they signal current or future changes to inflation or the output gap (Gruen et al., 2003).

Mishkin (2008) argued that asset price bubbles can be hard to identify. As a result, tightening monetary policy to restrain a bubble that has been misidentified can lead to weaker economic growth than is warranted. In addition, central bank actions to influence asset prices when the central bank is uncertain about the presence or extent of a bubble can interfere with the role of asset prices in allocating resources.

He also stressed that even if asset price bubbles could be identified, the effect of interest rates on asset price bubbles is highly uncertain. Although some theoretical models suggest that raising interest rates can diminish the acceleration of asset prices, raising interest rates may be very ineffective in restraining the bubble, given that market participants expect such high rates of return from buying bubble-driven assets. Other historical examples, as referred to in Mishkin (2008), have suggested that raising interest rates may cause a bubble to burst more severely, thereby increasing the damage to the economy. This is due to the fact that bubbles are departures from normal behaviour, and it is unrealistic to expect that the usual tools of monetary policy will be effective in abnormal conditions. Besides, a bubble may be present in only a fraction of assets. By contrast, monetary policy tends to affect asset prices in general, rather than solely those in a bubble, and is likely to lead the economy into deep recession. According to the critics of the “leaning against the wind” approach, it is not possible to predict the effects of monetary policy actions on asset price bubbles.

Another concern that has been expressed by Ferguson (2003) is that investors tend to undervalue risks, if they are convinced that central banks will step in to forestall many scenarios of emerging financial imbalances, which could exacerbate moral hazard.

However, history has shown that bubbles do develop over time, which if spun out of control, could engender serious systemic risks. The materialisation of such risks might entail heavy economic costs, not only in terms of output and incomes, but also in terms of increased burden to public finances.

Despite the various discussions on the matter, there is no consensus on the appropriate strategy that needs to be adopted by monetary policymakers to address such phenomena. Ms Tumpel-Gugerell, a former member of the Executive Board of the European Central Bank (ECB), stressed the need to enhance the general monitoring and analysis of assets, the developments in asset prices and potential economic imbalances, while welcoming the decision to reinforce the EU framework for macro-prudential supervision. Specifically, on 16 December 2010 the legislation establishing the European Systemic Risk Board (ESRB) entered into force, with the mandate to conduct macro-prudential oversight of the financial system within the EU, thereby strengthening European supervisory arrangements, with a view to better protecting the citizen and rebuilding trust in the financial system. Experience from the recent financial crisis of 2007 has demonstrated that safeguarding the stability of banks at the individual level cannot guarantee the stability of the financial system as a whole. Monetary policy should be oriented towards the medium-term horizon and assign a central role to the analysis of monetary and credit developments. This will enable central banks to ensure price stability over the medium term, as well as financial stability (Tumpel-Gugerell, 2011).

TABLE 1 Daily average number and volume of transactions in CSE

	1996	1997	1998	1999 1/1 - 30/4	1999 1/5 - 31/7	1999 August	1999 4/10 - 31/12
Daily average number of transactions	178	174	297	703	2.696	4.230	4.285
Daily average volume of transactions (CYP thousands)	670	660	1.400	5.600	21.600	39.200	28.187

Source: Cyprus Stock Exchange Investigating Committee (2004).

In Cyprus, from April 1996, when the official stock exchange was launched, until December 1998, the CSE functioned without any disruptions. What's more, transactions were rather subdued, with the CSE general index at end-1997 and end-1998 standing well below the benchmark of 100 basis points that had been set in March 1996, namely at 77,3 and 90 basis points, respectively (Cyprus Stock Exchange Enquiry Committee, 2004).

However, in early 1999 a number of events, such as the resolution of political issues relating to the Paphos Air Force Base and the S300 missiles, the initiation of talks concerning the Cyprus problem and the Greek-Turkish relations, the prospect of EU accession and other positive political and economic developments in Cyprus, provided impetus to the stock market and stimulated investors' interest; thus, by mid-1999 the stock market had taken on avalanche dynamics, resulting in a stock market bubble (Cyprus Stock Exchange Enquiry Committee, 2004). **Tables 1** and **2** (p.219) illustrate clearly the CSE asset price boom. While in 1998 the average daily number of transactions stood at 297, representing a value of CYP1,4 million, in 1999 it surged to 11,915 transactions with a total value of CYP94,6 million. At the same time, the CSE general share price index rose by 273%, from 90,9 points in 1998 to 338,24 in 1999.

TABLE 2 CSE General Index

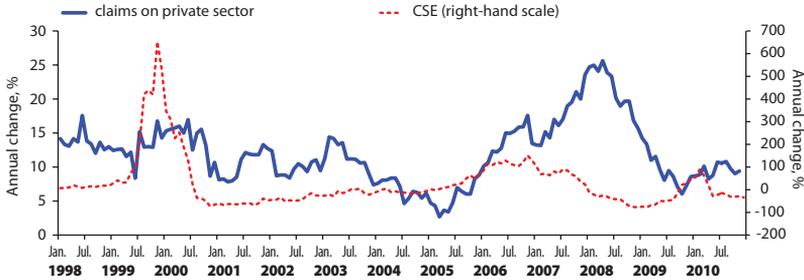
	CSE General index
December 1998	90,59
January 1999	101,41
February 1999	116,85
March 1999	116,32
April 1999	124,68
May 1999	148,57
June 1999	165,24
July 1999	260,02
August 1999	463,70
September 1999	420,29
October 1999	579,92
November 1999	847,91
December 1999	713,97

Source: Cyprus Stock Exchange Investigating Committee (2004).

Discerning the risks inherent in a bubble, the CBC warned in a number of circulars and press releases to commercial banks and the general public that the rise in stock prices was unsustainable (Karamanou and Syrichas, 2004). When it became clear that those warnings were not sufficient to dampen the price boom and the rapid credit growth (**Chart 1**, p.220), the CBC issued directives prohibiting the financing of the purchase of stocks, while at the same time credit ceilings were imposed in an effort to contain euphoria among investors. However, these measures failed to prevent the rise and subsequent crash in stock prices. Although the CBC was severely criticised at the time for interfering with the operation of the free market, ex-post facto, the stock market bubble of 1999-2000 has been a source of criticism of the CBC’s policy (Karamanou and Syrichas, 2004).

Specifically, in its report, the Cyprus Stock Exchange Enquiry Committee noted that commercial banks and other financial institutions followed a highly aggressive policy in terms of

CHART 1 Claims on private sector and Cyprus Stock Exchange Index (CSE)



Source: CBC.

financing investment activities and that the CBC’s instructions and advice were largely disregarded, since banks overshoot the targets for credit expansion set by the CBC and ignored relevant directives related to the granting of loans for the purchase of stock. Furthermore, the Committee considered that the CBC had not demonstrated the necessary resolve for a timely regulatory intervention in financial developments, noting that its decisive intervention only came after things had reached the point of no return (Cyprus Stock Exchange Enquiry Committee, 2004).

market rates relative to 1999. In more detail, the average monthly repo rate in the three months of March, April and May stood at about 6,0%, compared with 5,4% in the respective period of 1999. Besides, the 5-year and 10-year government bond yields continued to follow a slightly upward trend, with an average monthly yield of 7,54% and 7,69%, respectively, at end-2000, compared with 7,38% and 7,40%, respectively, at the beginning of the year.

6.3.3 Liberalisation of interest rates and capital movements in 2001¹⁶

In the realm of monetary policy in Cyprus, the liberalisation of interest rates was the milestone of the year 2001. The Interest Rate Liberalisation and Related Matters Law was enacted on 1 January 2001. The new law abolished the interest rate ceiling, effective since the mid-1940s, and imposed, among other things, a transparency requirement on banks as regards the capitalisation of interest on customer loans. Another important landmark for Cyprus monetary policy was the establishment of the Monetary Policy Committee (MPC), which initially had an advisory role¹⁷ and was responsible for examining issues related with monetary policy and the liberalisation of interest rates and submitting recommendations to the CBC's Board of Directors as to the level of the CBC's key policy rate.

As a transitional measure, and until experiences of the new system were acquired by banks, the base rate of banks was set to equal the marginal lending facility rate (Lombard rate) of the CBC, thereby ensuring the quick and effective transmission of the CBC interest rates changes to market interest rates. At the same time, in order to appease concerns about banks' excessive profit-seeking at the detriment of their customers, the CBC launched two specific schemes to shield from interest rate fluctuations two of the most vulnerable categories of borrowers, namely the mortgage owners and the small and medium size enterprises (SMEs). Specifically, the first scheme offered mortgage owners, whose initial housing loan did not exceed CYP60.000, a choice between a variable rate as determined by market forces or a fixed rate of 9,0% for a two-year period followed by a variable rate thereafter. The second scheme was addressed to SMEs, enabling them to borrow for the purpose of financing new investment or increasing working capital at a fixed rate of 8,5% for a duration of 5 to 7 years. To support this financing scheme, the CBC set up a special fund by releasing 1,5 percentage points

16. Main sources: Central Bank of Cyprus (2001) and Central Bank of Cyprus (2001-2010).

17. The MPC became fully responsible for designing and conducting monetary policy on 19 July 2002 under the Central Bank of Cyprus Law of 2002.

from the monetary and financial institutions' minimum reserve accounts.

In the newly liberalised environment, the CBC placed special emphasis on its communication strategy to the general public, especially with regard to the monetary policy framework and decision-making. Against this background, the CBC had opted to establish various communication channels with the public and market participants, some of which were: (1) a press conference following the MPC meeting, in which the Governor gave an introductory speech on the decision of the MPC and the rationale behind it; (2) a monetary policy decision announcement posted on the CBC website (for instance see **Box 6.2**, p.225); and (3) the MPC report, which was released immediately after the MPC meeting, providing a comprehensive analysis of the domestic and international economy (Karamanou and Syrichas, 2004).

The Governor and other officials of the CBC were actively involved in providing information to the public via the media concerning the impending changes in the interest rate regime.

At the same time, in the context of a fully liberalised financial sector, the existing restrictions on borrowing by domestic residents in foreign currency were eased. Specifically, as from 1 January 2001, all domestic residents were allowed to take out medium- and long-term loans in foreign currency to finance their domestic activities without the need of prior approval by the CBC. As a result, the first half of 2001 saw a considerable rise in foreign currency loans to residents, and particularly in euro, due to the pegging of the Cyprus pound to the euro and the increased stability of the parity between the two currencies, as well as the lower interest rate prevailing in the euro area compared with the domestic one. This exerted upward pressure on the value of the Cyprus pound and exposed foreign currency borrowers to foreign exchange risk. Thus, the liquidity shortage that had been observed in the first quarter of 2001 began to reverse gradually in the second quarter, on the back of increased foreign exchange inflows in the form of medium- and long-

term borrowing. In view of these developments, the CBC discontinued the provision of liquidity to the banking sector through repo auctions after the first quarter, while in mid-July it conducted the first reverse repo auction of the year to mop up part of the existing excess liquidity. Furthermore, upon the introduction of the fixing session¹⁸ in the foreign exchange market, the official fluctuation margins of the Cyprus pound against the euro were widened on 13 August 2001 from $\pm 2,25\%$ to $\pm 15\%$, although the wider band was only used to fend off speculative effects from massive capital inflows or outflows, as detailed below. The narrower fluctuation margins ($\pm 2,25\%$) were maintained as a benchmark, with a view to keeping inflation expectations at bay and safeguarding the credibility of the exchange rate policy.

The liberalisation of interest rates contributed to a gradual decline in interest rate levels, belying earlier fears of a surge in interest rates and negative effects on the financial system (Arestis and Demetriades, 1999, and Demetriades, 1999)¹⁹, thus indicating conditions of market equilibrium between demand and supply, in a context of healthy competition. Specifically, over the period 2001-2007, lending rates in Cyprus decreased, on average, to 7,10% compared with 8,90% over the period 1961-2000, which preceded the adoption of the new monetary policy framework. Meanwhile, the average growth rate of M2 decelerated to 11,3% during the period 2001-2007 compared with 13,8% during the period 1961-2000, while the average growth rate of credit to the private sector reached 11,8% from 14,1%, respectively.

Overall, the transition to the new liberalised environment was smooth and banks followed the standard market practice of differentiating lending rates depending on customers' creditworthiness and credit risk.

18. As from 1 January 2001, in the context of the harmonisation process with the EU, the CBC deregulated the system of spot and forward foreign exchange transactions, and the exchange rate of the Cyprus pound vis-à-vis foreign currencies was determined by demand and supply conditions. This occurred in the context of the fixing session, held every working day for the purpose of determining the official exchange rates of the Cyprus pound against other major foreign currencies, under the responsibility of the CBC and with the participation of commercial banks.

19. In the first paper, the authors argue that interest rate liberalisation may have negative effects on the financial system, mainly on account of financial market imperfections, such as imperfect competition and asymmetric information, e.g. moral hazard and adverse selection. In the second paper, the author focuses on the possible challenges for the Cyprus economy as a result of the liberalisation of interest rates. Such challenges related to macroeconomic instability and the concentration of lending in saturated sectors of the economy, the oligopolistic nature of the banking system and the risks stemming from the liberalisation of external borrowing, the lack of economic tools for effective risk management and the lack of experience in the financial sector.

In the first half of 2001, key interest rates remained unchanged, on account of robust economic performance and full employment conditions, and also in view of persistently high consumer spending, giving rise to plausible concerns about an increase in the current account deficit. Monetary policy was conducted in an environment of massive foreign exchange inflows, which reversed bank liquidity conditions to a surplus and which continued, albeit somewhat weaker, throughout the remainder of 2001.

At its meeting in August 2001, the Monetary Policy Committee, expressed some doubts about future economic growth, despite the until then satisfactory performance of the Cyprus economy, mainly on account of the protracted global economic downturn and the continued drop in the stock exchange index. Specifically, the worsening in stock exchange valuations created reasonable concerns about an acceleration of adverse effects on domestic consumer demand and economic activity in general. Moreover, domestic residents increasingly resorted to foreign borrowing, which undermined monetary policy objectives and added to external debt. The shift to foreign borrowing was primarily motivated by a differential of at least two percentage points between domestic and foreign interest rates.

The members of the Monetary Policy Committee at the August 2001 meeting seemed to agree on the need for pre-emptive action on the part of the CBC, with a view to averting the above unfavourable developments and containing borrowing in foreign currency, which had grown to alarming proportions. However, there was no consensus on the appropriate response by the CBC. Initially, it was suggested to halt foreign borrowing by prohibiting commercial banks from providing guarantees to customers borrowing from foreign banks. This proposal or other similar measures of direct control were not welcomed by the majority of the MPC members as they were seen as difficult to implement in practice.

Rather, most of the MPC members were in favour of a combination of interest rate and exchange rate policies. These policies would be

Box 6.2 Announcement by the CBC on monetary policy decisions**13 December 2002**

At today's meeting, the Monetary Policy Committee reached the following decisions:

1. The Lombard rate is lowered by 0.5 percentage point to 5,0%.
2. The overnight deposit facility rate remains unchanged at 2,5%.
3. The ceiling on the annual growth rate of bank credit remains unchanged at 11.0%.

Economic developments since the last meeting of the Monetary Policy Committee held in November have strengthened the case for a reduction in the Central Bank's key interest rates, which are summarised below:

- (a) The global economic recovery appears to be staggering. This has led the US Federal Reserve to lower its key rates in November. In the same vein, the ECB decided at its latest meeting on 5 December to equivalently reduce its key rates, bringing the interest rate differential between Cyprus and the euro area upwards to 175 basis points.
- (b) Domestic inflationary pressures appear to be less strong than initially expected, with inflation declining in October and November to 2,52% and 2,86% respectively, compared with 3,41% in September 2002. For 2002 as a whole, inflation is expected to stand at slightly below 3%.
- (c) Domestic economic activity, as confirmed by various economic indicators – reduced tourist arrivals and incomes, a marked slowdown in retail sales and low credit expansion – has remained comparatively weak. GDP growth in 2002 is not expected to exceed 2%, while the anticipated economic recovery for 2003 remains closely linked with international political and

economic developments.

Taking all of the above factors into account, the Committee decided to lower the Lombard rate by 0.5 percentage point

mutually reinforcing: interest rate cuts would narrow the differential between domestic and foreign interest rates, while a wider exchange rate band would make it riskier to borrow in foreign currency. Still, this proposal was met with some opposition. The use of the exchange rate tool was questioned by those who argued that, in order to discourage foreign exchange inflows, an overshooting of the Cyprus currency would be needed to generate expectations of a depreciation of the domestic currency to potential foreign currency borrowers. This, went the argument, would however lead to unnecessary instability in the system, as well as speculation. On the other hand, a small decrease in interest rates alone would not be capable of averting capital inflows. Furthermore, there was a risk that many Cypriots would be trapped in external borrowing, given the certainty associated with a narrow fluctuation band, which would hamper the use of the exchange rate policy tool in the future. At this point, it was argued that the CBC needed to keep its independence in determining interest rates in response to domestic economic developments and to do so, therefore, the narrow fluctuation band should be abandoned. Otherwise, the CBC would have to follow changes in European interest rates regardless of domestic economic conditions.

In the end, the Committee unanimously decided to recommend to the CBC's Board of Directors a reduction in interest rates by 0,5 percentage point and a widening of the fluctuation margins of the Cyprus pound vis-à-vis the euro from $\pm 2,25\%$ to $\pm 15\%$. The Board of Directors adopted a decision to this effect²⁰.

Notwithstanding the above decision, the domestic economic environment continued to deteriorate, as stock exchange valuations kept

20. See **Appendix 6.1** (p.255) for the relevant announcement by the Monetary Policy Committee of the CBC.

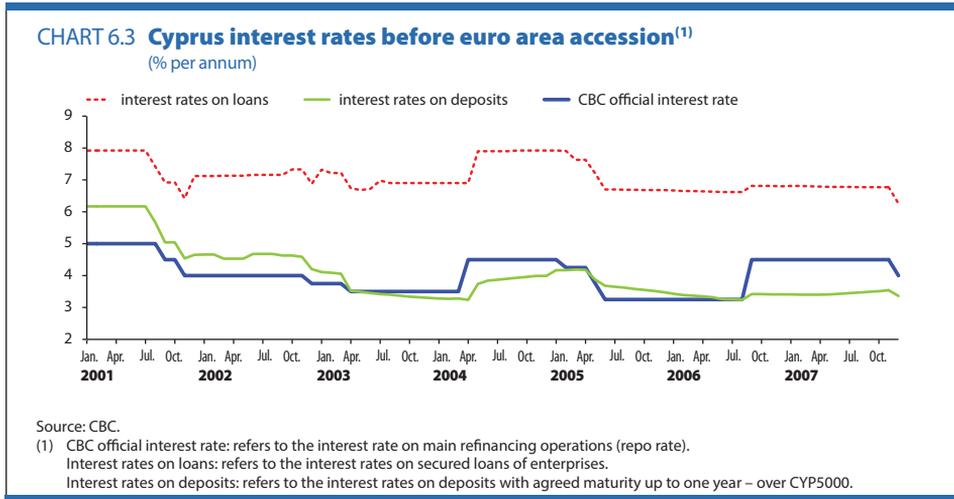
declining to historic lows. In addition to the impact on consumption, plummeting share prices, especially those of the banking sub-index, affected banks' capital base and hampered fund raising.

In light of the above, and given that the reduction in domestic interest rates had been neutralised by two successive cuts in the ECB's key rates in late August and mid-September 2001, the CBC lowered its interest rates by a further 0,5 percentage point in September. The interest rate cut was promptly passed through to money market rates and to banks' basic rates (see **Chart 6.3**, p.228), while foreign exchange inflows recorded a visible drop, partly attributable to the aforementioned monetary policy decisions.

Meanwhile, the global economy, strongly affected by the terrorist attacks against the US in September 2001, was slipping into recession, with growth rates around the globe being revised downwards both for the remainder of 2001 and for 2002, prompting most central banks to announce further interest rate cuts in November 2001. The unfavourable international environment also weighed on the Cyprus economy, with tourist arrivals falling dramatically. As a result the CBC proceeded in November with its third consecutive reduction in its key policy rates of 0,5 percentage point.

The CBC's expansionary monetary policy throughout 2001 managed to cushion the Cyprus economy as, despite the adverse international environment, economic growth reached 4,0% in 2001 compared with 5,0% in 2000. In the labour market, full employment conditions continued to prevail, with the unemployment rate declining further to 2,8% compared with 3,2% recorded in 2000. Moreover, CPI inflation declined sharply in 2001 to 2,0% compared with 4,1% in 2000, mainly on account of a base effect related to the increase in the standard VAT rate from 8% to 10% in 2000. The fiscal deficit remained broadly unchanged at 2,2% in 2001 compared with 2,3% in 2000, while the current account deficit as a percent of GDP decreased to 3,3% in 2001 from 5,3% in 2000.

Turning to monetary developments, credit growth to the private



sector moderated somewhat in the second half of 2001, whilst for the whole year it recorded an increase of 12,3% compared with 14,3% in 2000. Foreign currency borrowing by domestic residents weakened considerably in the second half of the year, as transactions in foreign currency loans carried out by banks totalled CYP161,8 million (outstanding balances increased from CYP571,3 million in the first half of 2001 to CYP733,0 million at the end of the year) compared with transactions of CYP199,3 million in the first half of 2001 (outstanding balances of CYP571,3 million from CYP372,0 million) and CYP361,0 million for the whole 2001 (outstanding balances amounted to CYP733,0 million in 2001 compared with CYP372,0 million in 2000) (see **Table 6.1**, p.229). It should be noted that in 2001 the share of euro-denominated loans (both to residents and non-residents) in total foreign currency loans almost doubled relative to 2000, from 28% to 55%, while the share of USD-denominated loans dropped to 26% in 2001, from 52% in 2000.

The tight link between the CBC's Lombard rate and the base rate of commercial banks facilitated the three consecutive reductions in the CBC's official interest rates to be promptly transmitted to all money market (deposit and lending) interest rates. As a result, at end-2001 the respective interest rates stood at considerably lower levels compared with 2000. Indicatively, the interest rate on housing loans stood at about

TABLE 6.1 Advances and loans to the private sector
(CYP thousands)

	2000	2001-H1	2001	2002	2003	2004	2005	2006	2007-H1
Local currency loans	6.163.954	6.477.028	6.627.501	7.183.757	7.587.288	8.041.078	8.322.325	9.168.402	10.395.617
Residents	6.105.517	6.477.405	6.596.115	7.145.572	7.527.301	7.941.886	8.180.857	8.961.521	10.141.982
Non-residents	27.437	29.623	31.386	38.185	59.987	99.192	141.468	206.881	253.635
Foreign currency loans	619.738	817.806	1.015.854	1.092.376	1.088.211	1.285.923	1.646.719	2.511.120	3.225.886
Residents	372.022	571.282	733.041	785.151	798.959	909.944	1.205.773	1.896.949	2.348.244
Non-residents	247.716	246.524	282.813	307.225	289.252	375.979	440.946	614.171	877.642
Total Advances and Loans	6.752.692	7.294.834	7.643.355	8.276.133	8.675.499	9.327.001	9.969.044	11.679.522	13.621.503

Source: CBC.

7,0% in December 2001, down from 8,7% at the beginning of the year. Similarly, the interest rate on corporate loans for highly creditworthy customers decreased to 7,1% at the end of 2001, from 7,9% in January, while deposit rates with maturity of over one year decreased to 4,9% from 6,5%, respectively.

In sum, by lowering its interest rates in the second half of 2001, the CBC aimed at mitigating the negative effects of the global recession and the drop in stock prices, whilst ensuring that domestic economic growth was on track. The monetary policy mix was supplemented with the adoption of wider fluctuation margins for the exchange rate of the Cyprus pound vis-à-vis the euro, which contributed to restraining excessive foreign currency borrowing.

6.3.4 Global economic recovery shadowed by the war in Iraq, 2002-2003²¹

The incipient global economic recovery observed during the first half of 2002 was partly shadowed by well-founded concerns about a possible rekindling of global inflation, and a possible subsequent increase in interest rates. On the domestic front, the CBC's monetary policy decisions were guided by its assessment of underlying inflationary pressures. The heightened worldwide political uncertainty led to upward revisions in oil price projections and, generally, to higher inflationary

21. Main sources: Central Bank of Cyprus (2001-2010) and Central Bank of Cyprus (2002a).

pressures, which were also fuelled by domestic factors, such as increases in indirect taxes effective as from July 2002. Furthermore, the provision of wage increments in various sectors of the economy, coupled with the imminent rise in personal disposable income in view of the expected tax reform, as well as the increase in available liquidity as a result of net sales of government securities, also added to higher inflationary pressures. In particular, inflation reached 2,5% in the first half of 2002 compared with 2,0% in the corresponding period of 2001.

On the monetary front, the impact of excess bank liquidity on inflation and the current account were offset by subdued developments in credit to the private sector. In particular, the rate of credit growth to the private sector declined further to 8,0% in 2000 compared with 12,3% in 2001, mainly on account of reduced demand for loans by the private sector, driven by the economic downturn and the tightening of credit standards by banks. Still, the risk of a surge in inflation was lurking and it could materialise in the event of a reversal in weak credit developments. On the other hand, the strengthening of the Cyprus pound vis-à-vis the US dollar and the pound sterling observed in the second half of 2002 by 11,2% and 2,6% , respectively, compared with the second half of 2001, kept, in part, domestic inflationary pressures at bay.

Against this background, and in the context of its anti-inflationary policy, the CBC intervened in the money market through deposit collection auctions (depos), thereby absorbing liquidity totalling CYP2.905,5 million in 15 auctions during the first half of 2002, while it maintained a wait-and-see policy approach, keeping its interest rates unchanged during most of 2002. In December, the CBC decided to lower its Lombard rate by 0,5 percentage point, from 5,50% to 5,00%, on account of a further widening of the gap between Cyprus and the European key policy rates, the weak and staggering global economic recovery, as well as the decline in domestic inflation.

For most of 2003, the war in Iraq dominated international developments, as a result of the uncertain and pessimistic climate that

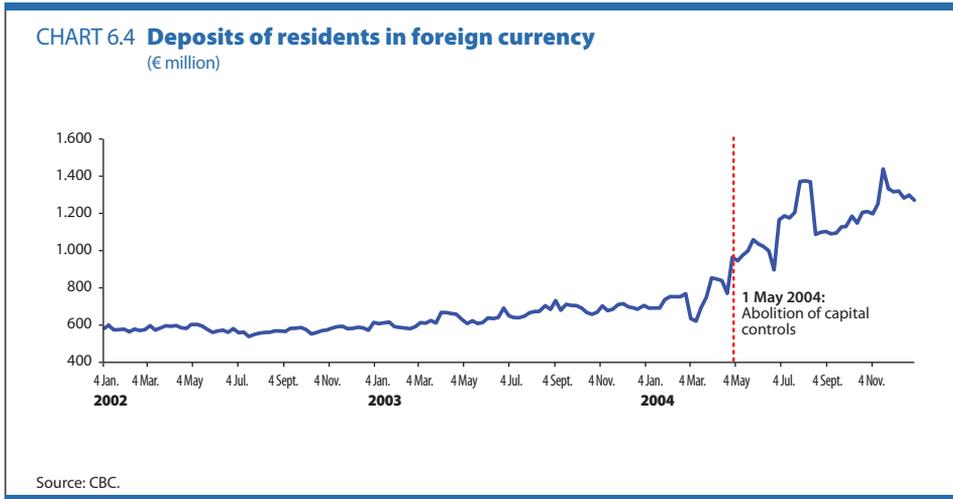
was compounded by the high volatility in oil prices, thus generating expectations of a weak outlook for the global economy. Taking into consideration the alarming potential implications of the war in Iraq, as well as the reduction in the ECB's interest rates, the CBC lowered its key policy rate by 50 basis points from 5,00% to 4,50% in April 2003. Revived hopes for an economic recovery after the end of the war in Iraq, coupled with relatively high domestic inflation rates and large fiscal and current account deficits, led the CBC to adopt a wait-and-see approach for the remainder of the year.

Despite the reduction in the CBC's key rate, M2 growth declined further to 4,0% in December 2003 compared with 10,3% in December 2002. The main factor affecting the growth in M2 was the notable slowdown in credit to both the private and the public sectors, which grew by 5,1% and 9,7%, respectively, at end-2003 compared with 8,0% and 17,1%, respectively, in 2002. The slowdown in credit to the private sector was attributed to the overall subdued economic activity and the ensuing low demand for loans, as well as to a tightening of banks' credit standards regarding loans applications.

6.3.5 Accession of Cyprus to the European Union in 2004²²

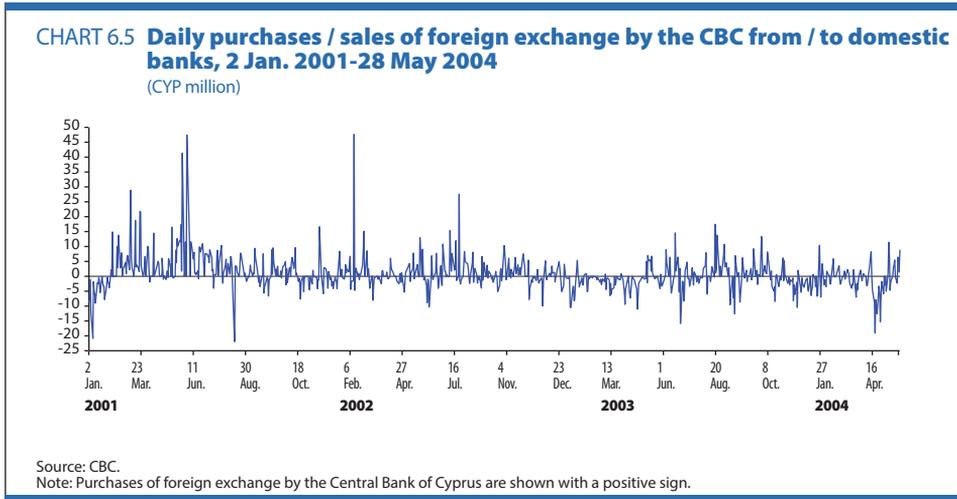
With the accession of Cyprus to the EU on 1 May 2004, the abolition of foreign exchange controls was completed, in line with the *acquis communautaire*. The Capital Movement Law of 2003, passed by the Parliament in July 2003 to replace the Exchange Control Law, ensured the free capital movement with certain exceptions provided by the EU *acquis*. In brief, under the new Law, Cypriot citizens were allowed to also open accounts in foreign currency, which was previously prohibited, and to export foreign exchange over CYP50.000 without the CBC's approval, whilst at the same time foreign citizens were allowed to also borrow in Cyprus pound. **Chart 6.4** (p.232) shows the considerable rise in Cypriot residents' deposits in foreign currency after the removal of restrictions on capital movements.

22. Main sources: Central Bank of Cyprus (2001-2010) and Central Bank of Cyprus (2002a).



As regards monetary policy, the domestic key interest rate remained unchanged for most of the year, recording only one increase of 1 percentage point in April. Specifically, at the extraordinary meeting of the CBC's Monetary Policy Committee on 30 April 2004, the assessment of the Committee members was that a negative sentiment had started prevailing, which was attributable to the uncertain political developments, as well as to the upcoming full liberalisation of the capital account as from 1 May. At the same time, the members shared the view that economic developments had not changed materially to justify any interest rate change.

Focusing on the domestic foreign exchange market, the sharp rise in foreign exchange outflows in the immediate period prior to the increase in interest rates, was mainly due to the prevailing insecure climate in anticipation of the Referendum concerning the Annan Plan on 24 April, as well as the abolition of capital movement restrictions as from 1 May 2004. More specifically, sizeable outflows amounting to CYP93,6 million were observed in April 2004 compared with outflows of CYP64,3 million a year earlier, albeit the additional CYP25 million outflows that were recorded in the second half of April were negligible in comparison with the stock of foreign exchange, which amounted to CYP1,5 billion (Christodoulou, 2004) (see **Chart 6.5**, p.233).



Reflecting the decline in banks’ excess liquidity and the April hike in the key interest rate, the average overnight domestic interbank rate increased, standing at a monthly average at 3,92% in 2004 from 3,35% in 2003. Mirroring the path of the key rate, commercial banks’ lending rates to non-financial corporations and households remained unchanged in the first four months of the year, posting an increase of 1 percentage point in May and stabilising at their new levels until the end of the year. Interest rates on deposits with an agreed maturity of up to one year also increased from 3,40% in April 2004 to 4,21% in December (Christodoulou, 2004).

Regarding weekly developments in deposits as shown in **Table 6.2**, p.234, the second half of April 2004 recorded massive outflows in deposits by Cypriot residents both in local and in foreign currency, especially before the Referendum, exceeding the amount of CYP60 million and CYP45 million, respectively (**Chart 6.6**, p.235). Reflecting deposit withdrawals and foreign exchange outflows, the Cyprus pound weakened against other foreign currencies, such as the US dollar and the pound sterling (**Chart 6.7**, p.235).

In light of the above, discussions at the Monetary Policy Committee focused on whether the CBC should pre-emptively raise its interest rates

TABLE 6.2 Net foreign exchange transactions by the CBC
(CYP million)

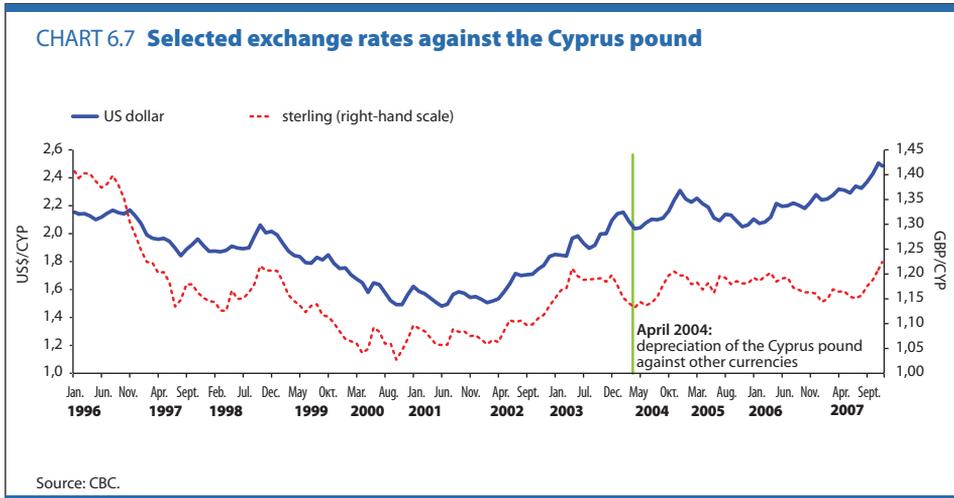
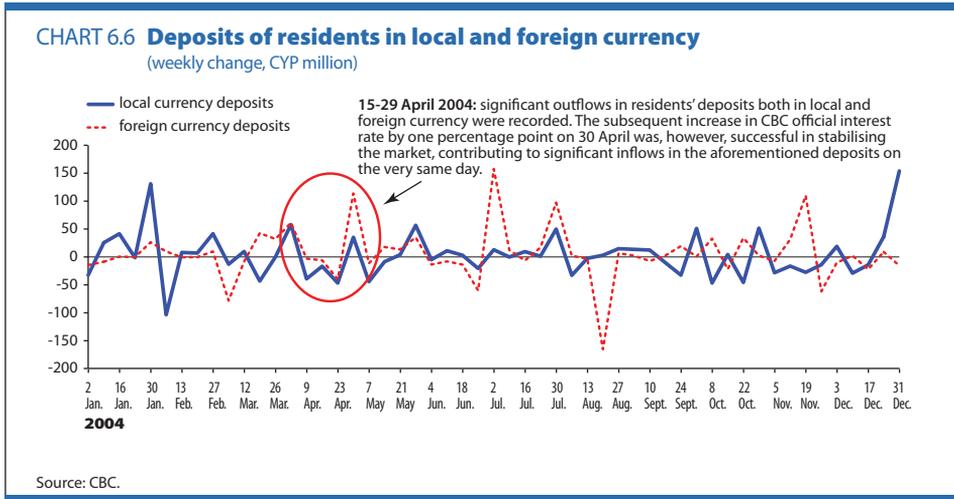
	2001	2002	2003	2004	2005	2006	2007
January	-107,4	-5,8	-55,7	-40,6	-49,5	-46,0	-81,6
February	61,9	82,3	-22,0	-4,3	-0,1	-4,3	-80,9
March	156,2	-4,8	-38,6	-19,4	-14,5	2,9	-81,5
April	49,6	-1,0	-64,3	-93,6	66,3	93,5	-145,5
May	158,7	42,1	14,2	29,2	101,5	187,7	-0,3
June	155,6	-6,0	17,0	56,9	145,0	83,6	48,6
July	90,7	87,3	-19,5	13,6	28,1	64,9	115,6
August	28,2	30,3	51,6	48,9	75,3	14,9	87,9
September	19,6	8,8	-2,1	38,5	38,5	107,4	-27,8
October	33,5	51,6	31,7	-11,3	80,8	121,3	90,5
November	16,4	-26,7	-9,1	-44,1	55,2	-47,2	-63,1
December	0,4	15,0	-37,3	0,6	34,1	15,0	139,2
TOTAL FOREX	663,4	273,1	-134,0	-25,5	560,7	593,6	1,2

Source: CBC.

and how this would be interpreted by markets. Eventually, after a thorough debate, it was decided that the CBC should convey a strong message to the markets signalling its resolve to support the exchange rate of the Cyprus pound, which in its view reflected the fundamentals of the Cyprus economy. As a result, the CBC raised its key policy rate from 4,50% to 5,50%, and maintained that level until the end of 2004. The overnight deposit facility rate followed the path of the marginal lending rate, posting only one increase from 2,50% to 3,50% on 30 April, and hovered at these levels until the end of 2004. Conversely, the corresponding euro area rate stood at 1,00% throughout the year.

With the Committee's decision to raise interest rates by 100 basis points on 30 April, domestic interest rates became more attractive to foreign investors, thereby helping to reinforce public confidence in the Cyprus pound and to reverse the previous trend of foreign exchange outflows²³ (Syriachas, 2010). Consequently, in May 2004 inflows of CYP 29,2 million were recorded, compared with inflows of CYP14,2 million in May 2003 (**Table 6.2**). Overall, between January and May 2004, total outflows declined relative to the corresponding period of 2003

23. See **Appendix 6.2** (p.256) for the relevant announcement by the Monetary Policy Committee of the CBC and **Appendix 6.3** (p.257) for the relevant reference to the CBC's Concise Monetary Policy Report in June 2004.



(CYP128,62 million and CYP166,33 million, respectively). Furthermore, total deposits by Cypriot residents in local currency increased by CYP8 million in May compared with a decrease of CYP9 million in April, indicating a stabilisation in the market (Table 6.3, p.236).

As regards liquidity conditions in the money market, for most of the year the CBC continued its interventions through auctions for the acceptance of deposits to absorb excess liquidity. Nevertheless, the foreign exchange outflows of April 2004 had a negative impact on excess liquidity, thus the

TABLE 6.3 Deposits developments of domestic banks ⁽¹⁾
(CYP-thousands)

WEEK	12	13	14	15	16	17	18	19	20	21	
	March Last week					April Last week				May Last week	
52											
	Outstanding amounts end of period Dec-03										
ETOS											
2004 - DOMESTIC BANKS (1)	31/12/2003	26/03/2004	02/04/2004	08/04/2004	16/04/2004	23/04/2004	30/04/2004	07/05/2004	14/05/2004	21/05/2004	28/05/2004
Residents deposits (local and foreign currency)	8.060.370	8.142.787	8.261.889	8.219.790	8.197.158	8.110.708	8.259.811	8.204.130	8.213.367	8.230.713	8.322.406
annual change, %		5,4	6,8	5,4	5,3	4,7	7,0	6,1	7,1	7,1	8,5
Change since 1/1		82.417	201.519	159.420	136.788	50.338	199.441	143.760	152.997	170.343	262.036
Change - current week / previous month's last week		-57.988	119.102	77.003	54.371	-32.079	117.024	-55.681	-46.444	-29.098	62.595
Change on previous week		32.054	119.102	-42.099	-22.632	-86.450	149.103	-55.681	9.237	17.346	91.693
Residents deposits in local currency	7.633.140	7.704.285	7.762.240	7.722.999	7.706.292	7.659.658	7.694.894	7.650.667	7.642.100	7.646.036	7.702.751
Change since 1/1		71.145	129.100	89.859	73.152	26.518	61.754	17.527	8.960	12.896	69.611
Change - current week / previous month's last week		-46.448	57.955	18.714	2.007	-44.627	-9.391	-44.227	-52.794	-48.858	7.857
Change on previous week		-138	57.955	-39.241	-16.707	-46.634	35.236	-44.227	-8.567	3.936	56.715
Residents deposits in foreign currency	427.230	438.502	499.649	496.791	490.866	451.050	564.917	553.463	571.267	584.677	619.655
Change since 1/1		11.272	72.419	69.561	63.636	23.820	137.687	126.233	144.037	157.447	192.425
Change - current week / previous month's last week		-11.540	61.147	58.289	52.364	12.548	126.415	-11.454	6.350	19.760	54.738
Change on previous week		32.192	61.147	-2.858	-5.925	-39.816	113.867	-11.454	17.804	13.410	34.978
Non-residents deposits (local and foreign currency)	4.133.018	4.555.365	4.404.044	4.514.110	4.557.191	4.550.096	4.629.841	4.647.715	4.701.907	4.678.690	4.573.441
annual change, %		7,5	4,3	8,3	10,0	9,7	14,2	14,5	17,5	17,5	14,7
Change since 1/1		422.347	271.026	381.092	424.173	417.078	496.823	514.697	568.889	545.672	390.423
Change - current week / previous month's last week		210.532	-151.321	-41.255	1.826	-5.269	74.476	17.874	72.066	48.849	-106.400
Change on previous week		13.193	-151.321	110.066	43.081	-7.095	79.745	17.874	54.192	-23.217	-155.249

Source: CBC.

(1) Excluding cooperative credit institutions.

average daily amounts deposited under the facility fell to CYP93,3 million from CYP140,3 million in March. Specifically, on 29 April an auction was conducted in which no bids were submitted by banks. Also, from 1 May onwards banks were required to hold minimum reserves with the CBC as a percent of their deposits in foreign currency. By mid-May, these two factors assisted in balancing the liquidity conditions in the market.

Turning to monetary developments, an expansion in credit growth was recorded, which was also reflected in the annual growth of total money supply. Furthermore, M2 growth was positively influenced by significant increases in both demand deposits and time deposits by Cypriot residents in foreign currency.

6.3.6 Participation of the Cyprus pound in the Exchange Rate Mechanism II (ERM II) in 2005²⁴

On 2 May 2005, one year after the accession of Cyprus to the EU, the Cyprus pound joined the ERM II at the central parity of CYP1 = €1,7086 or €1 = CYP 0,585274 and fluctuation margins of $\pm 15\%$. The participation of the Cyprus currency in the ERM II, which paved the way for the adoption of the euro, confirmed the appropriateness of the exchange rate in relation to domestic economic fundamentals, while at the same time created the necessary conditions for further convergence of the domestic interest rates with the respective European rates.

The participation in the ERM II was accompanied by increased foreign exchange inflows, leading to an appreciation of the pound vis-à-vis the euro. This, in combination with a relatively low domestic inflation, an encouraging growth path of the economy and a marked improvement in public finances, urged the Monetary Policy Committee of the CBC to ease its monetary policy during the year under review. Capital inflows, the strengthening of the currency observed in that period, especially after the Cyprus pound joined the ERM II, the reduction in fiscal deficit, the confidence in the currency, as well as the reduced risk premium which was not justifiable by

24. Main source: Central Bank of Cyprus (2001-2010).

the widening of the interest rate differential, were the main arguments of the Committee in favour of lower interest rates. Nevertheless, there were concerns relating to the upward trend of inflation, the uncertainty regarding the balance of payments, weaknesses in the medium-term improvement of the fiscal position, as well as the rising real estate prices. The Committee, taking into consideration all of the above, lowered its key policy rate on three occasions in 2005 by a total of 125 basis points to 4,25%. Furthermore, the minimum reserve ratio was reduced from 6,5% to 5,0% in November 2005, with a view to achieving further convergence of the Cyprus economy with the euro area economy. This created a liquidity surplus in the banking system, which was further fuelled by the above-mentioned foreign exchange inflows. As regards monetary developments, the annual growth rate of money supply increased sharply to 10,2% in December 2005 compared with 5,6% in December 2004, mainly on account of foreign exchange inflows and increased lending to the private sector. Credit to the public sector also rose substantially, by 17,2%, due to the government's shift to domestic borrowing in 2005, after falling by 6,0% in 2004.

6.3.7 Overheating of the Cyprus economy, coupled with a surge in borrowing both in domestic and foreign currency, 2006-2007²⁵

During the ERM II period, the Cypriot economy continued to be confronted with some old and new challenges. In particular, on account of the prevailing interest differential between Cyprus and the euro area, capital continued to flow into the island, partly in the form of foreign currency borrowing, which was mostly used for the purchase of property and for consumption purposes. It should be noted that foreign currency borrowing was a major indicator of domestic monetary developments and therefore, was closely monitored by the Monetary Policy Committee of the CBC. At the same time, fast credit growth, coupled with the brisk pace of economic activity, further exacerbated inflationary pressures.

25. Main sources: Central Bank of Cyprus (2007a, 2007b and 2007c), Central Bank of Cyprus (2001-2010) and Syrinchas (2010).

In general, as outlined in Rosenberg et al. (2008), membership in the European Union boosts foreign currency borrowing through various indirect channels. First, by fully liberalising the capital account, EU membership offers borrowers increased access to foreign funding, both through domestic banks affiliated with foreign parents and directly from abroad. Secondly, by increasing the trade openness of the Cyprus economy, it provides hedging opportunities, especially for the corporate sector. Finally, EU membership appears to boost the private sector's confidence in exchange rate stability and imminent euro adoption. As a result, borrowers tend to consider a devaluation in domestic currency as a low-probability event, and therefore neglect the exchange rate risk associated with borrowing in foreign currency. This is further enforced by existing interest rate differentials. For the same reasons, commercial banks appear to be more willing to extend loans in foreign currency. To mitigate these challenges, it is important for any aspirant country to achieve a high degree of nominal and real convergence with the EU economy before joining ERM II (Syrichas, 2008).

The CBC reacted to these developments in terms of its communication to the public, providing frequent reminders of the exchange rate risk associated with borrowing in foreign currency. On 13 June 2006, the CBC, in response to a surge in foreign currency borrowing, issued a public announcement, informing borrowers that the era of historically low interest rates had ended and that further increases in interest rates were globally expected²⁶. Furthermore, it warned of the potential negative effect on the final amount due and, therefore, on the ability to repay loans denominated in foreign currencies, such as the Japanese yen, the Swiss franc and the US dollar, from sharp movements in the exchange rate of these currencies vis-à-vis the Cyprus pound.

Despite this, however, and following the irrevocable fixing of the Cyprus pound against the euro in July 2007, at its ERM II central parity, credit growth in Cyprus recorded a further significant increase. The main factors behind this increase were the perceived lower foreign exchange

26. See **Appendix 6.4** (p.258) for the relevant announcement of the CBC.

risk and the anticipated convergence of interest rates towards euro area rates. Lower interest rates and reduced foreign exchange risk generated a climate of euphoria in the real estate sector both for Cypriot and for foreign buyers, which boosted demand and led to a surge in property prices. Indeed, the sharp rise in property prices observed in Cyprus from 2006 onwards was among the highest across euro area countries.

As shown in **Chart 6.8** (p.241), credit, and particularly broad real estate and housing loans, recorded a rapid growth during the period preceding the adoption of the euro in Cyprus²⁷. In more detail, in 2007 the growth rates of total loans and broad real estate and housing loans to residents in Cyprus reached 23,0% and 42,1%, respectively, compared with 12,5% and 31,7%, respectively, in 2006. In addition, other indicators including building permits, property sales contracts and the issuance of title deeds (**Table 6.4**, p.241) also indicated a rapid increase in activity in the domestic real estate market. As a result of the above developments, the prevailing view at the CBC was that the very rapid growth in activity in the property market had become unsustainable, while legitimate concerns were voiced about the ability of financial institutions to absorb a potentially substantial negative shock to the economy or adjust to a reversal in market conditions.

Against this background, and seeking to mitigate heightened credit risk for Monetary and Financial Institutions (MFIs), the CBC decided on 12 July 2007, in the face of serious objections, to impose a reduction in the maximum loan-to-value ratio. In particular, the CBC issued a circular to commercial banks reducing the maximum percentage of financing allowed for the purchase or construction of a secondary residence from 70% to 60% of the value of the property funded. The corresponding maximum percentage of funding allowed for the purchase or construction of a primary residence remained at 80% (Central Bank of Cyprus, 2010b).

27. Following the accession of Cyprus to the euro area on 1 January 2008, the CBC has been monitoring and publishing new harmonised monetary and financial statistics under the ECB's legal framework. As a result of the above changes, the publication of old statistical series was discontinued in December 2007, while the old and the new series were reconciled using the simple splicing method. All monetary aggregates, including interest rates, refer to data excluding the CBC and/or the Eurosystem. It should also be noted that the data analysed in the current section of the Report refer to residents in Cyprus, excluding entities without physical presence in Cyprus (brass plate companies). The effect of brass plate companies is excluded so as to ensure the comparability of statistical data over time and to help draw reliable conclusions.

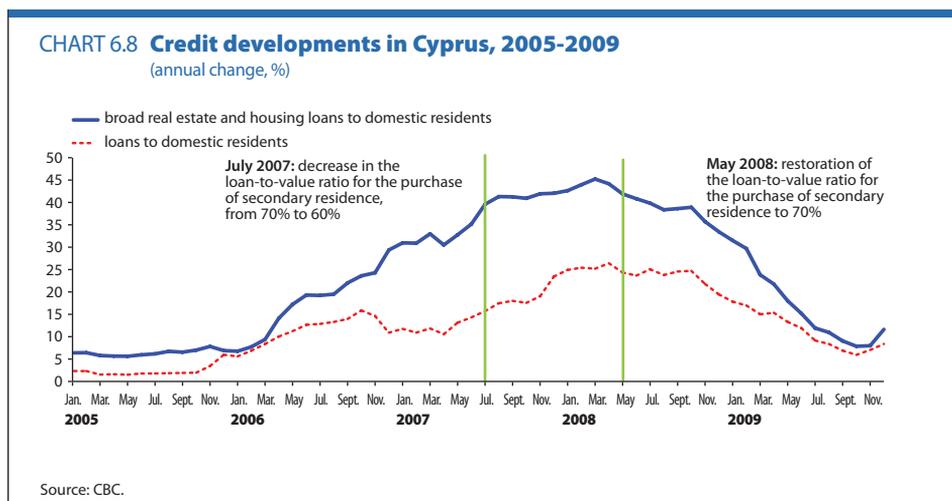


TABLE 6.4 Construction sector indicators
(annual change, %)

	June 2006 - May 2007	June 2007 - May 2008	June 2008 - May 2009
Sales contracts – total in Cyprus	42,6	7,2	-49,7
Building permits – residential	1,9	-7,2	-0,4
Building permits – total	3,1	-8,0	2,1
Local sales of cement	7,9	12,2	-10,0
Title deeds – Nicosia	8,7	4,4	-39,1
Title deeds – Limassol	36,0	6,5	-48,8
Title deeds – Larnaca	20,4	-1,0	-53,5
Title deeds – Famagusta	30,8	-16,3	-44,0
Title deeds – Paphos	52,0	7,0	-40,4

Source: Central Bank of Cyprus (2010b).

Furthermore, in view of the conditions that prevailed in the run-up to euro adoption, the CBC deemed it necessary to postpone the interest rate reduction by 50 basis points and the reduction of the minimum reserve ratio to the respective euro area levels. Specifically, inflation followed an upward path, particularly in the second half of 2007, mainly reflecting the sharp increases in international oil and food commodity prices. At the same time, higher perceived inflation and inflation expectations played a role, albeit limited, in the exacerbation of

TABLE 6.5 Interest rate announcements in 2007

(%)

	Jan. 11	Feb. 8	Mar. 8	Apr. 12	May 10	Jun. 6	Jul. 5	Aug. 2	Sept. 6	Oct. 4	Nov. 8	Dec. 6
European Central Bank ⁽¹⁾	3,50	3,50	3,75	3,75	3,75	4,00	4,00	4,00	4,00	4,00	4,00	4,00
Bank of England ⁽²⁾	5,25	5,25	5,25	5,25	5,50	5,50	5,75	5,75	5,75	5,75	5,75	5,50
US Federal Reserve ⁽³⁾	5,25 30/31	-	5,25 20/21	-	5,25	5,25 27/28	-	5,25	4,75 18	4,50 30/31	-	4,25 11
Central Bank of Cyprus ⁽⁴⁾	4,50 12	4,50 23	4,50 12	4,50 13	4,50 18	4,50 6	4,50 17	-	4,50 10	4,50 8	4,50 12	4,50 10
												21
												4,00
												(unscheduled meeting)

Source: CBC.

(1) Minimum bid rate on the main refinancing operations.

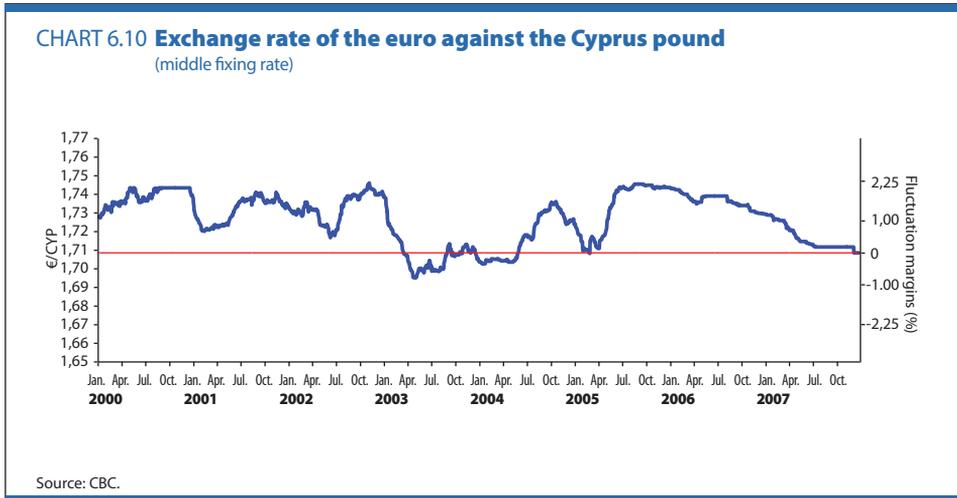
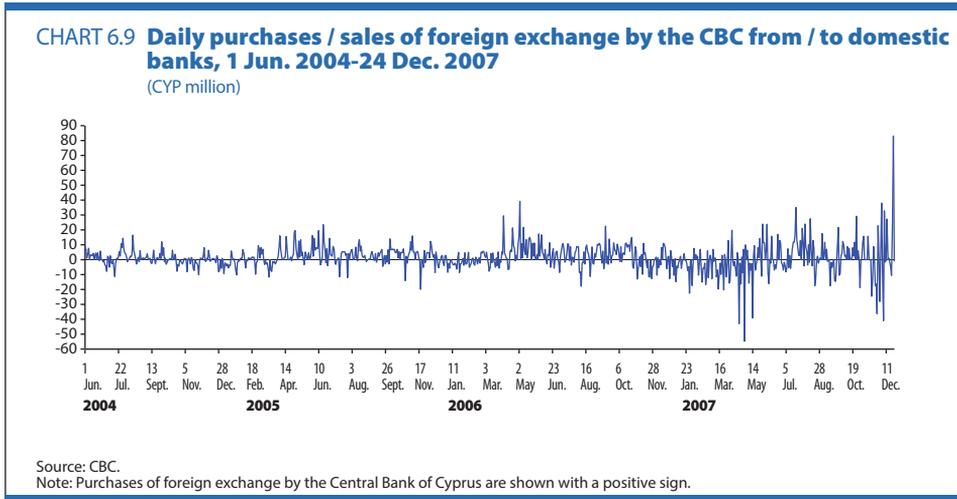
(2) Rate paid on commercial bank reserves.

(3) Federal funds rate.

(4) Bid rate on the main refinancing operations (repo rate).

inflationary pressures, via wage and price setting behaviour. It should be noted that the exorbitant credit growth was also reflected in a widening of the current account deficit, which peaked at 11,7% at end-2007, its highest level since 1978 (Central Bank of Cyprus, 2010b).

In its efforts to maintain normal liquidity conditions with a view to containing inflationary pressures, the CBC intervened in the money market by conducting auctions for the acceptance of deposits (depos) and absorbed, in monthly average terms, liquidity amounting to CYP265 million in 2007. In particular, the total foreign exchange transactions conducted by the CBC (**Chart 6.9**, p.243), taking also into account the gradual slight weakening of the Cyprus pound vis-à-vis the euro (**Chart 6.10**, p.243), led to net outflows of CYP341,16 million in the first half of 2007, compared with net inflows of CYP317,28 million in the corresponding period of 2006. These outflows were viewed as normal, given the 50 basis points decline in the interest rate differential between the



Cyprus pound and the euro in the first half of 2007 (**Table 6.5**, p.242). Moreover, in April 2007 a considerable decrease in excess liquidity was observed, mainly due to foreign exchange outflows and an increase in government deposits. At the auction conducted on 10 May 2007, the CBC absorbed the whole amount of bids totalling CYP40,0 million at an average interest rate of 3,29%, while on 19 July 2007 it mopped up CYP206 million through an extraordinary deposit operation at a fixed rate of 4,60% and with a maturity of 167 days.

The annual growth rate of domestic residents' deposits in local currency increased to 10,0% in October 2007 compared with 10,7% in September and 13,8% in October 2006. Similarly, domestic residents' deposits in foreign currency grew at an annual rate of 87,0% in October 2007 compared with 82,0% in September 2007 and 23,1% in October 2006. This development was partly due to the anticipated adoption of the euro on 1 January 2008, the decreasing interest rate differential between euro-denominated and Cyprus pound-denominated deposits, as well as due to the fact that, as from 30 October 2006, transactions on the Cyprus Stock exchange were conducted in euro.

Excess bank liquidity and the concomitant overheating of the economy, especially in the construction industry, led to a delay in the harmonisation of the minimum bid rate for the main refinancing operations with the corresponding euro area rate, which at the time stood at 4,00%. Full harmonisation of the CBC's key policy rates with the ECB's key rates was finally achieved on 21 December 2007 (**Table 6.5**, p.242), a few days before the adoption of the euro, while the minimum reserve ratio was harmonised on 1 January 2008 (i.e. it was reduced from 5% to 2%). The rates on the marginal lending facility and the deposit facility remained unchanged at 5% and 3%, respectively. It should be noted that under a CBC circular to the banks, banks' basic rate was set equal to the CBC's main refinancing rate and was applicable to loans agreed upon until 31 December 2007.

6.4 The implementation of monetary policy in Cyprus after accession to the euro area, 2008-2010

6.4.1 Cyprus accession to the euro area in 2008²⁸

In retrospect, one could argue that the monetary policy strategy that was adopted and implemented in Cyprus, in conjunction with disciplined fiscal and monetary policies, as well as the timely and effective public information both by the CBC and other parties involved, ensured Cyprus's successful and smooth entry into the euro area on 1 January 2008.

28. Main sources: Central Bank of Cyprus (2001-2010) and Central Bank of Cyprus (2008a and 2008b).

Since then, the key rates have been determined by the Governing Council of the European Central Bank (ECB), which comprises the Governors of the national central banks of all euro area countries, including the Governor of the CBC. Following the adoption of the euro and until 2010, credit growth to the private sector, as calculated on the basis of the ECB's definitions and methodology, averaged 12,0%, while lending rates declined further, standing on average at 6,00% over the same period

Despite the loss of monetary policy independence, the CBC is now responsible for implementing the common euro area monetary policy at the domestic level, by conducting monetary policy operations with domestic financial institutions (Orphanides, 2007). It should also be noted that in the context of a monetary union such as the Economic and Monetary Union (EMU), fiscal policy also plays a central role in ensuring that domestic inflation remains close to the euro area average.

In 2008, despite the measures adopted by the CBC in order to address the overheating of the economy and avert a potential bubble, as a result of excessive increases in credit growth and property prices, fiscal policymakers failed to follow a similar example and instead engaged in an ill-timed fiscal relaxation, with negative repercussions on public finances, the current account and inflation.

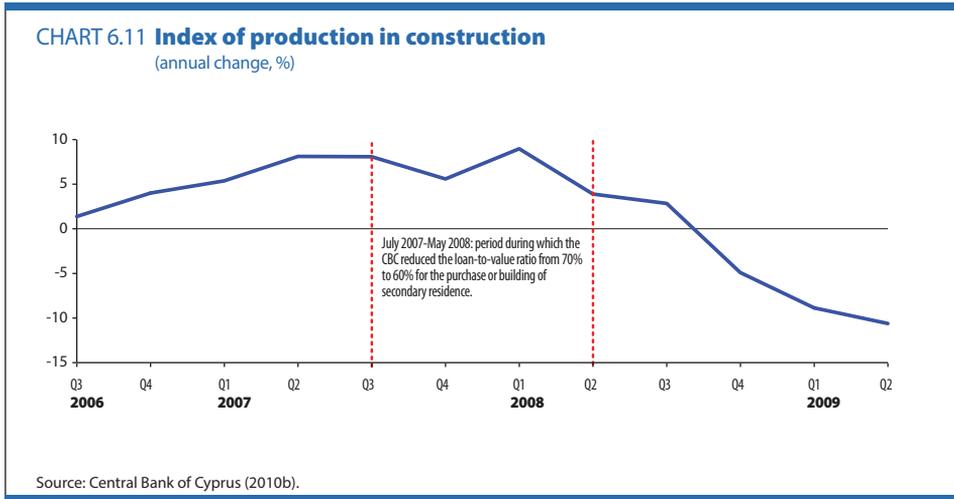
At the same time, the compulsory, under the circumstances, reduction in the CBC's key rate in December 2007, as well as the lowering of the minimum reserve ratio to the euro area level as from 1 January 2008, further fuelled the rapid growth in loans and monetary aggregates and, consequently, the overheating of the economy in 2008. As a matter of fact, during the first half of 2008, credit growth increased further, with the increase in loans to the private sector (excluding companies with no physical presence in Cyprus) reaching historically high levels in April 2008, with an annual rate of growth of 26,4%. This was mainly driven by strong economic activity in the construction and real estate sectors, as well as the excess bank liquidity created by the suspension of the obligation of banks to maintain 70% of their total euro-denominated deposits, which were no longer classified as foreign currency, in liquid assets

(Central Bank of Cyprus, 2009a). Credit expansion, which supported domestic demand, combined with an expansionary fiscal policy, brought about a further rise in inflation, in the context of an already robust, and apparently above potential, economic growth.

Notwithstanding, the reduction in the maximum loan-to-value ratio managed to dampen domestic demand, as the growth rate of loans to housing and the broader real estate sector, albeit still high, recorded a noticeable deceleration in the second quarter of 2008 (to 42,3% from 43,9% in the first quarter), halting the acceleration in credit expansion observed in 2006 and 2007. It should be noted that CCI, which are not subject to supervision by the CBC, had not reduced the maximum loan-to-value ratio, thereby causing distortions in the domestic financial system, as households could shift their residential mortgage applications to the CCI. In light of the above, and given that the share of the CCI in total lending for housing purposes was well above 50%, one would expect that the aforementioned macro-prudential measure adopted by the CBC would have had a stronger impact if the CCI had also lowered their maximum loan-to-value ratio.

Given the nature of the loan arrangements in real estate which have a built-in lag mechanism, since such loans must first be approved and later disbursed in tranches according to the progress of the construction work, the anticipated slowdown in the growth of loans, on account of the reduction in the maximum loan-to-value ratio, would take a few months to fully materialise. Furthermore, over the period June 2000-May 2008, a slowdown in the growth of related indicators such as title deeds issued, building permits and monthly sales contracts (**Table 6.4**, p.241), as well as in the approvals of new loans was recorded. Moreover, the index of production in construction showed clear signs of a slowdown at the end of the first half of 2008, following a period of rapid expansion (**Chart 6.11**, p.247) (Central Bank of Cyprus, 2010b).

Based on these developments, the CBC reviewed the measure adopted in July 2007 and restored the maximum loan-to-value ratio for the purchase or construction of a secondary residence back to 70% on 27 May 2008. Examining the data related to the real estate sector



subsequent to that decision, one may conclude that the measure was effective both in containing the extremely rapid growth of credit in the real estate sector, as well as in changing the unsustainable level of construction activity (Central Bank of Cyprus, 2010b).

As a result of the rapid growth of MFI loans in the first half of 2008, credit to the private sector, on an annual basis, remained elevated throughout the remainder of 2008 and throughout the first quarter of 2009, although it started declining sharply from November 2008 onwards. It is indicative that in the first quarter of 2009 the average annual rate of credit growth stood at 16,6% compared with 25,2% in the first quarter of 2008. The considerable slowdown recorded since the second half of 2008 was also partly related to the global economic and financial crisis, which was triggered by the collapse of the US market for securitised subprime mortgage loans and which rapidly spread around the globe.

The reversal of the climate can be seen more clearly by looking at monthly developments in credit growth. In more detail, in 2007 the average monthly increase in credit growth reached 1,8%, while in 2008 it decelerated to 1,5%. Ever since, both the monthly volumes and the monthly growth rates of loans have followed a downward path, with the average monthly rate of credit growth standing at 0,7% in 2009 and at a mere 0,6% in 2010, on the

back of subdued demand for holiday homes, mostly by foreigners, which led to weaker construction activity and slower credit growth to the broad real estate and housing sector.

6.4.2 The monetary policy of the euro area during the global economic crisis and its impact on the Cyprus economy²⁹

The global economic crisis that started in 2007 and intensified in September 2008 severely hit the real economy of several countries. As part of concerted efforts to deal with the economic crisis, the ECB and other major central banks decided, among other things, to reduce interest rates at an international level and adopt (standard and non-standard) measures to support banks' liquidity. All these actions were aimed at restoring the normal functioning of markets as soon as possible and mitigating the impact on the real economy (Orphanides, 2008).

Specifically, between October 2008 and May 2009 the ECB lowered its key rates by 325 basis points, taking into account weakened consumer confidence, decreased investment and exports, as well as an abatement of inflationary pressures and lower expectations about both future inflation and economic growth in the euro area. It should be noted that the interest rate cut of 50 basis points on 8 October 2008 was decided with an unprecedented coordination between a number of central banks, namely the US Federal Reserve, the Bank of England, the National Bank of Switzerland, the Bank of Canada and the Sveriges Riksbank. Moreover, in response to the crisis, the ECB adopted new measures in the context of its monetary policy implementation. Specifically, it expanded the list of marketable assets eligible as collateral for main refinancing operations; it conducted more longer-term refinancing operations; it increased the number of eligible counterparties for fine-tuning operations; and it conducted US dollar and Swiss franc liquidity-providing operations, in cooperation with the US Federal Reserve and the National Bank of Switzerland, respectively. These actions averted a deterioration of the

29. Main sources: Central Bank of Cyprus (2001-2010), Central Bank of Cyprus (2009a and 2009b), Central Bank of Cyprus (2010a and 2010b) and Central Bank of Cyprus (2011).

situation in the financial system in the euro area and worldwide (Orphanides, 2008).

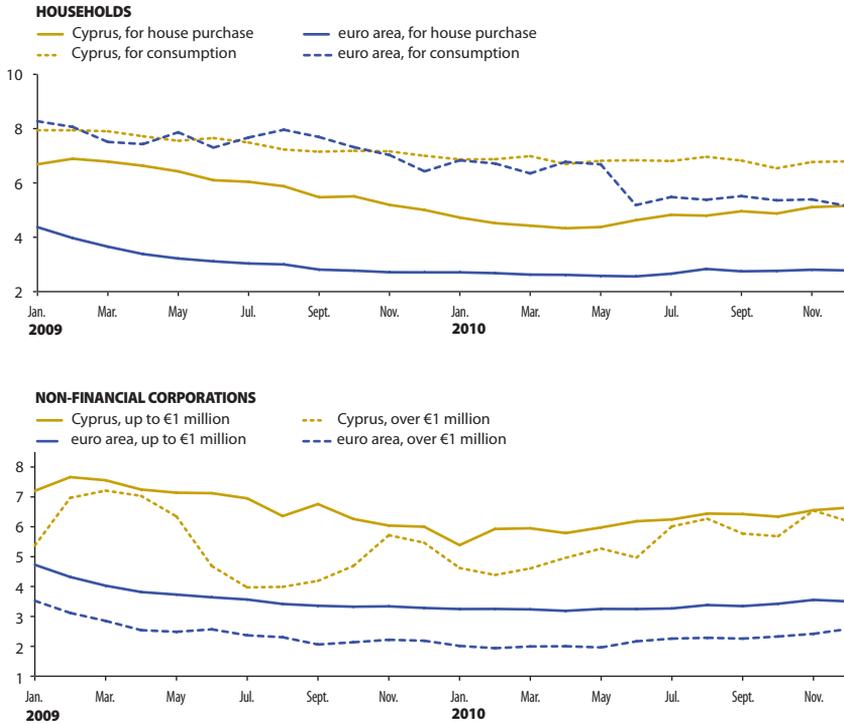
The above decisions of the ECB contributed to anchoring inflation expectations in line with the Governing Council's aim to maintain medium-term inflation rates below but close to 2%. By its commitment to the price stability objective, the ECB managed to support sustainable economic growth and employment and to safeguard financial stability (Orphanides, 2009).

Cyprus was less strongly affected by the impact of the crisis relative to other euro area countries and other advanced economies. This was due to the timely and successful entry of the country into the euro area prior to the onset of the crisis, as well as to the potent supervision of the banking system by the CBC over time. Unlike most banks in the euro area and around the world, Cyprus banks were not threatened by a liquidity shortage problem or exposed to overly risky assets, a fact that can be attributed to the CBC's effective regulatory framework, which, although occasionally seen as rigid, actually shielded the domestic banking system (Orphanides, 2009).

One important aspect of this strict supervision, which has been criticised as too strict and conservative, has been the CBC directives (introduced earlier and still in place) requiring banks to maintain minimum ratios of liquidity in domestic and foreign currencies. Under these directives, banks must maintain a minimum liquid asset ratio equal to 70% of total foreign currency deposits, while the definition of liquid assets is restrictive and does not include the various complex instruments, which prior to the financial crisis were globally considered to be highly liquid. Therefore, Cyprus banks had little motivation for investing in such instruments that would weigh on their liquidity; as a result, they were effectively protected from all those factors that brought other banking institutions abroad to the brink of collapse or caused them to actually collapse.

Nevertheless, the international turmoil, particularly after its intensification in September and October 2008, inevitably affected credit conditions in Cyprus as well. As was the case in many other countries,

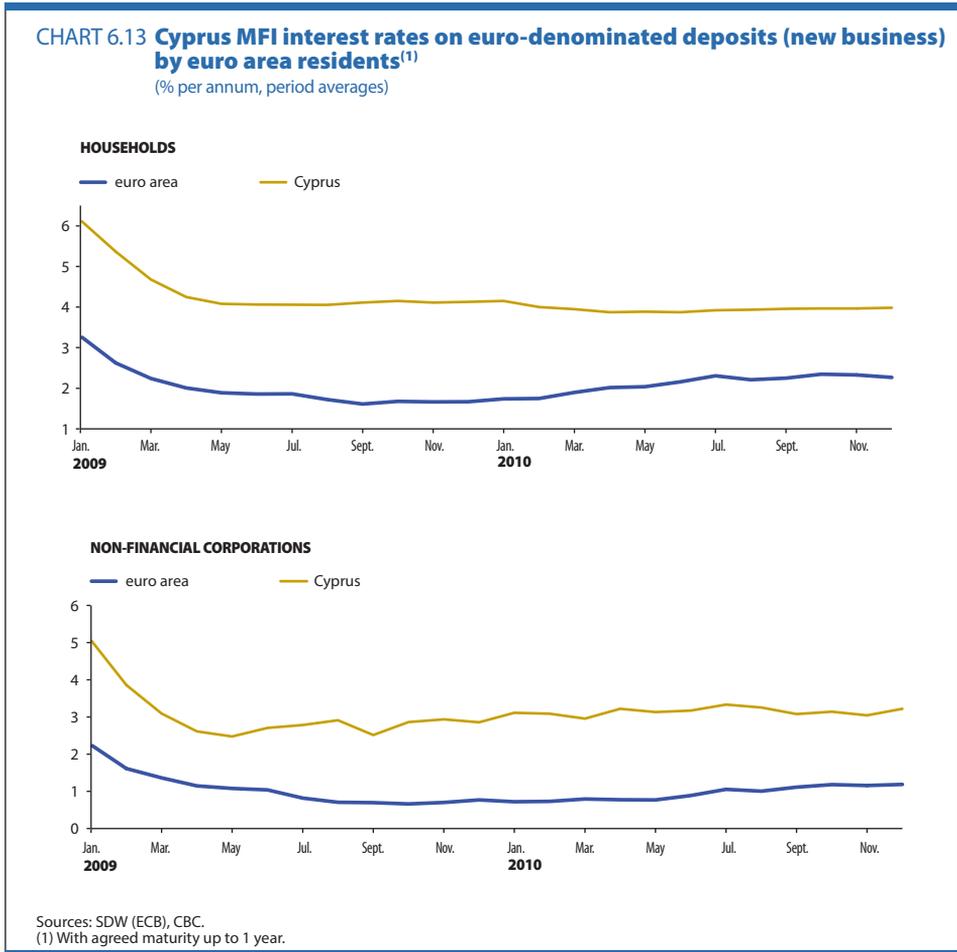
CHART 6.12 Cyprus MFI interest rates on euro-denominated loans (new business) to euro area residents⁽¹⁾
 (% per annum, period averages)



Sources: SDW (ECB), CBC.
 (1) At floating rate and up to 1 year initial rate fixation.

deposit and lending rates increased markedly in 2008 (**Charts 6.12 and 6.13**, p.251), in line with the interbank Euribor rate, which serves as a reference rate for several loans and deposits. At the same time, the heavy reliance of the Cyprus economy on external demand and tourism could not leave the country unaffected by such a widespread and deep global economic recession (Orphanides, 2008).

Amid persistent uncertainty in the economic environment, major central banks continued to pursue accommodative policies by keeping their key rates at very low levels, with the ECB’s interest rate on main refinancing operations remaining unchanged from 13 May 2009 at 1%



throughout 2010. On the other hand, the Eurosystem continued to provide liquidity to the euro area banking system; meanwhile, it began to phase out its earlier non-standard measures that had been aimed to restore the normal and effective functioning of the monetary policy transmission mechanism.

In 2010, the Cyprus economy, despite some dim signs of recovery, continued to be weighed down by the adverse global economic conditions of 2009, and this was reflected in all relevant indicators, including credit expansion. After following a steep upward path from 2007 to mid-2008, the rate of credit growth to the private sector declined

TABLE 6.6 Loans to domestic households ^{(1), (2)}

	Outstanding balance as a % of total ⁽³⁾		Annual change, %	
	2010 Dec.	2009 Dec.	2009 Dec.	2010 Dec.
Domestic households	100,0	8,8	8,4	9,4
1. Loans for consumption	15,0	7,5	0,3	
2. Loans for house purchase	53,0	11,5	14,3	
3. Loans for other lending	32,0	5,7	6,6	

Source: CBC.

(1) Sectoral classification is based on ESA 95.

(2) Including non-profit institutions serving households.

(3) As at the end of the last month available. Figures may not add up due to rounding.

dramatically in 2009, remaining broadly unchanged during 2010. Specifically, it stood at 8,2% in December 2010 compared with 8,4% one year earlier and it was mainly supported by a rise in housing loans, which recorded an annual growth of 14,3% in December 2010 compared with 11,5% in December 2009 (**Table 6.6**).

Focusing on deposits, the annual growth rate of total deposits³⁰ by the domestic private sector exhibited an upward trend since the beginning of 2010 reaching 6,3% at end-December 2010 from 2,4% in the corresponding month of the previous year, largely on account of an increase in deposits by non-financial corporations, insurance companies and pension funds. The overall subdued behaviour of depositors, amid a climate of uncertainty about the prospects of the Cyprus economy, was still reflected in subdued consumption and preference for interest-bearing deposits. Furthermore, fierce competition among MFIs in attracting deposits continued, given that these are considered to be their main source of funding. As a result, both deposit and lending rates in Cyprus remained elevated relative to the corresponding euro area rates (**Charts 6.12**, p.250 and **6.13**, p.251).

As regards 2011, although for most of the year the ECB implemented a clearly tighter anti-inflationary policy in relation to 2010, factors such as continued uncertainty in the economic environment, an abrupt decline in euro area growth rate, as well as the financial market

30. Excluding deposits with MFIs.

turbulence that was triggered by the sovereign debt crisis³¹, led to a change in its monetary policy stance. Specifically, in November and December 2011, under its new president Mario Draghi, the ECB lowered its key rates by 25 basis points, respectively, while it continued to provide liquidity support to the banking system through its standard and non-standard monetary policy measures, with a view to ensuring adequate funding for euro area credit institutions. As a result, on 14 December 2011 the interest rate on the main refinancing operations of the Eurosystem was 1,00%, while the marginal lending facility rate and the deposit facility rate stood at 1,75% and 0,25%, respectively.

In the domestic financial sector, the current international and domestic financial developments, including the haircut on the Greek government debt, the recent downgrades of Cyprus government bonds and domestic banking institutions by international rating agencies, as well as the need domestic MFIs to shield themselves against any new macroeconomic shocks, have had a direct impact on them, as they have been striving to secure funding and strengthen their capital adequacy ratios. In light of the above, interest rates have risen sharply across all loan categories compared with the corresponding period of 2010. An upward trend is also observed in deposit rates, which are strongly influenced by competition between commercial banks, CCI, as well as foreign banks active in Cyprus in an attempt to increase their market share in deposits.

Furthermore, in the context of a weak and uncertain financial environment both domestically and internationally, a subdued domestic economic activity, particularly during the second half of 2011, as well as high borrowing costs, the annual growth of domestic MFI credit to the private sector decelerated considerably in 2011 to 5,0%, from 8,2% in 2010. It should be noted that the growth rate of deposits also recorded a significant downward trend in 2011 (declining from 5,2% in January 2011 to 1,1% in December 2011), partly reflecting the increasing trend in the withdrawal of deposits by both non-financial corporations and

31. For a more detailed discussion of the euro area sovereign debt crisis, see **Chapter 8**, p.303.

households, in order to meet their business and other operating costs or current obligations, respectively.

6.5 Summary

The implementation of a prudent and unambiguous monetary policy by the CBC was key to ensuring price stability and, subsequently, a strong economic growth in Cyprus. During the development and evolution of the domestic monetary policy, following the establishment of the CBC in 1963 and until the adoption of the euro, a wide range of standard and non-standard measures were utilized. Initially, the CBC applied direct liquidity controls such on the foreign exchange, the cost of credit, the minimum reserve ratio and the minimum liquidity ratio. Later on, during the mid-1990s, direct liquidity controls were replaced by open market operations under the new monetary policy framework introduced in 1996. In exceptional circumstances, the CBC also resorted to quantitative restrictions on credit.

The long-term objective of the CBC for the full membership of Cyprus in the EMU was attained on 1 January 2008. The Ecofin Council's decision of 10 July 2007 to approve Cyprus accession to the euro area at the same central parity that the CBC had unilaterally chosen in 1992 to peg the Cyprus pound to the ECU, confirmed the effectiveness of its monetary policy strategy and implementation over time. Upon accession of the country to the euro area, the CBC lost the ability to conduct monetary policy at the domestic level. Key interest rates are now determined by the Governing Council of the ECB, which comprises the governors of the central banks of all euro area countries, including the governor of the CBC, while the implementation of the common monetary policy is entrusted to the national central banks. During the recent financial crisis and amid the current euro area sovereign debt crisis, the CBC, as part of the Eurosystem, has been actively involved in the implementation of standard and non-standard measures to address the ensuing adverse effects on European money and capital markets and restore financial stability.

Appendices

Appendix 6.1

ANNOUNCEMENT OF THE CENTRAL BANK OF CYPRUS

Monetary policy decisions

10 August 2001

At today's meeting, the Board of Directors of the Central Bank, after taking into consideration the Monetary Policy Committee's recommendations, reached the following decisions:

1. The key rates of the Central Bank, i.e. the marginal lending facility (Lombard) rate and the deposit facility rate, are reduced to 6,5% and 3,5%, respectively.
2. The target for the annual credit growth in 2001 remains unchanged at 11%.

During its review of recent economic developments, the Board of Directors stressed that the economy appears to continue growing at a satisfactory pace, since both domestic and foreign demand have increased at relatively high rates. Specifically, on the demand side, private consumption growth in May 2001, based on the retail sales volume index, remained broadly unchanged compared with the corresponding month of the previous year, while for the first five months of the year retail sales recorded a slight acceleration. A significant increase is also observed in foreign demand for services, in particular tourism, which has started to recover from a weak first quarter. Nevertheless, tourist arrivals have continued to decline in the first half of 2001 compared with the first half of 2000. In the secondary sector, the picture is mixed, as the construction sector showed clear signs of recovery in the first half of 2001, whereas the manufacturing sector weakened over the period January-April 2001.

Labour market and price developments continue to be encouraging. Specifically, unemployment decreased to 3,1% of the active population between January and June compared with 3,7% in the corresponding

period of 2000, while inflation declined to 1,01% in July, bringing the rate of inflation for the first seven months of the year to 1,82%.

The fiscal deficit rose to CYP22,9 million in the period January-April, while for the year as a whole it is projected to decline to about 2%. In the monetary sector, credit growth to the private sector has continued to grow at a higher rate than the target set by the Central Bank.

Despite the so far satisfactory performance of the economy, the Bank's Board of Directors expressed some doubts about future economic growth, due to the protracted international economic downturn and the continued decline in the stock exchange index. In particular, the continued drop in stock prices has raised reasonable concerns about a possible acceleration of negative repercussions on domestic consumer demand and, in general, economic activity. Furthermore, a marked shift was observed towards foreign borrowing, which undermines monetary policy targets, and at the same time adds to the external debt of Cyprus.

In acting pre-emptively to maintain the economy on a growth track, avert the above unfavourable developments and limit foreign currency borrowing, which increased to alarming proportions, the Bank's Board of Directors decided to reduce the key rates of the Central Bank by 0,5 percentage point, while the narrow fluctuation margins of the Cyprus pound vis-à-vis the euro of 2,25% are abandoned and are replaced by the wider margins of 15%.

Appendix 6.2

ANNOUNCEMENT BY THE CENTRAL BANK OF CYPRUS

Monetary Policy Decisions

30 April 2004

The Monetary Policy Committee held a meeting today and conducted a thorough analysis of economic data, particularly with relevance to

monetary developments, in view of the abolition of restrictions on capital movements as from 1 May 2004.

The Committee concluded that the Cyprus pound remains strong, maintains its value unchanged and confirms the overall perception that it rests upon sound economic fundamentals. Taking into account all of the above, the Committee decided to raise its key rates by one percentage point, sending a strong message in support of the pound against unfounded rumours about an alleged imminent devaluation of the currency. This decision renders interest rates in Cyprus more attractive, which can have positive effects on inflows of foreign funds.

More specifically, the Monetary Policy Committee reached the following decision:

The Central Bank's key interest rates, i.e. the Lombard rate and the overnight deposit facility rate, are raised by one percentage point, to 5,5% and 3,5%, respectively.

Appendix 6.3

Economic Research Department, Central Bank of Cyprus Concise Monetary Policy Report

June 2004

Introduction

[...] On 30 April 2004, the Central Bank's Monetary Policy Committee increased the official interest rate from 4,5% to 5,5%. This decision resulted, in part, in the reversal of capital outflows that had occurred in the last fortnight of April. Consequently, in the first 20 days of May there were net currency inflows and, during the first five months of the year, there were smaller net currency outflows compared with the same period last year.

Appendix 6.4

ANNOUNCEMENT BY THE CENTRAL BANK OF CYPRUS

Foreign currency loans

13 June 2006

In response to the observed growing trend towards foreign currency borrowing, the Central Bank of Cyprus would like to draw the attention of the public to the following:

1. Before taking up a loan in foreign currency, borrowers should take into serious consideration that the era of accommodative monetary policies and historically low interest rates at the international level has come to an end. For instance, the US Federal Reserve has raised its key policy rate from 1% to 5% after 16 consecutive increases, while the ECB has also raised its key interest rates on three occasions during the last six months. According to economic analysts, further increases in interest rates should be expected worldwide.
2. Moreover, as regards loans in foreign currency, such as the Japanese yen, the Swiss franc and the US dollar, the entailed foreign exchange risk should be taken into account very seriously and borrowers should weigh carefully the potential negative effects on the final amount due, hence their ability to repay their loan in a timely manner, from possible large fluctuations in the exchange rates of these currencies vis-à-vis the Cyprus pound.

Appendix 6.5

CBC policy rate

TABLE Π.5 **Official interest rates of the CBC**
(% per annum)

Date of monetary policy decision	Deposit facility	Open market operations			Marginal lending facility
		Main refinancing operations	Liquidity absorbing operations		
			Repo operations	Reverse repo operations	
		Minimum bid rate	Maximum bid rate	Maximum bid rate	
2001 10 Aug.	3,50	5,00	5,00	-	6,50
18 Sept.	3,00	4,50	4,50	-	6,00
02 Nov.	2,50	4,00	4,00	4,00	5,50
2002 13 Dec.	2,50	3,75	3,75	3,75	5,00
2003 04 Apr.	2,50	3,50	3,50	3,50	4,50
2004 30 Apr.	3,50	4,50	4,50	4,50	5,50
2005 25 Feb.	3,25	4,25	4,25	4,25	5,25
20 May	2,75	3,75	3,75	3,75	4,75
09 Jun.	2,25	3,25	3,25	3,25	4,25
2006 01 Sept. ⁽²⁾	2,50	4,50	4,50	4,50	4,50
2007 12 Mar.	2,75	4,50	4,50	4,50	4,75
06 Jun.	3,00	4,50	4,50	4,50	5,00
21 Dec.	3,00	4,00	4,00	4,00	5,00

Source: CBC.

(1) The first operation for the acceptance of deposits was conducted on 9 October 2001 with a maximum bid rate of 4,50%.

(2) Following the Monetary Policy Committee's decision on 1 September 2006, the main refinancing operations rate (repo) replaced the marginal lending facility rate (Lombard), which had been used since 1 January 2001, for the purpose of pricing local currency bank loans.

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ABBREVIATIONS CHAPTER 7

Athex: Athens Exchange

CB: Central Body

CBC: Central Bank of Cyprus

CCB: Co-operative Central Bank

CCI: Co-operative Credit Institutions

RoCY: Republic of Cyprus

CSE: Cyprus Stock Exchange

CSSDA: Authority for the Supervision and Development of Co-operative Societies

CYSTAT: Statistical Service of Cyprus

ECB: European Central Bank

ECP: Euro Commercial Paper

EMTN: Euro Medium-Term Note

EMU: Economic and Monetary Union

EONIA: Euro Overnight Index Average

EU: European Union

EURIBOR: Euro Interbank Offered Rate

FSF: Financial Stability Fund

GDP: Gross Domestic Product

GRDS: Government Registered Development Stocks

IF: Investment Firms

IMF: International Monetary Fund

MFI: Monetary and Financial Institutions

NIBOR: Nicosia Interbank Borrowing Offered Rate

TB: Treasury Bills

US: United States

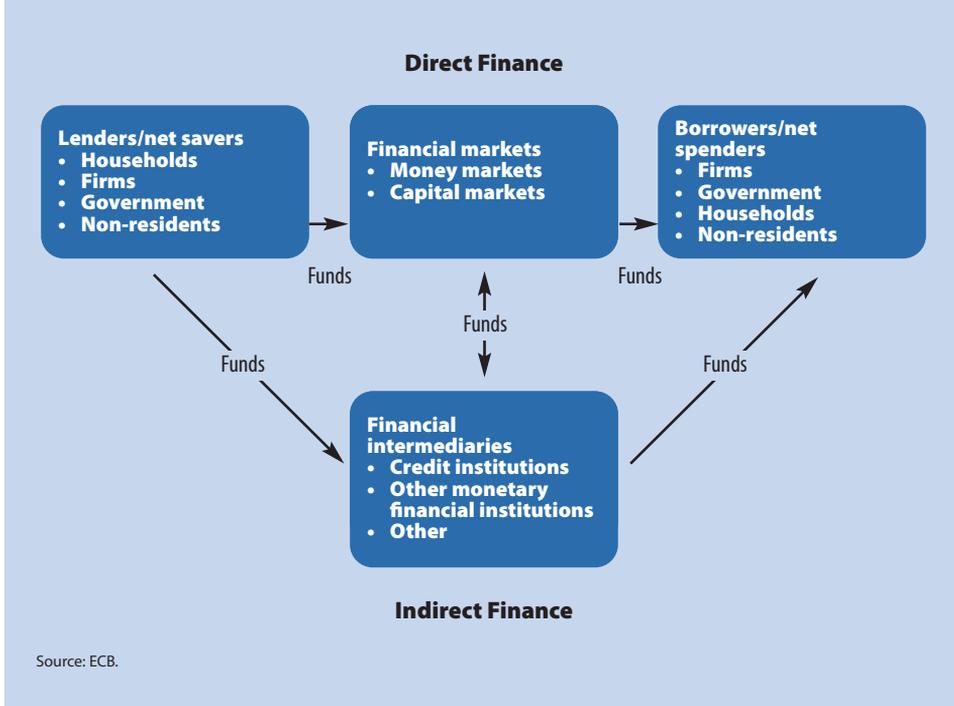
7. The financial system of Cyprus

Christiana Argyridou-Dimitriou, Ektoras Kanaris*

7.1 Introduction

The development of Cyprus into a business centre of the Mediterranean can be traced back to the Bronze Age (2300 BC). The island's strategic location at the crossroads of three continents, combined with its rich agricultural, forest and above all mineral resources, have enabled Cyprus to evolve into a transit and trade centre, much coveted by conquerors, as domination of the island meant effective control over the trade routes of the then known world. Following the country's independence in 1960, one of the key priorities of the first government was to accelerate economic growth and create the necessary infrastructure. Thus, in the early years of independence, the annual growth rate reached 7%, mainly driven by exports of agricultural products and minerals. After 13 years of planned growth, the positive performance came to a temporary halt in 1974, with the Turkish invasion and the occupation of the northern part of the island by Turkey. The economy was momentarily threatened with collapse and faced by a load of problems; nevertheless, Cyprus managed not only to rebound but in fact to develop into a thriving tourist and business centre. Today the tertiary sector, predominantly consisting of financial services, is considered to be the backbone of the Cyprus economy, making Cyprus an international business

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CHART 7.1 **Functions of financial systems**

and services centre. Specifically, the estimated contribution of this sector to GDP was about 8% in 2010, while financial intermediaries currently employ some 17.600 persons.

The financial system in Cyprus consists of financial intermediaries, such as banks and insurance companies, financial markets such as the money market and the capital market, as well as financial infrastructure enabling payment transfers and the trading, clearing and settlement of securities (**Chart 7.1**). Among financial intermediaries, the banking and credit co-operative sectors play a dominant role in the Cypriot financial system. For the purposes of this chapter, the private insurance sector and financial infrastructure are not included in the scope of discussion.

The present chapter attempts a historical overview of the development of the Cyprus financial system. **Section 7.2** (p.265) summarises the infrastructure and the key factors behind the sector's development. **Section**

7.3 (p.267) describes in brief the establishment and evolution of the banking and credit systems, with a subsection dedicated to co-operative credit institutions. **Section 7.4** (p.284) discusses the evolution of money and capital markets and, lastly, **Section 7.5** (p.292) outlines the repercussions of the global financial crisis on Cyprus.

7.2 The evolution of the financial sector in Cyprus

The rapid development of the sector was due to the strategic planning of an economic policy aimed at gradually transforming Cyprus into a regional centre for financial services diversifying away from tourist services. Macroeconomic stabilisation, the liberalisation ensuing from the accession of Cyprus to the European Union (EU) and the euro area, as well as Cypriots' high level of education contributed to this direction. Efforts to create a regional centre for services began in the 1970s with the introduction of a special tax regime for international business companies owned by non-residents (off-shore companies). Following Cyprus's entry into the EU, off-shore companies were abolished, and the special tax treatment, as well as the general legal and tax systems were harmonised with EU standards. Cyprus, however, continues to have a number of advantages for international business companies which develop investment activities. Such benefits include a favourable tax system, a sophisticated system of legal, accounting and banking services and state-of-the-art technological infrastructure. Specifically, corporate tax, at a rate of 10%, is among the lowest in the EU and in Europe more generally (see **Table 7.1**, p.266). Moreover, Cyprus has signed bilateral investment agreements with 17 countries and double tax treaties with 40 countries, which contribute to an alleviation of the tax burden, while 39 more agreements are currently under negotiation. In addition, the liberalised foreign investment policy, coupled with free capital mobility, have created a very favourable business environment.

Following the decision of the Cyprus government to apply for

TABLE 7.1 Comparison of tax rates in selected European countries
(%)

	Bulgaria 1 Jan. 2011	Cyprus 1 Jan. 2011	Gibraltar 1 Jan. 2011	Isle of Man 1 Jan. 2010	Liechtenstein 1 Jan. 2011	Malta 1 Jan. 2009
Standard corporate tax rate	10,00	10,00	10,00	0,00	12,50	35,00
Effective tax payable	10,00	10,22	31,33	0,00	14,34	6,80
Profit after tax	90,00	89,78	68,67	100,00	85,66	93,20
Withholding tax (company, non-treaty country)	4,50	0,00	0,00	0,00	0,00	0,00
Dividend distributed	85,50	89,78	68,67	100,00	85,66	93,20
Percentage of accounting profit received by shareholder if it is:						
An individual who is:						
EU-resident	85,50	76,32	68,67	100,00	85,66	60,58
Treaty country resident	85,50	89,78	68,67	100,00	85,66	93,20
Non-treaty country resident	85,50	89,78	68,67	100,00	85,66	93,20
A company which is:						
EU-resident	90,00	89,78	68,67	100,00	85,66	93,20
Treaty country resident	85,50	89,78	68,67	100,00	85,66	93,20
Non-treaty country resident	85,50	89,78	68,67	100,00	85,66	93,20

Source: AGN International.

membership to the EU in 1990, the authorities intensified their efforts for harmonisation with the EU acquis. This propelled significant reforms which contributed to the expansion of the economy and the financial sector in particular. For instance, on 1 January 2001 the statutory interest rate ceiling was abolished, enabling the CBC to proceed further with the gradual liberalisation of exchange controls on capital flows. Furthermore, the liberalisation of interest rates urged banks to expand the range of their products and services in a context of enhanced competition, offering a wider choice to the public and better terms to borrowers (Georgiadou, 2002).

Despite the remarkable progress achieved over the last decades, the financial sector is faced by challenges associated with its structure and growth model. Financial supervision, with responsibilities divided among different bodies corresponding to the segments of the financial sector, is considered segmented at the expense of its effectiveness and efficiency (IMF, FSAP 2009). Specifically, the CBC has responsibility for the

regulation and supervision of commercial banks, while the Authority for the Supervision and Development of Co-operative Societies (CSSDA) is responsible for the supervision of Co-operative Credit Institutions (CCI). The Cyprus Securities and Exchange Commission is the supervisory authority for investment firms (IF), the Superintendent of Insurance at the Insurance Companies Control Service under the Ministry of Finance is responsible for the supervision of insurance operations and the Supervisory Authority of Occupational Retirement Benefits Funds under the Ministry of Labour and Social Insurance is entrusted with the supervision of Provident Funds.

7.3. The banking and credit system

7.3.1 Establishment and development

The core function of the financial system refers to the channeling of resources from surplus units (saving) to deficit units (investment). This takes place either directly by the trading of securities on the capital market or indirectly via the intermediation of financial institutions. Financial intermediation methods and channels differ across countries depending on the state of economic development, as well as on the size and the degree of development of the institutional framework. In Cyprus, the financial sector constitutes the main source of financing of the economy, with Monetary Financial Institutions (MFIs) playing a dominant role in financial intermediation.

The Cyprus banking system has a relatively long tradition, which dates back to the early colonial years. Initially, banks were owned and controlled by foreigners. The first bank to operate on the island was the Ottoman Bank, founded in 1864 as a joint venture of French and British interests, opening its first branch in Larnaca. Its main activity was the financing of agricultural trade, while from 1878 until 1963 the bank carried out the functions of a central bank for the colonial government. Other foreign banks followed suit, such as

the Bank of Athens (1893), the National Bank of Greece (1902), the Ionian Bank (1926) and Barclays Bank (1937). The first financial institutions owned and controlled by Cypriots emerged at the beginning of the 20th century as savings banks. Specifically, the Nicosia Savings Bank was founded in 1899, while the Popular Savings Bank of Limassol, as well as the Nicosia Savings Box, renamed to Nicosia Moslem Savings Bank and later to The Nicosia Turkish Bank Ltd., were established in 1901. The Nicosia Savings Bank and the Popular Savings Bank of Limassol were the predecessors of the two largest banks currently active on the island, while three banks of Turkish-Cypriot or Turkish origin operated until 1974: the Nicosia Turkish Bank Ltd., the Cyprus Turkish Cooperative Central Bank Ltd. and the Türkiye İş Bankası.

The second phase in the development of the financial system was marked by the enactment of the Cyprus *Company Law* 1922, under which many savings banks were registered as limited companies and expanded their scope of activities. It should be noted that there was neither institutional nor regulatory framework in place for banking business up until the CBC's establishment in 1963. The absence of a lender of last resort became clear in 1939 when domestic banks had to confront speculative shocks, which forced the colonial government to suspend banking operations by declaring a bank holiday. Foreign banks then assumed the role of the lender of last resort under government guarantees (Phylaktis, 1994). In 1939 the *Banking Business (Temporary Restrictions) Law* was passed according to which a Controller of banks was appointed, and banking business became subject to licensing requirements. Notwithstanding the existence of this law, there was no legislation concerning minimum capital requirements, adequate financial reporting or creditworthiness checks for banks. The inadequate and obsolete law of 1939 was replaced by the *Banking Law of 1997*, which was in line with EU Directives, as well as the prevailing banking trends and practices.

Serious distortions in the shaping of the financial system were also caused by the existence of an interest rate ceiling. The statutory interest rate ceiling of 9%, aimed at combating usury (Christodoulou, 2006), was introduced in

1944 and reconfirmed with the *Interest Rate Law of 1977*. The CBC had the authority of determining the interest rate. During the 1944-2000 period, this rate was subject to only two changes: in 1994 the interest rate ceiling was lowered from 9% to 8.5%, and then in 1997 to 8%. As a result, until interest rates were liberalised on 1 January 2001, bank competition focused on better customer service and more extensive branch networks.

An important aspect of the domestic banking landscape is the co-operative movement, active in Cyprus since the early 1900s. At end-2010, there were 110 Co-operative Credit Institutions (CCI), all but one having signed a permanent affiliation agreement with the Co-operative Central Bank (CCB) which guarantees the total of CCI liabilities and their off-balance sheet items with some exceptions.

Besides domestic banks, International Banking Units (IBUs) also have an important presence. IBUs were initially confined to operations in foreign currency with non-residents, but as from 1 January 2001 they were authorised by the CBC to also grant loans in foreign currency to residents. IBUs operating in Cyprus enjoyed significant tax incentives. The repeal of the Exchange Control Law by the *Capital Movement Law (115(I)/2003)* that came into effect as from Cyprus's accession to the EU, combined with the 2002 tax reform, created a new context for the functioning of the IBUs already active in Cyprus. Specifically, as from 1 January 2006, all IBUs are subject to the single tax rate of 10% like domestic banks and may provide the entire range of banking services to residents of Cyprus.

Over the last few decades, the domestic banking and credit system has grown to a significant size and developed a broad array of services such as providing all types of deposit accounts, short-term credit facilities, financing of capital and other investment, foreign exchange trading, trade financing, credit cards and other types of plastic money, Automated Teller Machines (ATMs) and consulting services.

An important development for the banking system's structure has been the acquisitions of the largest foreign-controlled banks by domestic banking institutions. Specifically, the Bank of Cyprus acquired the domestic business

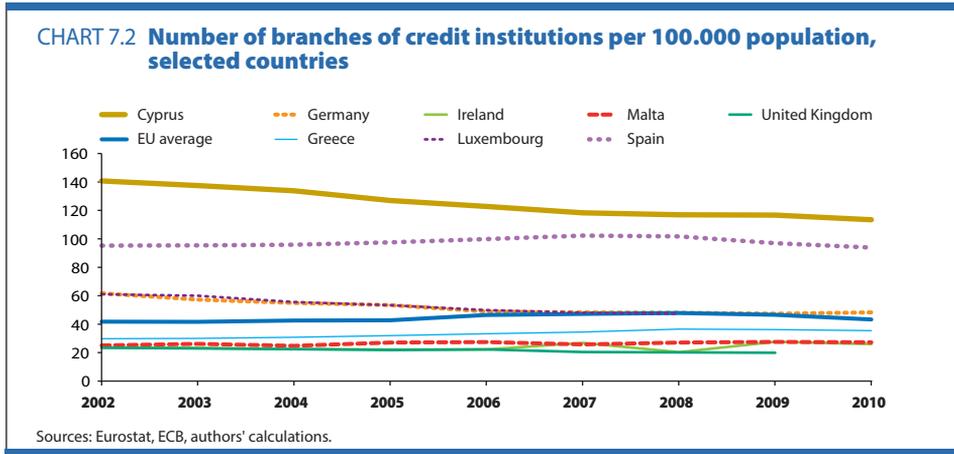
of Standard Chartered Bank in 1982, Laiki Bank bought out Grindlays Bank in 1983 and Hellenic Bank took over Barclays Bank in 1996. Although in the months following the 1974 invasion, prevailing uncertainty made foreign banks more attractive for depositors, from 1976 onwards the share of deposits with foreign banks had been declining significantly (Phylaktis, 1994). This was due to the gradual restoration of political stability but, most crucially, to higher competition among commercial banks. Following the establishment of Hellenic Bank in 1976, the rapid growth of Laiki Bank and the recovery of the Bank of Cyprus from the effects of the invasion, those three domestic banks, in their efforts to maintain and increase their market shares, embarked on aggressive strategies as regards the development and the expansion of their branch networks. Against this background, the reluctance of foreign banks to change their operational strategies to adjust to a more competitive environment, led to their withdrawal from the Cyprus market.

Contrary to the predictions of standard economic theory, acquisitions resulted in stronger competition. The smaller number of players in the oligopolistic market urged banks to further increase their market shares. As a result of intense competition, the quality and the quantity of services provided were improved to reach the standards prevailing in Europe and other advanced economies at the time. A landmark in that process was also the creation of the JCC payment system by the two largest banks in 1989, to provide a single platform for card-processing. By 1991 all commercial banks had become members of JCC.

Increased competition among banks also encouraged the expansion of their branch network. Although beneficial to customers, this resulted in what can be described as an overbanked system. A relevant measure in this respect is the population density of branches, i.e. the number of branches per 100.000 inhabitants. **Chart 7.2** (p.271) shows that Cyprus, despite a drop in recent years, has about three times more bank branches¹ than the EU-27 average.

As the domestic banking system did not offer much room for expansion, the strategies of domestic banks focused on expansion overseas. By 1990 the two largest banks offered services in the UK, Greece

1. Including CCI.



and Australia, while until very recently Cypriot banks were active in all developed continents with a special emphasis on Eastern Europe.

The entry of Cyprus into EMU, the gradual abolition of foreign exchange controls and the liberalisation of interest rates brought about greater transparency and exposed domestic credit institutions to European competition. In order to cope with the highly competitive environment, banks undertook structural changes, e.g. cutbacks in operational costs and development of innovative activities, such as telebanking.

7.3.2 The structure of the banking sector

At end-2010, the domestic banking sector comprised 41 banks. Overall, banks provide their services through a network of 457 branches excluding CCI (see **Table 7.2**, p.272).

The banking sector in Cyprus commenced via private initiatives, with the exception of three government-controlled specialised credit institutions. Of the 40 commercial banks currently active in Cyprus, 15 are incorporated in Cyprus and only 7 have Cyprus as their country of origin (**Table 7.3**, p.273). The remaining banks are subsidiaries of both EU and non-EU banks (available data until the end of December 2010).

Four banks, including the three largest domestic MFIs, are public

TABLE 7.2 Bank branches⁽¹⁾ in Cyprus

	1991	2010
Bank of Cyprus Public Co Ltd	165	143
Marfin Popular Bank Public Co Ltd	127	116
Hellenic Bank Public Co Ltd	66	71
National Bank of Greece (Cyprus) Ltd	22	21
Emporiki Bank - Cyprus Ltd	0	12
Piraeus Bank (Cyprus) Ltd	16	15
Alpha Bank Cyprus Ltd	10	36
Cooperative Central Bank Ltd	5	4
Cyprus Development Bank Public Co Ltd	1	1
Housing Finance Corporation	7	5
Société Générale Bank - Cyprus Ltd	0	7
National Bank of Greece Ltd	0	1
Eurobank EFG Cyprus Ltd	0	6
USB Bank Plc ⁽²⁾	2	17
Barclays Bank Plc	49	0
BNP Paribas ⁽³⁾	0	1
Russian Commercial Bank (Cyprus) Ltd	0	1
Total	470	457

Source: CBC.

(1) Branches operating in Cyprus.

(2) Formerly operating as Yialousa Savings Bank.

(3) Ceased to operate in Cyprus on 30 June 2011.

companies listed on the Cyprus Stock Exchange (CSE). The two largest of these banks, namely Bank of Cyprus Public Company Ltd. and Marfin Popular Bank Public Co. Ltd., are also listed on the Athens Exchange (Athex) (Table 7.4, p.274).

Banks have no close links to business groups, as strict restrictions apply regarding the extent of banks' holdings in non-bank entities. Specifically, unless a prior written approval is granted by the CBC, banks are not permitted to acquire (direct or indirect) holdings in any other company, in excess of 10% of the company's share capital and in excess of 15% in the case of banks established in the Republic of Cyprus. In addition, the total of such holdings may not exceed 60% of the bank's own funds. An exception to the aforementioned provisions applies to holdings in companies doing business integral to or closely related to banking, as well as to holdings in non-bank entities that were granted in the process of satisfaction of debts.

TABLE 7.3 Structure of the banking sector⁽¹⁾ (consolidated data)

	2004	2005	2006	2007	2008	2009	2010
Banking sector structure							
Banks with Cyprus origin	8	7	7	7	7	7	7
Banks with foreign origin	30	30	30	33	33	33	33
Subsidiaries of banks from EU countries	7	8	8	7	7	7	6
Branches of banks from EU countries	4	4	4	9	10	9	9
Subsidiaries of banks from non-EU countries	1	1	1	1	1	1	2
Branches of banks from non-EU countries	18	17	17	16	15	16	16
Total	38	37	37	40	40	40	40
Banking sector total assets (euro million)							
Banks with Cyprus origin	35.869	43.749	58.667	73.961	86.836	96.039	99.772
Banks with foreign origin	12.763	18.481	24.263	31.200	38.762	48.440	44.297
Subsidiaries of banks from EU countries	8.233	12.112	18.515	18.583	24.393	36.168	30.227
Branches of banks from EU countries	477	1.046	731	5.081	4.135	1.122	1.501
Subsidiaries of banks from non-EU countries	1.414	2.162	1.781	1.928	4.715	5.944	6.267
Branches of banks from non-EU countries	2.639	3.161	3.236	5.608	5.519	5.206	6.302
Total	48.632	62.230	82.930	105.161	125.598	144.479	144.069
Source: CBC.							
(1) Cooperative Credit Institutions are not included in the above table.							

The only state-owned specialised financial institution is currently the Housing Finance Corporation, which grants long-term loans for housing purposes, mainly to medium- and low-income households. Until recently another state-owned institution was the Cyprus Development Bank Public Company Ltd², which before its privatisation had specialised in granting mostly medium and long-term project finance and provided investment banking as well as consulting services. Among the private specialised financial institutions was also the Mortgage Bank of Cyprus Ltd., which was mainly engaged in granting medium and long-term loans for the development of the tourist and manufacturing industries and whose business was transferred to the Bank of Cyprus in July 2010.

7.3.3 Key features of the banking sector

The banking and credit sector in Cyprus is quite large relative to the size of the economy, reflecting the efforts to promote Cyprus as an

2. The Cyprus Development Bank was privatised on 7 February 2008.

TABLE 7.4 Banks operating in Cyprus at the end of 2010

Domestic banks	Foreign banks			
	Subsidiaries of foreign banks from EU member states	Branches of banks from EU member states	Subsidiaries of foreign banks from non-EU countries	Branches of banks from non-EU countries
Bank of Cyprus Public Co Ltd	Alpha Bank Cyprus Ltd	Barclays Bank Plc	Russian Commercial Bank (Cyprus) Ltd	BankMed SAL
Marfin Popular Bank Public Co Ltd	BNP Paribas Cyprus Ltd ⁽²⁾	Banque SBA	Société Générale Bank - Cyprus Ltd	Arab Jordan Investment Bank SA
Hellenic Bank Public Co Ltd	Emporiki Bank – Cyprus Ltd	First Investment Bank Ltd		Banque Bemo SAL
Cooperative Central Bank Ltd	National Bank of Greece (Cyprus) Ltd	Joint Stock Company “Trasta Komerbanka”		Bank of Beirut SAL
Cyprus Development Bank Public Co Ltd	Piraeus Bank (Cyprus) Ltd	National Bank of Greece Ltd		BBAC SAL
Housing Finance Corporation	Eurobank EFG Cyprus Ltd	Central Cooperative Bank Plc		BLOM Bank SAL
USB Bank Plc		Banca Transilvania SA		Byblos Bank SAL
		Baltikums Bank AS		Credit Libanais SA
		AS LTB Bank		FBME Bank Ltd
				Open joint-stock company AvtoVAZbank
				OJSC Promsvyazbank
				Jordan Kuwait Bank Plc
				Jordan Ahli Bank Plc
				Lebanon and Gulf Bank SAL
				Privatbank Commercial Bank
				IBL Bank SAL

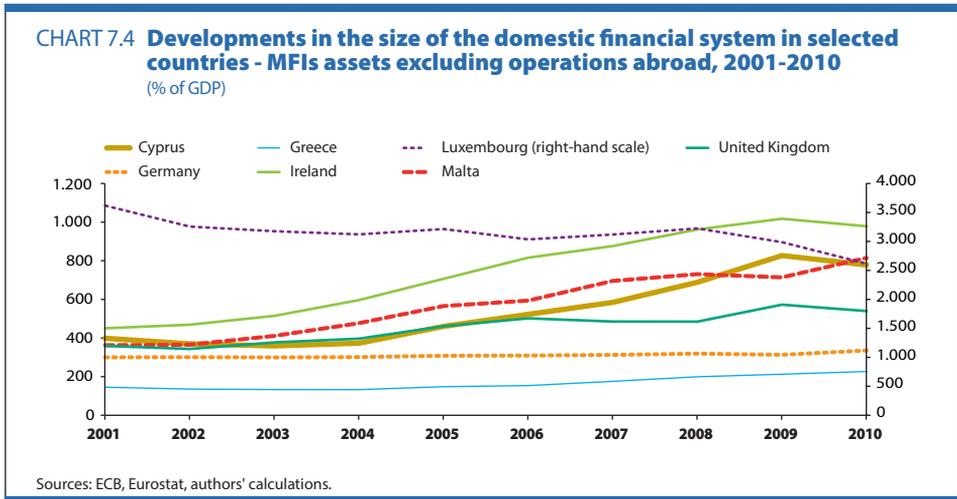
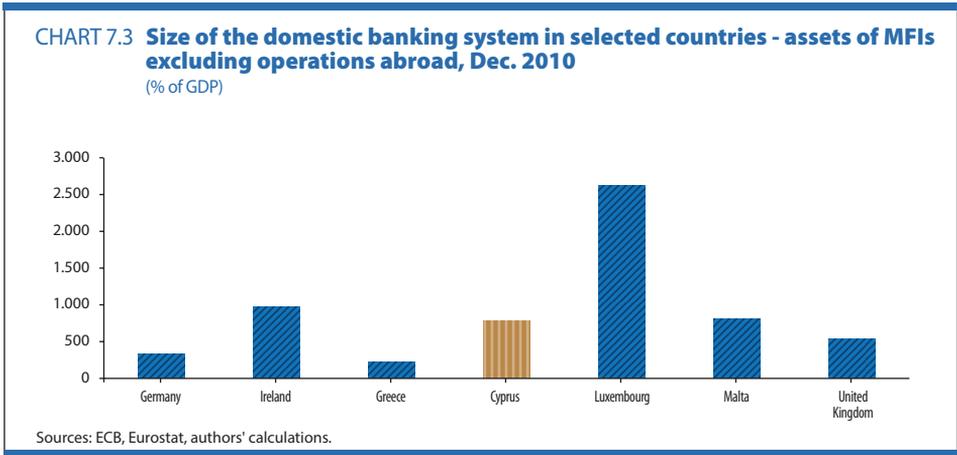
Source: CBC.

(1) On 17 February 2011, the Lebanese BLC Bank SAL acquired 93,85% of USB Bank Plc.

(2) Ceased to operate in Cyprus on 30 June 2011.

international financial centre. The total assets of Monetary Financial Institutions (MFIs), excluding business abroad, increased by about 20% per annum between 2005 and 2010 and came to €135 billion (€161 billion including business abroad) or some 780% of GDP at the end of 2010. **Charts 7.3** and **7.4** (p.275) illustrate the size and evolution of the domestic banking system, compared with other selected countries.

The total assets of the financial system controlled by foreign banks account for nearly 37% of total MFI assets, while the total assets of CCI account for some 10% of total MFI assets. Furthermore, three domestic banks conduct banking business abroad either through a branch network or through subsidiaries. Taking into account those banks' cross-border

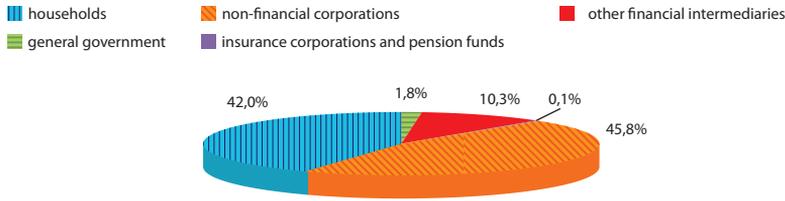


activities, total assets amount to approximately €160 billion and thus, the total asset-based market shares of foreign banks and CCI come to 30% and 7,3%, respectively.

The banking sector is highly concentrated, with the three largest banks having a 58% market share in deposits (77% including CCI) and a 48,5% market share in lending (69% including CCI) at end-December 2010.

A natural consequence of the banking sector's size is its large contribution to total employment. In particular, employment in all banking and credit institutions stood at 12.653 persons at the end of 2010,

CHART 7.5 MFI loans to domestic residents, by sector, Dec. 2010



Source: *Monetary and Financial Statistics*, CBC.

representing about 3,5% of total employment, while employment including all financial institutions came to approximately 17.600 persons.

Lending is the largest asset category of banks and amounted to about €60 billion or €72 billion including CCI, at end-December 2010³. The bulk of credit is granted to the private sector. Lending to public institutions and corporations⁴, which includes lending to central government, local authorities, semi-public organisations and social security funds, accounts for a mere 1,8% of total lending. Banks provide both corporate and retail banking services. The great majority of non-financial corporations are small or medium-sized, reflecting the size of the domestic market. Lending to non-financial corporations accounted for 45,8% of total lending in December 2010 and was mainly channelled to construction, tourist and industrial enterprises (**Chart 7.5**).

The total assets of the financial system almost quadrupled over the period 2005-2010 with most of the increase stemming from the growth of loans (**Table 7.5**, p.277). The low share of financial derivatives in total assets reflects the traditionally conservative business model of Cypriot banks, as deposits remain by far their most important source of funding. During recent years banks have upgraded their infrastructure with modern risk management and loan portfolio performance systems. Banks' loan portfolios are relatively well diversified with respect to economic

3. Total MFI loans to non-MFIs headquartered in Cyprus (including foreign business).

4. Including organisations such as THOC (Cyprus Theatre Organisation), CSO (Cyprus Sports Organisation), CTO (Cyprus Tourism Organisation), local school boards, University of Cyprus, etc.

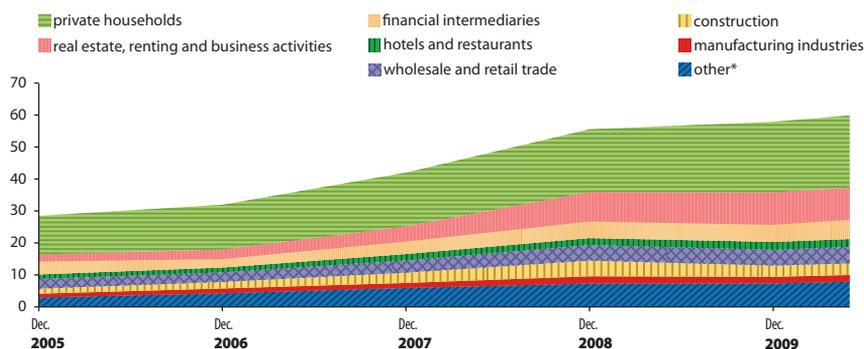
TABLE 7.5 Balance sheet of the domestic banking sector (including CCIs) - non-consolidated assets (not including overseas operations)
(euro billion)

	Dec. 2005	Dec. 2010
Assets		
Cash	0,11	0,34
Loans	25,68	91,30
Securities other than shares	7,10	33,86
Shares and other equity	0,68	2,98
Fixed assets	0,45	2,38
Financial derivatives	0,09	0,14
Remaining assets	0,72	1,52
TOTAL ASSETS	34,84	132,52

Source: CBC.

Note: Loans in the above table include interbank borrowing.

CHART 7.6 Sectoral distribution of loans to residents - NACE 1.1 classification
(€ billion)



Source: CBC.

* The category "other" includes the following: agriculture, livestock, hunting and forestry, fishing, mining and quarrying, manufacturing, electricity, gas and water, construction, wholesale and retail trade, hotels and restaurants, transport, storage and communication, financial intermediation, real estate, renting and business activities, public administration and defence, compulsory social security, education, health and social work, other community, social and personal service activities, activities of households, and extra-territorial organisations and bodies.

sectors, type of customer and geographical breakdown within Cyprus. Most loans are adequately collateralised (**Chart 7.6**).

The liability structure of banks is quite diversified. Their deposit base is stable with most of it coming from customer deposits, which exceeded 80% of total liabilities in December 2010 (**Table 7.6**, p.278). At the same time, the dependence of banks on short-term funding through the

TABLE 7.6 Balance sheet of the domestic banking sector (including CCIs) - non-consolidated liabilities (not including overseas operations)
(euro billion)

	Dec. 2005	Dec. 2010
Liabilities		
Deposits	28,14	116,48
Debt securities issued by MFIs	3,07	2,56
Provisions for liabilities and charges	0,24	0,86
Financial derivatives	0,18	0,44
Remaining liabilities	0,83	1,80
Capital and reserves	2,37	10,37
TOTAL LIABILITIES	34,84	132,52
OFF-BALANCE SHEET ITEMS	8,27	10,16

Source: CBC.

interbank money market still remains limited even after Cyprus's accession to EMU.

As already mentioned, the bulk of loans are adequately secured by collateral (mainly real estate). Banks review their loans at least twice a year in order to determine the level of provisions for bad debts. This review covers all customer accounts which may be potentially non-performing. Moreover, the CBC conducts on-site inspections to review banks' loan portfolios and to examine the adequacy of their provisioning and may issue recommendations on increased provisions. In determining the amount of provisions, account is taken of the realisable value of collateral. Non-performing loans (NPLs) include all loans overdue for more than three months. The ratio of NPLs to total loans⁵ stood at 7,3% at the end of 2010.

All banks incorporated in Cyprus are subject to capital requirements, as laid down by the Basel Committee and by relevant EU Directives, with the minimum capital adequacy ratio currently set at 8%. The banking system has always been well-capitalised. Furthermore, several banks carried out capital increases in 2010 and 2011, thereby strengthening their capital bases. According to the latest available data, the consolidated Tier 1 risk asset ratio and the consolidated risk asset ratio for Cyprus banks stood at 10,73% and 12,2%, respectively, at the end of 2010.

5. Bank branches are not included.

In July 2011, the CBC amended the Directive⁶ for the calculation of capital requirements and large exposures, with a view to further enhancing the banks' own funds, mainly in terms of quality, thus promoting a more resilient banking sector. The amendment takes account of the size and the systemic importance of the banking sector in Cyprus, the prevailing macro-economic conditions, as well as several studies⁷ which examine the degree of shock transmission to the banking sector and the financial system as a whole. The amended Directive introduces a new ratio, namely the Core Tier 1 capital ratio, which was used for the very first time in 2011 during the EU-wide stress tests⁸. The minimum threshold of the new ratio has been set at 8% and will be increased over a transitional period by the percentage of the bank's total assets to the GDP of the Republic of Cyprus. Capital requirements depend on the size and nature of banks' activities, so that a bank's risk provisions reflect its systemic importance in the economy as a whole. A zero increment coefficient has been set until the end of December 2012. Furthermore, the minimum increment of Tier 1 capital ratio for the purpose of establishing the original own funds ratio is set at 150 basis points, whereas the minimum increment over the original own funds for the purpose of establishing the total own funds ratio is set at 200 basis points. The Directive envisages a transitional period until the end of 2014 for its full implementation. Moreover, the CBC stipulates that capital requirements under Pillar 2 must be met only by original own funds. Cyprus is one of the first euro area countries where such a ratio is applied.

Over the past decade, the banking sector has grown at a rapid pace, as reflected in the Return on Assets (RoA and Return on Capital Employed (RoCE – **Table 7.7**, p.280). During 2001-2010 the average annual levels of RoA and RoCE for the entire banking sector stood at 0,68% and 10,3%, respectively (**Table 7.7**, p.280).

As shown in **Table 7.7**, p.280, the net interest margin has narrowed in recent years, mainly reflecting increased competition among banks and CCI, as well as the entry of Greek banks into the domestic market. Despite a sizeable drop in the interest margin since 2005, the impact on prof-

6. Κ.Δ.Π. 269/2011.

7. Tarashev et al. (2010) and Drehmann and Tarashev (2011).

8. For further information, see <http://www.eba.europa.eu/EU-wide-stress-testing.aspx>.

TABLE 7.7 Profitability ratios for locally active banks
(%)

	2010	2009	2008	2007	2006	2005	2004	2003	2002	2001
Pre-tax return on total assets	0,52	0,64	1,20	2,00	1,35	0,68	0,36	-0,16	-0,41	0,62
Pre-tax return on capital employed	8,76	10,89	16,26	24,59	24,61	12,29	6,60	-2,83	-6,33	8,18
Cost to income ratio	53,69	53,64	51,10	44,53	50,25	60,63	63,24	67,81	72,69	-
Net interest margin	1,86	1,67	2,26	2,71	2,46	2,50	-	-	-	-

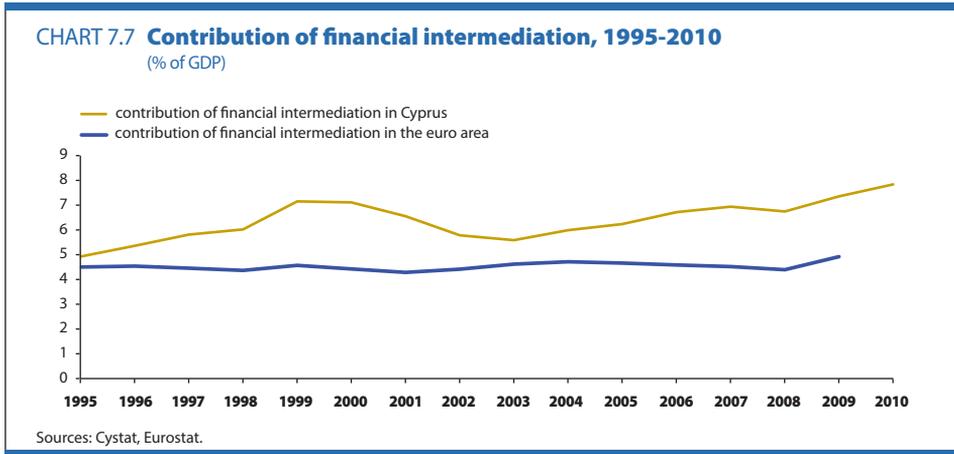
Source: CBC.

itability was mitigated by increased lending and a rise in non-interest income. With a view to enhancing their income and diversifying its sources, banks have lately improved their operating efficiency and have penetrated emerging markets, mostly in Southeast Europe.

The level of banking intermediation in Cyprus, as captured by the bank assets-to-GDP ratio, is high (**Chart 7.7**, p.281). Overall, the Cyprus banking sector has fulfilled very satisfactorily its financial intermediation role and was the key driver of the robust economic growth and stability that the country experienced following the Turkish invasion.

7.3.4 Credit Co-operative Institutions

The co-operative movement emerged in Cyprus in response to the economic and social oppression and, especially, the prevalence of usury. On 12 July 1878, when the British Empire succeeded the Ottoman rule, the new conquerors imposed heavy taxes on Cypriots in order to obtain the “tribute” the British were obliged to pay to Turkey under the 1878 Treaty. This tribute totalled 92.800 pounds annually, which was an enormous amount given the standards at the time, far beyond the financial capabilities of the Cypriots whose main activity was then limited to agriculture and, to a lesser extent, livestock breeding. Specifically, according to the 1881 census, 80% of the population lived in rural areas



and were engaged in agriculture. Farmers had no other alternative than external financing in order to cope with volatile weather conditions and the heavy Ottoman taxation. In this environment marked by a pressing need for borrowing, commercial banks were reluctant to grant agricultural loans, due to the difficulty in liquidating mortgaged land property in the event of a default, as well as fear that money could end up in the hands of previous users. Thus, farmers had no other option than to resort to usurers, who charged them with prohibitive interest rates of 30%-40%. As a rule, this resulted in the borrower's default and loss of property. It is important to note that while the official lending rate was 9%, there were cases in which the actual interest received by usurers would reach up to 600% (Heracleous, 2006).

Despite the trend prevailing in the rest of Europe, where co-operative activity had been acquiring significant proportions since the second half of the 19th century, the co-operative movement in Cyprus was established with a time lag. This was due to a number of reasons such as the lack of resources and the low educational level of farmers. Over time it became clear that short- and long-term credit to agriculture could only be effectively extended through specialised credit institutions.

Against this background, the first registered co-operative society was founded in 1909 in Lefkoniko. The new institution was very successful

triggering the establishment of several other credit societies. Co-operative societies were owned and managed by their members only and their main activity was to accept deposits by, and grant loans to, their members. In addition, they offered a variety of services such as supply of seeds, fertilisers and other agricultural necessities as well as trading agricultural products.

Following Cyprus's independence in 1960 until the withdrawal of the Turkish-Cypriot community from the government in 1963, there were two Co-operative Development Departments, subject to the Greek-Cypriot Community and the Turkish-Cypriot Community, respectively. Between 1960 and 1974 the co-operative movement became increasingly stronger and contributed significantly to the socioeconomic development of the newly-established state.

After the Turkish invasion of 1974 and its devastating consequences, especially the displacement of one third of the Cypriot population, the co-operative movement, although it was itself severely hit by the dislodgment of 225 co-operative societies, played a crucial role in addressing the housing and other problems, thereby supporting the government in its daunting task and at the same time fostering social cohesion.

In the context of the restructuring and reconstruction that followed the island's devastation, as well as in an effort to create new jobs, new co-operative societies were founded in the construction and industrial sectors with financing from the Co-operative Central Bank. However, as lending to those societies was often not based on proper feasibility studies, many of the loans fell overdue and, as a result, co-operative societies went bankrupt. The government and commercial banks provided financial support of CY£17,8 million and CY£4,5 million, respectively (Phylaktis, 1994), which in total corresponded to 3% of GDP in 1980. In the late 1980s, an additional support package was granted, totalling CY£67 million or 3% of GDP in 1989, and was eventually repaid in 2006. Furthermore, the government assigned the supervision of the Co-operative Central Bank to the CBC, while the other co-operative societies remained subject to a separate supervisory authority (Department of Co-operative

Development), which had been founded in 1935 under the Cyprus Ministry of Commerce, Industry and Tourism. This arrangement remained in place until 2003, when Law 123(I)/2003 established the independence of the Commissioner of Co-operative Development.

CCI are active in the domestic market only and are significant players in Cyprus's banking scene. Their market share reaches about 10% of the total assets (including foreign banking business) of credit institutions registered in Cyprus, while based on deposits, the co-operative sector currently has an aggregate market share of about 20%⁹.

As a result of the accession of Cyprus to the EU, the co-operative sector was required to adopt a set of reforms concerning the functioning of its credit institutions. A main development to this end was the replacement of the Department of Co-operative Development under the Ministry of Commerce, Industry and Tourism by the Supervision and Development of Co-operative Societies (CSSDA) in July 2003. The CSSDA is now an independent institution in accordance with the Co-operative Societies Law of 1985-2011 and is the supervisory authority for the co-operative sector in Cyprus. The CBC has signed a Memorandum of Understanding on Co-operation with the CSSDA, which came into effect on 10 November 2003 aimed at facilitating the task of both organisations in the field of CCI supervision¹⁰.

Another important change was brought about in the context of Article 3 of the EU Directive 2006/48/EC concerning the permanent affiliation of credit institutions to a central body which supervises them. Specifically, a Central Body (CB) was institutionalised for the co-operative sector, namely the Central Co-operative Bank (CCB), on 1 January 2008. In accordance with the abovementioned Directive, the deposits or other commitments of CCI are entirely guaranteed by the CCB, while their solvency and liquidity are monitored as a whole on the basis of consolidated accounts reported to the CCB-CB and the CSSDA (CSSDA, 2010). Moreover, the management of the Central Body is empowered to issue instructions to the affiliated institutions (Regulatory Decision of the CSSDA Committee, 2006). It should be noted that the arrangements on the affiliation of CCI

9. CBC data, December 2010.

10. The Memorandum of Understanding (MoU) on Co-operation was added to the existing MoU signed between the CBC, the Cyprus Securities and Exchange Commission and the Insurance Companies Control Service, effective since 1 January 2003.

to the CCB do not establish a relation between a parent undertaking and its subsidiary nor do they constitute a group of companies but they create a special relationship for the purposes of harmonisation with the European *acquis*. Therefore, affiliated CCI continue to maintain their independence and autonomy under their own administration and management.

Due to competition and the need for modernisation of the co-operative movement, as well as EU Directives on minimum capital requirements for credit institutions, the co-operative sector is undergoing substantial consolidation in recent years through CCI mergers. The number of CCI declined to 101 at the end of 2011 from about 360 at the end of 2005, with a view to further reductions.

CCI are fully harmonised with the EU *acquis* either independently (1 CCI) or through their affiliation to the CCB Ltd./Central Body (100 CCI). Besides, the CSSDA has been upgraded in line with international and European standards regarding the supervision of credit institutions, and all EU Directives on CCI have been transposed into national co-operative legislation.

7.4. The broader financial system

7.4.1 The stock market and the Cyprus Stock Exchange

The development of the securities market started effectively in the late 1970s, when transactions were mainly carried out over the counter (OTC) and in the absence of a proper legal and operational framework. Consequently, this led to asymmetric awareness and access to information for the general public (Clerides and Loizides, 1990). The development of the market, however, took place with the establishment of the Cyprus Stock Exchange (CSE), which began operations in March 1996. Since then, the CSE has become a source of growing importance for corporate funding. At the end of 2010, 122 public companies (CSE, Monthly Bulletin, Dec. 2010) were listed on the CSE, compared with 42 in 1996. Total market capitalisation reached about €13

TABLE 7.8 Main features of the CSE - selected periods

	CSE commences its operation	Stock market bubble			Period before and during the financial crisis			
	1996	1999	2000	2001	2007	2008	2009	2010
Number of listed companies	42	60	120	149	141	135	128	122
Number of corporate bonds	10	16	13	9	9	11	13	17
Number of government bonds	-	31	21	39	51	43	42	39
Market capitalisation (end of year), euro billion	1,8	25,3	14,3	9,6	25,3	10,3	14,2	13,0
Shares	-	22,0	12,3	6,9	20,2	5,7	7,2	5,1
Corporate bonds	-	0,6	0,2	0,2	0,5	1,2	1,7	1,9
Government bonds	-	1,5	1,4	2,4	4,2	3,2	5,2	6,0
Market capitalisation/GDP (%)	25,9	279,0	151,2	94,8	159,4	59,6	83,6	74,3
Total annual turnover, euro billion	0,4	6,7	10,8	3,8	3,9	1,5	1,3	0,9
Average daily trading volume, euro million	1,5	30,6	44,1	15,5	15,7	6,3	5,4	3,5

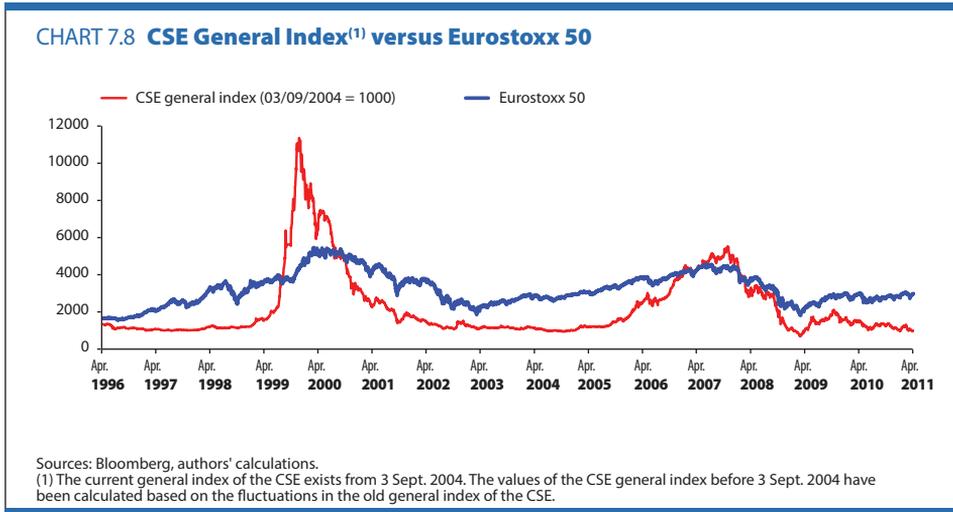
Source: CSE.

billion or 70% of GDP at the end of 2010, with shares accounting for €5,2 billion and bonds for €7,9 billion. The bond market in Cyprus is dominated by government debt securities, totalling €6 billion, while activity in the corporate bond market remains subdued, with a total value of €1,9 billion in December 2010. Very few domestic corporations, in fact only the three largest banks, have sought funding from international capital markets. In 2010 the total value of transactions (turnover) amounted to €875 million, with the average daily trading volume amounting to €3,5 million (**Table 7.8**).

A milestone in the history of the CSE was the launching of a common platform for both the Athex and the CSE in November 2006, which greatly increased investing options. The common platform aimed to enhance the accessibility and liquidity of the Cyprus capital market, since Cypriot enterprises would thus have access to Greek funds and foreign portfolios via the Athex, while Greek companies would have the opportunity to list their shares on the CSE and benefit from the more favourable tax regime.

7.4.2 The excessive rise in CSE share prices in 1999

During 1999 an excessive rise was observed in share prices, with the



CSE all-share price index rising by approximately eight times in November 1999, relative to late January 1999. This surge in stock prices, together with the increasing number of new listings, resulted in a huge increase in market capitalisation to €24 billion at the end of 1999, compared with €1,8 billion in 1996, i.e. an increase of 1300%. Following the spectacular rise in 1999, correction was inevitable; the CSE index declined dramatically and market capitalisation dropped to €9,6 billion at end-December 2001. The bursting of the bubble shattered investors' confidence, leading to a substantial decline in stock exchange activity (**Chart 7.8**).

A significant number of households had invested their savings in the stock exchange and, as a result, lost their money. The stock exchange crisis swept across the foundations of the economy. The CBC, in collaboration with the Research Centre of Cyprus College and later with the University of Cyprus, conducted a study (Cyprus College, 2001) in order to evaluate the actual dimensions of the phenomenon and eventually assess its impact on macro-economic stability and the economy. The main results of the study are the following:

- About 43% of Cyprus households held stock some time after 1999. This percentage of direct stockholding was among the highest worldwide.

Before 1999 stockholding was limited to about 7% and mainly referred to higher income households.

- Most of the mass participation of households in the CSE came from medium income brackets. Higher income households benefited the most, compared with all other population groups, since they had acquired shares before 1999.
- A typical household invested about 83% of its annual income in the CSE, while the purchase of shares was financed by about three quarters with own funds and by about one quarter with borrowed funds.
- The losses incurred as a result of the stock exchange crisis did not have a direct effect on consumption demand. This is due to the fact that most of the own funds employed were intended for future, possibly indefinable at the time, needs of the family.
- Households that used both own and borrowed funds spent more money than the other households and suffered the heaviest losses from the bursting of the stock exchange bubble.

7.4.3 The bond market

The government can meet its financing needs by issuing debt¹¹, by borrowing from commercial banks or through loan facilities by international organisations, namely the European Investment Bank and the Council of Europe Development Bank.

The Cyprus bond market is at an embryonic stage, clearly dominated by the government bond market. There are also some corporate bonds issued mainly by banks and, to a lesser extent, other corporations, which however account for a very small market share (less than 5% of the corporate bond market capitalisation at the end of 2010).

The government bond market grew substantially over the last years, and the total nominal value of outstanding government bonds traded in the CSE amounted to €6 billion at end-December 2010, compared with €2,4 billion at the end of June 2001.

11. The CBC was responsible for the management of public debt, issuing government bonds on behalf of the government until 1 August 2010 at which time the specific responsibility was transferred to the Ministry of Finance.

As from 1 June 1996, primary sales of government bonds are carried out via auctions and bids can be competitive or non-competitive. Non-competitive bids are satisfied at the weighted average price of accepted competitive bids. Institutional investors, firms and private individuals have the right to participate in auctions.

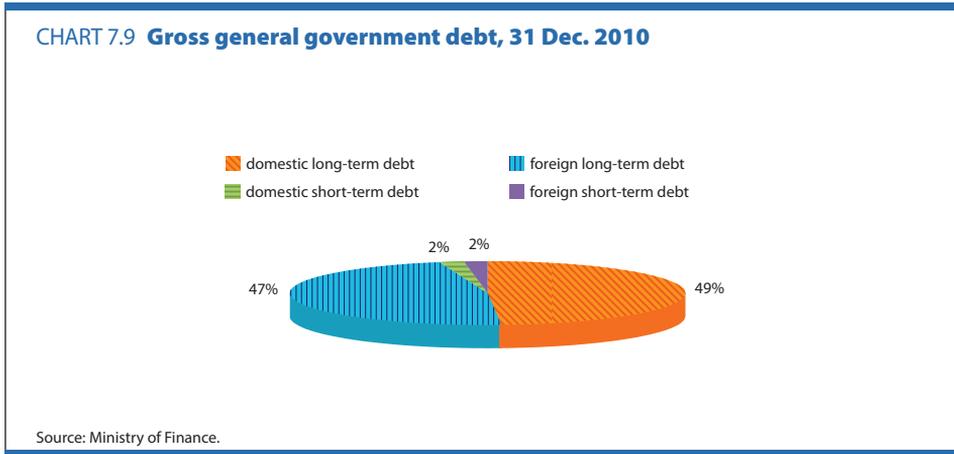
The government debt securities of the Republic of Cyprus comprise Treasury Bills (TB), Government Registered Development Stocks (GRDS), Euro Medium-Term Notes (EMTN) and Euro Commercial Paper (ECP). The first two categories are issued in the domestic market, whereas EMTN and ECP are issued in the international market.

Treasury Bills are short-term, with a maturity of up to 52 weeks, while GRDS have a long-term maturity of 2, 3, 5, 10 or 15 years. These bonds are auctioned to natural and legal persons and after their issuance are traded on the CSE.

The Euro Commercial Paper (ECP) Programme of the Republic of Cyprus was launched in November 1989 and allows short-term borrowing for 7 days to a maximum of 12 months. ECP may be issued in euro, US dollars, and Swiss francs or in any other currency, subject to all necessary approvals and consent. The limit of the programme was raised in 2010, from €5 billion to €6 billion, of which €2 billion is committed permanently for crisis management purposes.

The Euro Medium-Term Note Programme of the Republic of Cyprus was established in 1994. The limit of the Programme was set at €6 billion until 2010, while an increase to €9 billion is envisaged during 2011. EMTNs are traded in international stock exchanges and the government has the flexibility to issue EMTN in all major currencies depending on its needs.

In the past, three types of government debt were offered to natural persons, the issue of which has either been terminated or suspended. Specifically, the Republic of Cyprus issued 3-year GRDSs by subscription at par value. Their issue has been suspended since the end of 2007 while the last 3-year GRDSs were repaid in September 2010



The 7-year savings bonds had a nominal value of €8,54 (before the adoption of the euro: CY£5) and €17,09 (before the adoption of the euro: CY£10) and participated in regular draws. Prizes won at Savings Bonds draws were exempted from income tax. The issuing of Savings Bonds was terminated at the end of 2001.

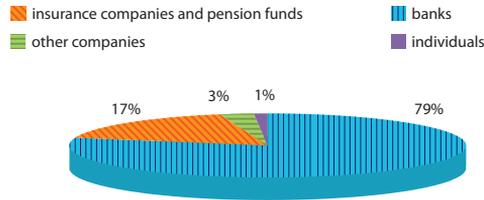
Savings certificates with maturity of five and seven years were also available to natural persons whose issuing was also ceased at the end of 2001. Around €50 million of savings bonds were still valid at the end of 2010. Their interest rate was set by decree of the Minister of Finance at 3,85% in April 2006.

Public debt as at 31 December 2010 amounted to a total value of €10,6 billion or 61% of GDP of which 96% is classified as long-term debt (Ministry of Finance, 2011). Total debt is almost equally divided between internal and external debt, with shares of 51% and 49% of outstanding debt, respectively. Of this debt, long-term debt amounts to 49% and 47%, respectively. The composition of long-term debt varies depending on the issuing market: 84% of external long-term debt consists of securities and 16% of institutional loans whereas internal long-term debt comprises of 61% securities and 39% loans¹².

Outstanding short-term debt amounts to €495 million and is almost equally divided between domestic (Treasury Bills) and foreign securities (ECP) (**Chart 7.9**).

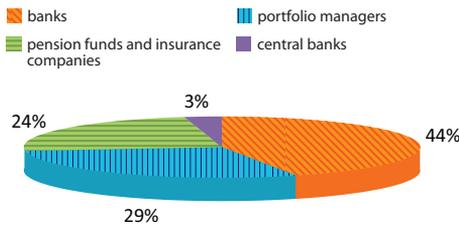
12. For further information, see **Chapter 8** (p.303).

CHART 7.10 Holders of debt securities in the domestic market, 31 Dec. 2010



Source: Ministry of Finance.

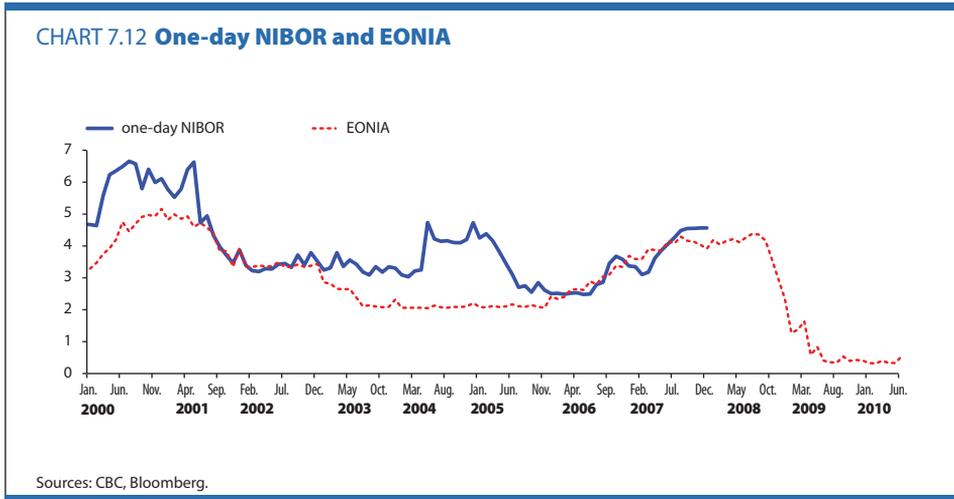
CHART 7.11 Distribution of investors in the Cyprus EMTN with maturity 1 Nov. 2015



Source: Ministry of Finance.

Domestic securities are almost entirely held by domestic investors. Banks dominate among institutional investors with a 79% share in holdings of Treasury bills and government bonds. Another 17% of domestic securities is held by insurance companies, pension and social security funds, while the remainder is distributed among other corporations and private individuals (**Chart 7.10**).

The largest foreign investors in government securities issued abroad originate from Germany, Austria and Switzerland. Other major foreign buyers of Cyprus debt are Greece and the UK. Commercial banks are once again the most important institutional investors in external debt securities.



The breakdown of investors during the last EMTN issue in October 2010, which is indicative of the total foreign debt holdings, is illustrated in **Chart 7.11** (p.290). Although government bonds are traded on the CSE, as well as on foreign stock exchanges (EMTN), trading volumes in the secondary market remain limited, as government bonds are typically held to maturity.

7.4.4 The interbank market

Over the past decade, the interbank market, albeit still relatively small, has become an option for banks’ short-term liquidity management. The interbank market provides a choice of investment for surplus funds or, where necessary, a source of borrowing for banks in order to meet their liquidity needs. Until the entry of Cyprus into the euro area, benchmark rates for the interbank market were reflected in the NIBOR (Nicosia Interbank Borrowing Offered Rate) rates, which were quoted daily by banks maturities starting at overnight and up to one year. Following Cyprus’s accession to the euro area, NIBOR was replaced by EURIBOR (Euro Interbank Offered Rate). This enabled Cypriot banks to invest their surplus funds and meet their liquidity needs through agreements with any euro area bank. **Chart 7.12** shows the relative co-movement of overnight

EURIBOR (EONIA) with overnight NIBOR until Cyprus's entry into the euro area on 1 January 2008.

The participation of Cyprus banks in the European interbank market is limited, since customer deposits and the Eurosystem's open market operations are the main sources of financing. The traditional funding model of Cyprus banks protected them from the first financial crisis of 2008 following the collapse of Lehman Brothers, given that they faced no liquidity constraints and made limited use of the interbank market. The bulk of transactions in the interbank market are conducted within the Cyprus banking system and within banking groups.

7.5. The global financial crisis and its impact on Cyprus

7.5.1 The global financial crisis

The global financial crisis, which commenced in the summer of 2007 due to developments in the US subprime mortgage market, was later transmitted to Europe and elsewhere as a money market crisis, and has now, at a third stage, evolved into a fiscal and debt crisis both in the US and in Europe, is considered to be one of the most complicated and toughest crises in international economic history since the Great Depression in 1930. The following factors which appear to explain the onset of the subprime mortgage crisis in the US are (Pezzuto, 2008, Hellwig, 2009, Clerides and Stephanou, 2009):

- Structural weaknesses in the mortgage refinancing chain.
- Market discipline proved to be insufficient owing to inappropriate accounting rules, non-transparent procedures and excessive reliance on credit rating agencies.
- The profitability incentives of banks' management, combined with low interest rates, stirred even more speculative behaviour of bankers.
- Consumer protection was not sufficient, especially in the US, as evidenced by the supply of mortgages with non-transparent terms and

conditions, to customers who would eventually face difficulties in loan repayments.

- Regulatory oversight was too lax.

As a result, major banking groups such as Lehman Brothers and Fannie Mae and Freddie Mac, which were exposed to the subprime mortgage market, succumbed under excessive pressures when their customers could no longer service their debts. The situation was further aggravated by the fact that the originator of the loan could no longer be identified, as these mortgages were sold to other entities in the form of complex structured financial products. The refusal of the US administration to bail out Lehman Brothers in September 2008 caused a chain reaction in the financial services industry within and out of the US, which turned into a fully fledged global recession (Bordo, 2008, Pezzuto, 2008).

Globalisation and the interlinkages of economies via interconnected financial linkages necessitated a global response to address the problem which had erupted in the US. Very soon, other banking organisations from third countries that were also exposed to such subprime products began to struggle for survival. Governments and central banks had to intervene with capital injections, acquisitions or non-conventional monetary policy tools in their efforts to calm down the markets.

The second phase focused on international money markets, when banking institutions began facing liquidity constraints, interbank rates soared to historically high levels amid heightened uncertainty and, as a result, state intervention was all the more warranted. For the first time, the international central banking community demonstrated overwhelming unity and cooperation, e.g. the joint interventions of the ECB, the US Federal Reserve, the Bank of England and others in the form of capital injections (ECB, press release, 18 September 2008), as well as cuts in interest rates to historically low levels (Trichet, 2010).

The third phase of the crisis, still ongoing at the time of writing the

present chapter, started when certain EU Member States began to face financing difficulties. In November 2009 a fiscal crisis broke out in Greece. Excessive fiscal deficits and public debt had become unsustainable and Greece was the first country to resort to the financial support mechanism that was jointly set up by the EU, the ECB and the IMF. Ireland followed suit, as banks' exposure to complex financial products called for public assistance which the Irish government was unable to provide. The third country to face major problems was Portugal, with large fiscal deficits that could not be financed in the context of the economic downturn. The three countries that resorted to the support mechanism committed to adopt very rigorous fiscal consolidation measures and adhere to strict timetables in order to avert a default.

7.5.2 The impact on Cyprus

Cyprus was not directly affected by the 2007 crisis in the US, due to the local banks' zero exposure to subprime products. Systematic and strict supervision by the CBC in the previous years, despite occasional criticism, proved beneficial to financial and, therefore, overall macroeconomic stability. Banks have followed traditional business models, focusing on core banking activities such as deposits and lending. Besides, given that their main source of funding has typically been customer deposits, their liquidity was not affected by the interbank market crisis and the financial turmoil of 2008-2009.

Nevertheless, there were indirect effects, associated with the economic downturn that hit, in particular, the UK. Specifically, British demand for real estate in Cyprus declined sharply, partly due to the depreciation of the pound sterling as a result of the recession. Consequently, there was a fall in property prices in local real estate markets where demand mainly originated from the UK (e.g. Pafos). As a result, the construction industry in Cyprus started posting lower and, subsequently, negative growth rates, with an adverse impact on the Cyprus economy as a whole. Reduced tax revenue

Box 7.1

Supervisory measures adopted by the CBC which protected the Cypriot banking system during the crisis of 2007-2010

- Banks are required to maintain a minimum liquid asset ratio, set at 70% of total deposits in foreign currency. The definition of liquid assets is restrictive and does not include various complex products which were considered as readily liquefiable prior to the crisis by international standards.
- The maximum loan-to-value ratio for mortgage loans is set at 80% for primary residence and 70% for secondary residence. The loan-to-value ratio for secondary residence had been reduced to 60% between July 2007 and May 2008, a period that was characterised by excessive lending in the real estate market. It was subsequently restored to 70% from May 2008 onwards.
- Amid the crisis, the CBC made recommendations to MFIs to strengthen their capital bases in order to enhance the shock absorption capacity.
- In formulating capital adequacy rules, the more conservative approach was adopted in cases where the relevant EU Directive allowed for discretion.
- In July 2011 the CBC raised capital requirements further, taking also into consideration the size of each MFI relative to the GDP of Cyprus.

from the real estate market, which was not accompanied by a reduction in public expenditure, further exacerbated the existing fiscal imbalances, triggering, for the first time since 2003, successive downgrades of Cyprus sovereign debt by international rating agencies. An additional source of concern for rating agencies was Cyprus banks' exposure to Greece.

Throughout the international financial crisis, the CBC remained

committed to continuous supervision and issued additional directives calling on banks to increase their capital buffers (see **Box 7.1**, p.295). Given the banking sector's size in the Cyprus economy, strict supervision of capital adequacy was warranted (Clerides and Stephanou, 2009), despite some negative implications such as an increase in non-performing loans in Greece.

7.5.3 Solutions and future prospects

The global financial crisis, which emanated from the US subprime mortgage crisis in 2007, was transmitted to money markets worldwide in 2008 and evolved into a fiscal crisis during the past few years, has brought to light the weaknesses of the architecture and structure of financial regulation and supervision (**Box 7.2**, p.297). The need for more effective and coordinated micro- and macro-prudential regulation and supervision amongst regulators has been underlined and, at the same time, central banks proved to play an important role in both safeguarding financial stability as well as maintaining price stability (Orphanides, 2010).

An important and necessary condition for appropriate supervision is the independence of competent authorities and bodies, which is not always the case in Cyprus. Currently the only independent supervisory authority is the CBC whose independence was enshrined by law in 2002 in the context of harmonisation with the European *acquis*.

The current architecture of banking supervision in Cyprus, with responsibilities shared between two supervisors, the CBC and the CSSDA, represents an obvious drawback that could lead to inconsistent implementation of rules governing the functioning of credit institutions, thereby compromising a level-playing field within the same segment of the financial system (IMF, 2009). A further step towards more effective and efficient supervision and lower costs would be bringing the regulation and supervision of the entire financial sector (MFIs, CCI, insurance companies

Box 7.2 **Financial stability: strengthening the framework for microprudential supervision and crisis management and resolution in Cyprus**

The large share of the financial system in the Cyprus economy calls for a fairly stricter supervision of MFIs, relative to other countries. The CBC has always aimed at an appropriate and strict supervision, which has actually shielded the financial system in times of turmoil. The global trend towards stricter supervision and regulation of financial institutions confirms the appropriateness of the CBC's policy over time.

In addition to decisions adopted at the EU level¹, the Cyprus authorities adopted measures to address future similar challenges at the domestic level. Specifically, in the field of microprudential supervision, the CBC issued new directives on MFI capital adequacy requirements. As regards the crisis management framework, the CBC, in cooperation with the Ministry of Finance, prepared a draft law on the establishment of a Financial Stability Fund (FSF), which following negotiations was finally enacted by Parliament in December 2011 as the *Establishment and Operation of the Independent Financial Stability Fund Law*.

In particular, the purpose of the FSF is to support and recapitalise distressed credit institutions through a sound framework for crisis management and resolution. More specific goals of the FSF are: safeguarding financial stability, containing contagion risks and ensuring normal conditions in financial markets and the overall economy. The achievement of these goals is pursued by the availability of adequate resources and appropriate tools² for the effective and early resolution of affected credit institutions. Through the FSF, the use of public resources for bank resolution purposes will be avoided,

1. For further discussion, see **Chapter 4** (p.111).

2. The appropriate bank resolution tools will be specified in amendments to the Banking Law.

while at the same time an FSF intervention will help to ensure public confidence and minimise moral hazard.

The funds of the FSF will originate from credit institutions in the Republic of Cyprus, including their branches, which have been set up outside the Republic and operate in the Republic through a branch. Exceptions will be acceptable only following a decision of the management committee of the FSF.

and public corporations) under one body like the example of other countries (Orphanides, 2010).

The global crisis has shown that cross-border cooperation between supervisory authorities is necessary in order to ensure that regulation is as uniform as possible and early warning procedures are in place during periods of distress.

Given the large size of the banking sector in Cyprus, it would be advisable to establish stricter supervisory regulations and requirements for banking institutions (Stephanou, 2010). The CBC works towards this goal by issuing regulations and directives which are consistent with the prudential strategy it has pursued over time. Some examples of regulatory intervention at crucial times were the lowering of the loan-to-value ratio for the purchase of secondary residence between July 2008 and May 2009 and the increase in capital requirements above the regulatory minimum set by the Basel III Accord in July 2011.

Furthermore, the fact that banks in Cyprus typically follow a simple retail business model, which entails zero exposure to complex financial products, turned out to be a key factor in safeguarding financial stability on the island during the global financial turmoil.

A valuable lesson taught by the recent debt crisis in Europe is the importance of fiscal discipline and sound government finances, so that in cases of crises, such as banking crises, the government can be in a position to support the banking system. It is vital for governments, and particularly

for euro area countries where monetary policy is no longer a national choice, to have sufficient fiscal buffers in order to cope with such problems. This can be achieved through cautious fiscal strategies leading to the build-up of countercyclical buffers (Stephanou, 2011).

The global crisis, which persisted for the third consecutive year at the time of writing, has revealed several vulnerabilities inherent in the financial systems of advanced economies. Political will is now the key for the development of a new framework of supervision and international cooperation, with a view to averting similar situations in the future.

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ABBREVIATIONS IN CHAPTER 8

AFs: Administered Funds

CBC: Central Bank of Cyprus

COLA: Cost of Living Allowance

CPI: Consumer Price Index

CyStat: Statistical Service of Cyprus

DDA: Deficit-Debt Adjustment

ECB: European Central Bank

EDP: Excessive Deficit Procedure

ESA: European System of National and Regional Accounts in the Community

ESCB: European System of Central Banks

EU: European Union

G20: Group of Twenty

GDP: Gross Domestic Product

IMF: International Monetary Fund

MTBF: Medium-Term Budgetary Framework

NAAFI: Navy, Army and Air Force Institutes

OECD: Organisation for Economic Co-operation and Development

SGP: Stability and Growth Pact

SIF: Social Insurance Fund

SP: Stability Programme

SSFs: Social Security Funds

SVAR: Structural Vector Auto-Regression

UN: United Nations

UNFICYP: United Nations Peacekeeping Force in Cyprus

VAT: Value Added Tax

8. Public finances: trends, challenges and prospects

Marios Polemidiotis, Stephan Haroutunian*

8.1 Introduction

This chapter deals with fiscal policy issues, in particular the macroeconomic role of government and the macroeconomic impact of fiscal policy. Fiscal policy refers to how government authorities intervene in the economy, mainly by managing public revenue and expenditure. This intervention affects several aspects of the economy, such as cyclical fluctuations, income distribution and economic efficiency. The choice of the extent and scope of government intervention depends on many factors, which can change over time, including a society's beliefs and preferences as to the desired extent and role of such intervention. The microeconomic role of government is outside the scope of this chapter.

The role of fiscal policy becomes even more important in the context of a monetary union, such as the euro area, characterised by a single monetary policy and national fiscal policies. Moreover, the need for fiscal soundness, which forms the basis of the Stability and Growth Pact (SGP), rests on the rationale that fiscal policy can make a decisive contribution to medium- and long-term economic stability. Against the backdrop of instances where provisions of the SGP were not strictly complied with, on 8 November 2011 the EU Council adopted a package

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of five regulations and one directive (the so-called “six-pack”), aiming to reform and strengthen EU economic governance and which entered into force on 13 December 2011. Furthermore, on 9 December 2011 the euro area heads of state or government agreed on new measures to foster fiscal discipline through the adoption of a new “fiscal compact”, which, among other rules, sets a requirement for national budgets to be in balance or in surplus. The fiscal compact is expected to enter into force, once ratified by at least twelve euro area countries.

Section 8.2 (p.305) highlights the importance of fiscal policy in a small and open economy such as Cyprus. It also underlines the role of fiscal policy during crises, such as the recent financial one, and explains the significance of fiscal consolidation. The severe recession of 2008 and 2009 and the increased risk of an economic and financial collapse justified an expansionary, albeit carefully targeted, fiscal policy in many EU countries including Cyprus, in order to buttress economic activity. However, the approach adopted ever since as to the stance of fiscal policy has undergone significant changes: rapidly increasing public debt ratios and heightened concerns about fiscal sustainability, as reflected in the rise of sovereign bond yields, along with risks stemming from the exposure of Cypriot banks to Greek government bonds, have made fiscal consolidation urgently necessary.

Section 8.3 (p.315) provides a comparative analysis of Cyprus’ total general government revenue and expenditure, including the general government expenditure for compensation of employees, vis-à-vis those of other EU countries. **Section 8.4** (p.318) adopts a historical perspective, examining the general government budget balance over 1995-2010 and focusing on the structural budget balance, which decomposes the overall balance into a cyclical and a non-cyclical (structural) component. An analysis of the main items of central government revenue and expenditure over 1970-2010 is presented in **Section 8.5** (p.324). Finally, **Section 8.6** (p.338) looks back to public debt data for the period 1995-2010 and discusses issues of fiscal

sustainability, using the ratio of general government consolidated gross debt to GDP for the relevant analysis.

8.2 The importance of fiscal policy

In general terms, through changes in taxes, subsidies and benefits, fiscal policy impacts on economic activity directly (via changes in the level of public investment and consumption) or indirectly (via changes in the disposable income of the private sector). Moreover, the use of fiscal policy as a macroeconomic tool for stabilising the economic cycle takes on particular importance in a small and open economy faced with the challenge of population ageing, such as Cyprus, and this is so because of three main reasons. First, changes in fiscal policy affect GDP, inflation and the current account balance. Second, within a monetary union, there is a single authority that formulates and implements monetary policy. In the euro area, this responsibility rests with the Governing Council of the ECB, which includes the Governor of the CBC in its membership. Thus, by changing its fiscal policy, a country within a monetary union can stabilise output and employment¹. Third, for countries with ageing populations, such as Cyprus, the appropriate design of healthcare and pension systems poses a long-term challenge with respect to maintaining sound and sustainable public finances. The remainder of this section looks into each of these issues in turn.

8.2.1 Effect on GDP

In times of crisis, like the recent financial crisis and the subsequent recession, discretionary fiscal expansion along with the operation of automatic stabilisers can lead to higher aggregate demand, at least in the medium term, and move the economy towards full employment, thereby smoothing the economic cycle. The ability to use fiscal policy in bad times and the effectiveness of this policy as a macroeconomic tool for

1. For a more extensive discussion of the importance of fiscal policy for monetary policy see **Chapters 4** (p.111) and **6** (p.199), which examine the relationship between these two macroeconomic tools within the euro area and the case of Cyprus in particular.

stabilising the economic cycle presuppose the maintenance a sound fiscal position in good times. This creates the fiscal space necessary for increasing the government's ability to respond to potential future crises by an expansionary fiscal policy (part of which coming from automatic stabilisers). A closely related issue is the long-term sustainability of public finances. If the fiscal structure of a country is sustainable over the long term, it will be possible to pursue an expansionary fiscal policy in the event of a crisis.

The impact of discretionary fiscal policy on GDP is another relevant aspect. Fiscal contraction is necessary when the budgetary position of a country is not sustainable. As suggested by recent empirical literature, discretionary fiscal contraction lowers growth over the short term, but has a beneficial impact over the long term. The size of the effect on economic growth (and also in part the sign of this effect, depending on the fiscal multiplier) is determined by a number of factors, such as the scope, the credibility and the composition of the fiscal consolidation strategy, the current macroeconomic environment and the stance of the accompanying monetary policy. The short- and long-term effects of fiscal consolidation are discussed below².

Short-term effects of fiscal consolidation

The short-term effects of fiscal consolidation have been analysed in the literature according to two main theoretical approaches: Keynesian and New-Keynesian models, on the one hand, and Non-Keynesian models, on the other.

In general, Keynesian and New-Keynesian models, combined with the empirical results of structural vector autoregressive (SVAR) models and simulation models, support the view that discretionary fiscal contraction can have negative short-term effects on economic growth through its impact on aggregate demand. The relevant mechanisms are

2. The discussion of the short- and long-term effects of fiscal consolidation draws on various analyses by the ESCB's Working Group on Public Finance, in which the two authors of this chapter participate as members. See e.g. Bouthevillain et al. (2009).

both direct, via changes in government consumption³ and investment, and indirect, mainly via changes in private consumption and investment⁴.

In another vein, the theory underlying Non-Keynesian models, such as the theory of the Ricardian equivalence⁵, combined with the results of empirical studies, support the view that the conventional negative effects of discretionary fiscal contraction can be mitigated or – depending on the case – even reversed. In more detail, changes in fiscal policy can induce adjustments in private consumption and investment, when there is an increase in the private sector's wealth (wealth effects)⁶ or in its perceived level of permanent income⁷ (see Giavazzi and Pagano, 1990, 1996).

Generally, while available empirical data support the view that, in most cases, fiscal consolidation is associated with short-term negative effects on growth, such effects can prove limited and not outweigh the positive effect of fiscal consolidation. Moreover, non-Keynesian effects, which include a broad spectrum of confidence effects, are more likely to occur in countries with high and unsustainable public debt, little fiscal space for the adoption of expansionary fiscal measures and a weak fiscal outlook, as well as in cases where the fiscal consolidation plan is comprehensive, credible and relies mostly on expenditure cuts with respect to non-targeted transfers and government wages. Giavazzi and Pagano (1990 and 1996), Alesina and Perotti (1997) and Alesina and Ardagna (1998) provide empirical evidence from OECD countries and examples of successful fiscal consolidations, such as those of Ireland in the late 1980s and Denmark during 1983-1986.

3. See e.g. Blanchard and Perotti (2002), Fatás and Mihov (2001), Perotti (2005, 2007), Mountford and Uhlig (2009), and Caldara and Kamps (2008).

4. See e.g. Auerbach and Hassett (2002) and Congressional Budget Office (2008).

5. According to this theory, if current and planned government expenditure is perceived by households as broadly unchanged, the tax constraint will be considered by households as being only temporary. Therefore, the higher the percentage of Ricardian consumers, the larger the part of increased disposable income that is saved, despite the introduction of temporary fiscal incentives, in view of an anticipated tax increase in the near future for the purpose of repaying the additional government debt.

6. According to Blanchard and Perotti (2002), cuts in government spending can lead to lower borrowing rates and boost private consumption and investment. Moreover, a fiscal consolidation policy geared towards cuts in the government compensation of employees can lead to corresponding cuts in the private sector and, consequently, to higher profits and private investment (see Alesina et al., 2002, Lane and Perotti, 2003, and Ardagna, 2007).

7. A significant and constant reduction in government spending can lead households to expect a permanent tax cut in the near future, implying a rise in their permanent income.

In the light of the above, fiscal consolidation, on the one hand, can lower economic growth in the short run; on the other hand, an unreasonable delay in taking fiscal consolidation measures might require greater fiscal adjustment later. Thus, a fiscal consolidation plan should offset the potential short-term negative impact on growth associated with a premature contractionary fiscal policy by the expected long-term gains associated with the implementation of a credible fiscal consolidation plan as soon as possible, in order to eliminate any doubts as to the government's ability to service its debt.

Long-term effects of fiscal consolidation

The long-term effects of fiscal policy on economic growth can be analysed on the basis of the role of government debt in conjunction with the size of the public sector and the composition of the fiscal consolidation plan.

It should be noted that the accumulation of government debt from low initial levels can provide a means of income redistribution in an economy over time and across generations, as well as of minimising the distortionary effects of higher taxation that, in the absence of borrowing, would become necessary in order to finance the provision of public goods and services (see Alesina and Tabellini, 1990). Consequently as regards with the long-term impact on economic growth, what matters is the level and sustainability of government debt. At the same time, long-term economic growth can be weighed down by large public sector borrowing requirements, especially in view of a government budget constraint and rapidly rising debt ratios. There are three main theoretical channels whereby fiscal policy can affect long-term growth prospects: long-term interest rates, inflation and inflation expectations.

In greater detail, large and persistent imbalances between public revenue and expenditure increase public debt and can lead to a rise in

real medium- and long-term interest rates on account of increased financing needs and potential investor concerns about the sustainability of public finances. The results of a regression analysis of dynamic panel data by the International Monetary Fund (2009b) support the view that for each one percent increase in public debt as a percentage of GDP, the long-term interest rate increases by five basis points. Moreover, according to Ardagna et al. (2007), there is a non-linear relationship between public debt and long-term interest rates. Higher levels of initial public debt reinforce the perception that a government will face difficulties in servicing its debt obligations and thus they increase credit risk. Therefore, a rise in long-term interest rates might crowd out private investment, with negative repercussions on the quality of investment during an upturn. A potential negative effect on the level and quality of private investment can cause a slowdown in the economy's productive capacity.

Regarding the impact of fiscal policy on long-term growth through its effect on inflation and inflation expectations, persistent fiscal deficits and rising public debt can lead to higher inflation expectations, if the public anticipates that the growing budgetary burden will be financed through debt monetisation. It could be argued that this risk is more likely for developing countries and in cases where monetary policy has not been entrusted to an independent central bank.

Available empirical data on the relationship between public debt and long-term growth are limited. Overall, however, they indicate that higher levels of public debt are detrimental to growth: an increase of 10 percentage points in public debt will subtract about 0.15% from annual real per capita GDP growth in advanced economies; this percentage is quite sizeable, in particular for countries with already low potential for further growth (see Kumar and Woo, 2010). Regarding advanced economies, two recent empirical studies have argued that there is a certain threshold of the debt-to-GDP ratio, about

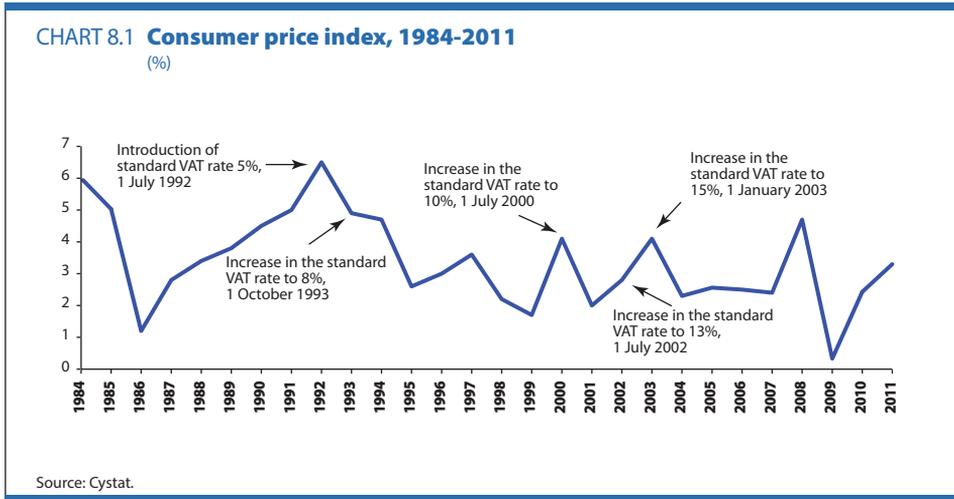
90%, beyond which public debt is negatively linked to long-term growth (see e.g. Reinhart and Rogoff, 2009 and Checherita and Rother, 2010). The empirical literature has also focused on the role of the external debt⁸ of developing countries. A strand of that literature supports the existence of a non-linear impact of external debt on long-term growth, with negative effects only occurring beyond a certain threshold of the debt-to-GDP ratio (see e.g. Pattillo et al., 2004 and 2011, and Cordella et al., 2005).

Regarding the fiscal policy composition, a consolidation strategy can be beneficial to long-term growth, if it relies on expenditure cuts rather than on tax hikes. Theoretical literature on the relationship between fiscal consolidation and long-term economic growth (albeit yielding mixed results) tends to point to three main conclusions. First, a fiscal consolidation strategy that relies on higher taxes, which increase distortions in the economy (in particular labour and corporate taxes), can have negative effects on growth (see Arnold, 2008 and Coenen et al., 2007). Second, cuts in non-productive government current expenditure, including non-targeted social transfers, can have favourable effects on long-term growth (see Barro, 1990 and Obstfeld and Peri, 1998 for theoretical approaches and Checherita et al., 2009 for empirical evidence). Third, fiscal policies that involve cuts in productive spending, e.g. for public investment (see Barro, 1990 and Aschauer, 2000) or education (see Lucas, 1988) are negatively related to long-term growth prospects.

8.2.2 Effects on inflation

Fiscal policy can have a significant effect on price developments, especially if one takes into account the high ratio of public spending to GDP. In the case of Cyprus, total expenditure of general government corresponds to about half of GDP (46.4% in 2010). As a result, changes in fiscal policy affect the evolution of demand and thus, indirectly, prices.

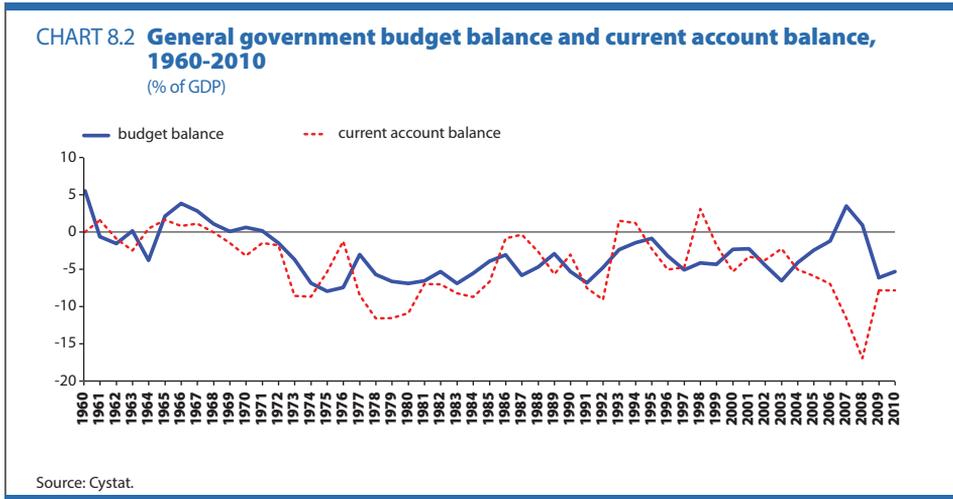
8. External debt is the part of a country's total debt that is owed to creditors outside the country. For more details, see **Chapter 2**, p.39.



Fiscal policy can indirectly affect prices and inflation in many ways. First, through changes in government consumption and public investment, which influence aggregate demand and can thus bring about significant changes in prices in the short run, especially given the relatively inelastic aggregate supply; second, by changes in fiscal variables, such as personal and corporate income tax rates, that affect private consumption or investment demand.

Fiscal policy can also affect inflation directly, through e.g. changes in indirect taxes, without necessarily changing demand. The most striking and perhaps most relevant example are changes in value added tax (VAT), which have a direct impact on prices, as VAT rates are included in inflation measures. **Chart 8.1** confirms the existence of a positive correlation between the consumer price index (CPI) and changes in the standard VAT rate. However, it should be noted that changes in inflation may result from changes in several other factors, such as import duties, consumption taxes and administered prices, which are not discussed in this chapter.

Other channels through which fiscal policy can directly affect prices include changes in the rates of social security contribution or in government wages. For example, through automatic wage



indexation, fiscal policy can directly influence unit labour costs. The containment of government compensation of employees, on the other hand, can play an important role not only in the fiscal consolidation effort, but also in wage moderation in the private sector, especially in countries with high level of public employment or comparatively high public sector wages. Wage moderation in the private sector would in turn help improve competitiveness and growth prospects⁹.

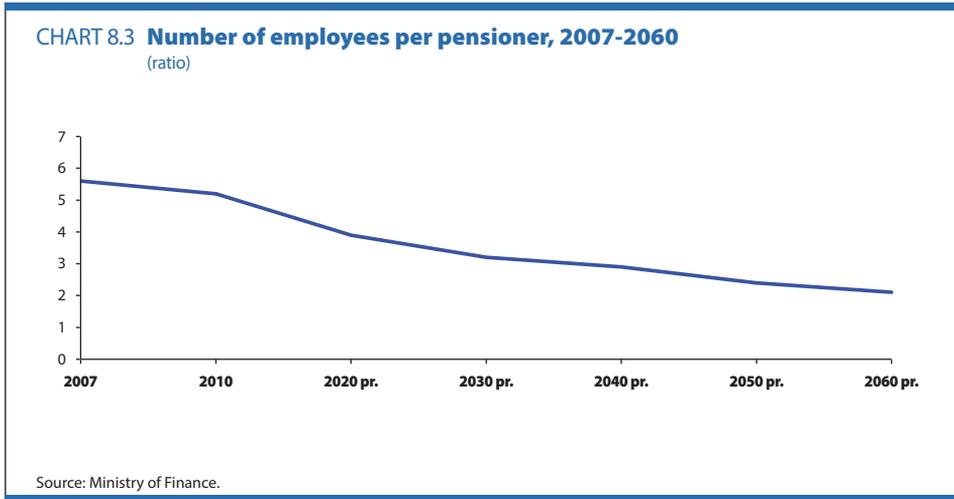
8.2.3 Effect on the current account

According to Ali Abbas et al. (2010), there are three main channels through which changes in fiscal policy affect the current account balance, namely: (i) through government demand for goods and services, which has a direct effect on the current account balance; (ii) through the real exchange rate; and (iii) through interest rates and country risk premia¹⁰.

Chart 8.2 suggests the existence of a positive relationship between the fiscal balance and the current account balance (at least up until 2005). This relationship underlies the term “twin deficits”. However, a

9. For a more extensive discussion of inflation, see **Chapter 9**, p.357.

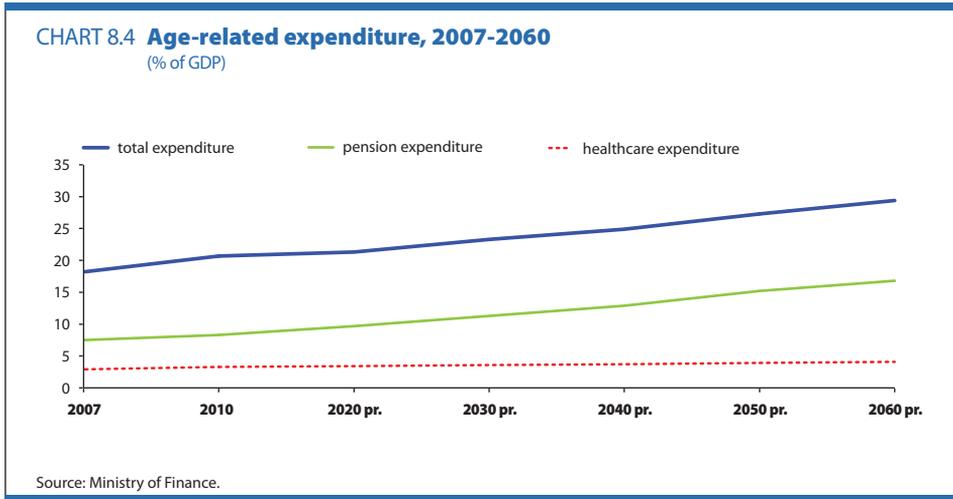
10. For a more extensive analysis of these three channels, see **Chapter 2**, p.39.



decoupling took place as from 2006. During 2006-2008, the decoupling was partly due to the property and construction boom: the latter, on the one hand, led to an improvement in the fiscal balance, because of the increased government revenue from real estate transactions and, on the other hand, weighed down on the current account balance due to higher imports of building materials and household appliances. During 2009-2010, especially in 2009, the decoupling came as a result of the economic crisis. The decline in domestic demand in the context of the crisis led to an improved current account balance, but the pursuit of an expansionary fiscal policy partly with a view to addressing the crisis, combined with the return of government revenue to the levels recorded before the property boom, caused the fiscal balance to deteriorate.

8.2.4 Population ageing and fiscal policy

As regards the role of fiscal policy in the light of population ageing in Cyprus, the existing pension and healthcare systems require the implementation of further reforms in order to address the macroeconomic implications of demographic changes and to



safeguard a desired level of pension and healthcare provision. Declining birth rates and longer life expectancy are the main causes of population ageing. According to the 2010-2014 Stability Programme (SP) of the Republic of Cyprus (see **Chart 8.3**, p.313), the ratio of workers to pensioners is expected to drop to 2.1 in 2060 from 5.6 in 2007¹¹.

Chart 8.4 shows projections of the Ministry of Finance as presented in the 2010-2014 SP of the Republic of Cyprus, regarding the total population ageing related expenditure, broken down into pension and healthcare expenditure. Pension expenditure¹² as a percentage of GDP is expected to grow considerably to 16.8% by 2060, from 8.3% in 2010, whereas healthcare expenditure is expected to increase to 4.1% of GDP, from 3.3% over the same period.

Therefore, the success of the effort to bring public finances back on a sustainable track hinges crucially on the ability to tackle the serious longer-term challenge of securing the resources to finance the pension funds. Although the adoption, in 2009, of measures to improve the long-term sustainability of the Social Insurance Fund (SIF) (such as higher contribution rates and stricter pension eligibility

11. The number of workers per pensioner is the inverse of the old age dependency ratio, which measures the population aged 65+ as a percentage of the population aged 15-64.

12. Pension expenditure includes Social Insurance Fund pensions and state occupational pension schemes.

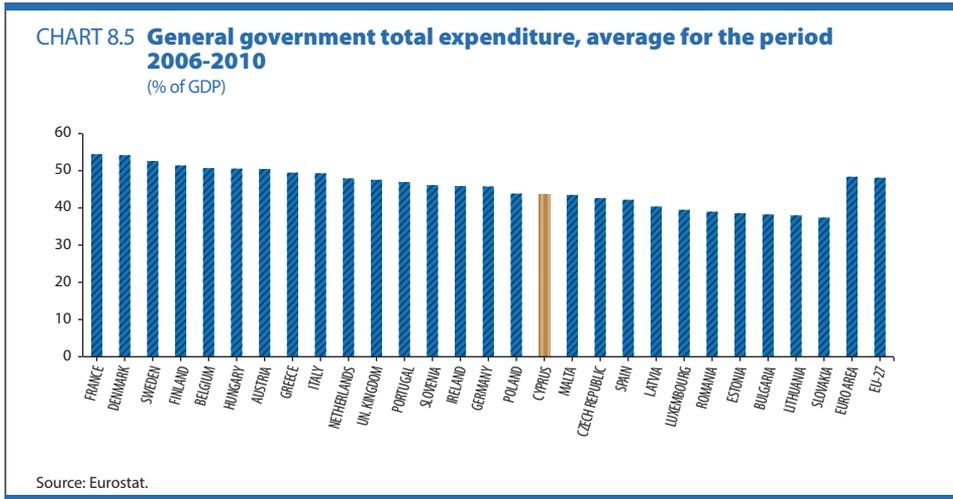
criteria) was an important step in the right direction, the projected population ageing necessitates additional measures. According to Hoffmaister et al. (2007) and the International Monetary Fund (2011), increasing the retirement age and realigning the relative generosity of public-versus-private pension benefits are, among other things, necessary for addressing the budgetary consequences of demographic changes. On a positive note the Ministry of Finance, in December 2010, appointed an independent agency to undertake an actuarial study regarding the sustainability of the country's pensions system. The findings of the study have formed the basis for the ongoing dialogue on pension reform. The study also led to a significant structural measure, on 1 October 2011, namely the introduction of a permanent mandatory contribution (3%) of workers in the broader public sector to occupational pension schemes. At the same time, those recruited in the broader public sector after the above date are ineligible for occupational pension schemes, and they will contribute to the SIF the same percentage of their gross wages as private sector workers (rather than 50%, as was the case before 1 October 2011).

8.3 A comparative analysis of general government revenue and expenditure between Cyprus and the other EU Member States

This section provides a comparative analysis between Cyprus and the other 26 EU Member States in terms of total general government¹³ revenue and expenditure (especially the government compensation of employees), based on 2006-2010 averages.

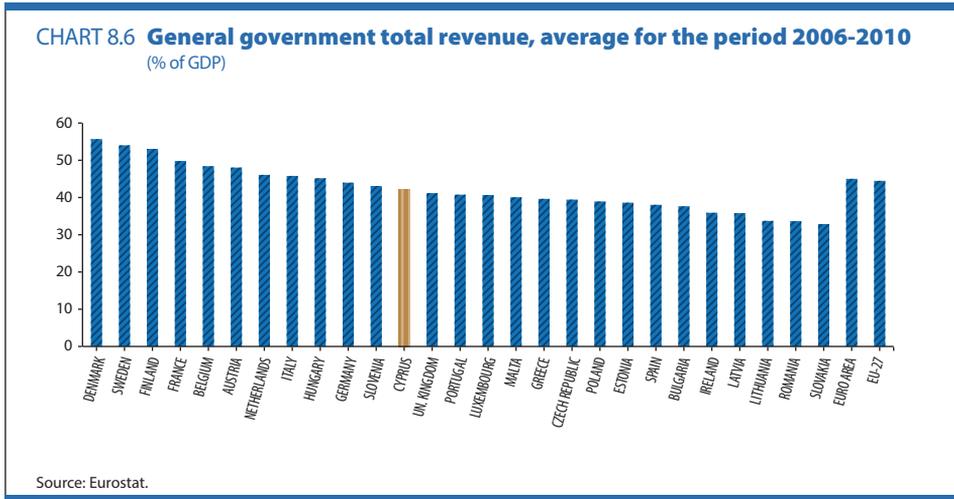
Chart 8.5 (p.316) shows total general government expenditure as a percentage of GDP for EU-27. Cyprus, with an average ratio of 43.7% has the 11th lowest ratio in the EU-27. Although there is no generally accepted rule about the optimal ratio of government expenditure to GDP, the issue has been extensively investigated in the literature.

13. See **Appendix 8.1** (p.349).



Afonso et al. (2006) for example find that the positive relationship between real GDP growth rate and the government expenditure-to-GDP ratio rises initially and then falls, and suggest that the optimal expenditure ratio would be between 30% and 35% of GDP. This is supported by the findings of Hauptmeier et al. (2006), suggesting that expenditure cuts, in particular reduced spending on transfers, subsidies and public consumption, while largely sparing capital expenditure and education spending, can have a positive impact on economic growth. Tanzi and Schuknecht (2000) also conclude that a level of public expenditure of around 30%-35% of GDP would be a maximum, ensuring the financing of high-quality public services. In the case of Cyprus, although the ratio of total expenditure to GDP is low relative to other EU Member States, it needs to be compared with total general government revenue as a percentage of GDP.

With a general government revenue-to-GDP ratio of 42.1%, Cyprus ranks 12th among the 27 Member States of the EU (**Chart 8.6**, p.317). This rather low ranking is to be expected, since Cyprus is one of the countries with relatively low tax rates, particularly as far as direct taxes are concerned. On the other hand, this ranking is partly attributable to significant revenue windfalls from direct and

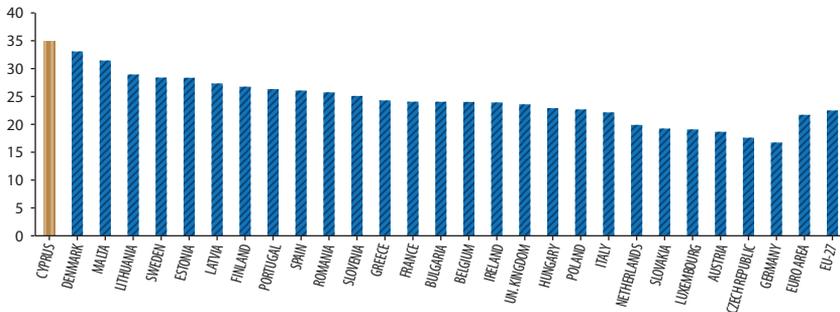


indirect taxation during 2006-2008, on account of the property boom. Without this effect, Cyprus would have ranked even lower. Taking these factors into consideration, and although government expenditure in Cyprus is relatively low by EU standards (**Chart 8.5**, p.316), there is still room for a further reduction, in particular in the area of current expenditure.

Chart 8.7, p.318, shows the government compensation of employees¹⁴, as a percentage of total public expenditure, for the EU-27. It is noteworthy that Cyprus with 34.9% has the highest percentage among all EU Member States, while the averages for the EU-27 and the euro area are 22.5% and 21.7%, respectively. In terms of the wage bill as a percentage of GDP, as shown in **Chart 8.8**, p.318, Cyprus is second only to Denmark, with a ratio of 15.2% of GDP which is more than four percentage points higher than the EU-27 or the euro area average. This ranking is reason for concern, not least because it is not in line with the respective ranking of Cyprus in terms of the overall government expenditure-to-GDP ratio (see **Chart 8.5**, p.316).

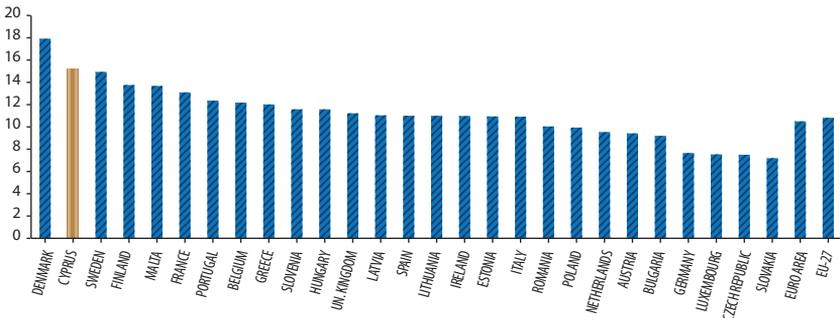
14. The government compensation of employees includes wages and salaries, contributions of the government as an employer to social insurance funds, as well as imputed social contributions, which, in the case of Cyprus, involve pensions and gratuities.

CHART 8.7 General government expenditure for compensation of employees, average for the period 2006-2010
(% of total expenditure)



Source: Eurostat.

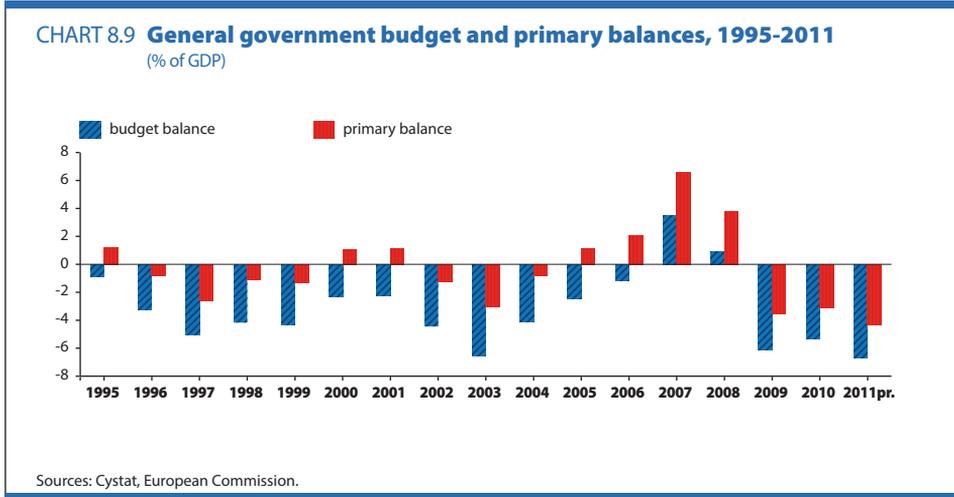
CHART 8.8 General government expenditure for compensation of employees, average for the period 2006-2010
(% of GDP)



Source: Eurostat.

8.4 The general government fiscal balance and the structural fiscal balance from a historical perspective

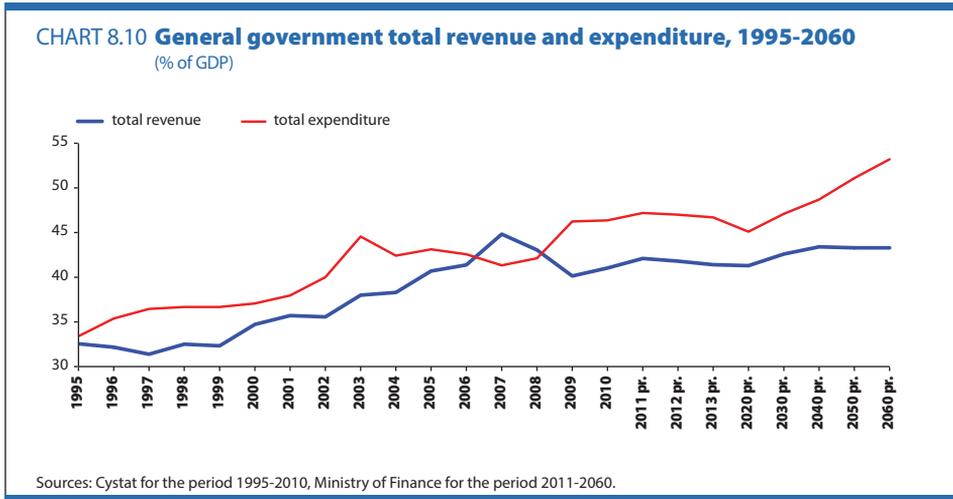
This section presents a historical analysis of the actual and structural fiscal balance of general government for the period 1995-2010. The structural fiscal balance is derived by subtracting the effects of the business cycle and of temporary measures from the fiscal balance.



8.4.1 Fiscal balance

According to comparable annual historical data of CyStat for the period 1995-2010, which are presented in **Chart 8.9**, the general government fiscal balance recorded deficits every year in the period under review, with the exception of 2007 and 2008 that saw surpluses of around 3.5% and 0.9% of GDP, respectively. These surpluses reflected significant revenue windfalls in the context of the property boom. In 2010, the fiscal deficit came to 5.3% of GDP. Between end-2007 and end-2010 the deficit ratio grew substantially, by about 9 percentage points. This was mainly due to the continued increase in government expenditure, partly aimed to address the economic crisis, along with the return of revenue to the levels observed before the property boom. The chart also shows the primary balance (which equals the fiscal balance net of interest payments on the public debt). According to the European Commission’s autumn economic forecast published in November 2011 (see European Commission, 2011a), the fiscal deficit and the primary deficit for 2011 were expected to be 6.7% and 4.3% of GDP, respectively.

Total general government expenditure as a percentage of GDP ranged



between 33% and 37% during 1995-2000. In 2002, total expenditure reached 40% of GDP and followed an upward path thereafter, reaching a historically high of 46.4% in 2010, mainly on account of spending on the government compensation of employees, and social transfers (15.9% and 14.4% of GDP, respectively). For 2011, the European Commission in its autumn economic forecast, expected government expenditure to reach 46.8% of GDP. Total general government revenue as a percentage of GDP ranged between 32% and 35% during 1995-2000, before reaching 38% in 2003, mainly on account of increases in the standard VAT rate in 2002 and 2003, and followed an upward course afterwards. In 2007 and 2008, the revenue-to-GDP ratio rose to 44.8% and 43.1%, respectively, mainly reflecting the revenue windfalls from the property boom. In 2010, the revenue ratio fell to 41% of GDP and, according to the European Commission's autumn economic forecast, should decline further to 40.1% of GDP in 2011, in line with an expected economic slowdown and lower corporate profitability. **Chart 8.10** shows projections for the period 2011-2060, taken from the 2010-2014 SP of the Republic of Cyprus. These figures point to a very dangerous upward trend, as, without corrective action, public expenditure is projected to soar to 53.2% of GDP by 2060.

8.4.2 Structural fiscal balance

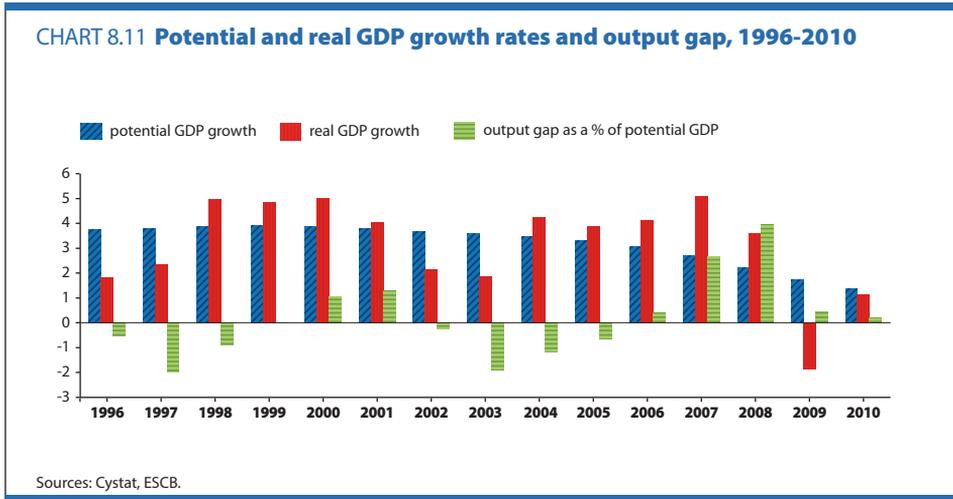
The economic cycle affects public revenue and expenditure, thereby also the fiscal balance. This is because, in downturns, the volume of economic transactions falls, thus actual GDP diverges from potential GDP¹⁵ (this divergence is called “output gap”), economic activity-related government revenue declines and certain expenditure items (e.g. unemployment benefits) increase. In order to formulate a sound fiscal policy, therefore, it is important to calculate both the cyclically adjusted balance and the structural balance. The structural balance is the fiscal balance that would arise, if actual GDP was at its potential level (hence the output gap was zero), i.e. after the effect of the economic cycle, and also of temporary measures is deducted from the fiscal balance. For example, if in a given year a temporary measure, such as a tax amnesty, leads to a rise in government revenue and thereby the fiscal balance improves, it would be wrong to interpret such improvement as permanent: rather, once the measure expires, revenue will return to the levels recorded before its introduction.

After Cyprus’ entry into the EU, the need to calculate the potential GDP and the structural fiscal balance became imperative, as the structural fiscal balance is used by the European Commission and the ECB in monitoring the fiscal condition of various Member States. The first attempts to calculate the structural fiscal balance of Cyprus were made by Pashardes and Haroutunian (2004) and Haroutunian and Pashardes (2005). After Cyprus’ accession to the EU, the CBC started to estimate the structural fiscal balance too, applying the methodology developed by the European System of Central Banks (ESCB) (see Bouthevillain et al., 2001)¹⁶.

Chart 8.11 (p.322) shows data on the growth rate of potential and actual GDP for the period 1996-2010, as well as on the output gap as a

15. Potential GDP is the GDP that would be achieved, if a country's factors of production were fully employed.

16. The methodology of Bouthevillain et al. (2001) involves, as a first step the assessment of the cyclical position of the economy, by estimating the output gap and the deviations of various macroeconomic bases from their trend, applying the Hodrick-Prescott filter. In a second step, the impact on the budget of the output gap is calculated, using the elasticities of various revenue and expenditure items to their respective tax or macroeconomic bases. These elasticities are usually derived by econometric methods or from tax/expenditure rules.

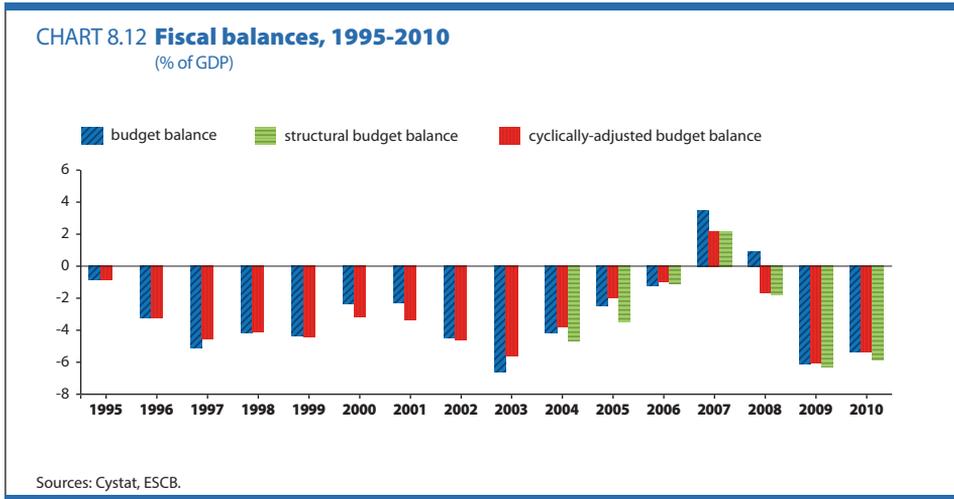


percentage of potential GDP. A negative output gap implies that economic activity falls short of the level that would be achieved if actual GDP was equal to potential GDP, which has adverse consequences on the fiscal balance.

Chart 8.12 (p.323) illustrates the various measures of the fiscal balance¹⁷, showing that in the periods 1996-1998 and 2003-2005, when the output gap was negative, excluding the unfavourable impact of the economic cycle, the fiscal balance would be smaller than the actual balance.

Even though between 2004 and 2005, the deficit-to-GDP ratio fell to 2.4%, from 4.1%, leading to the abrogation of the EDP for the Republic of Cyprus, the structural fiscal deficit as a percentage of GDP was only reduced from 4.6% to 3.4%. An important factor behind the improvement in the overall deficit was the tax amnesty that brought about significant, albeit non-recurrent, revenue. In 2008, a fiscal surplus of about 0.9% of GDP was recorded, due to the favourable impact of the economic cycle on the budget; without this impact the fiscal position would have been a deficit of about 1.7% of GDP. In 2009, although the output gap as a percentage of potential GDP was positive and reached

17. It should be mentioned that during 1995-2003, when Cyprus was not a member of the EU, the CBC did not record temporary fiscal measures. Thus, for that period, only the cyclically-adjusted fiscal balance is shown in the chart, whereas structural fiscal balance series starts from 2004. The calculations follow the methodology of Bouthevillain et al. (2001).



just 0.5% (although 2009 was the first year after 1974 when a negative growth rate was observed), this should be seen in the context of the change in the size of the output gap between 2008 and 2009 (a decline of 3.5% in potential GDP), which resulted in a significant deterioration of the fiscal situation. The fact that the fiscal deficit in 2009 was broadly at the same levels as the structural deficit (6.1% and 6.3%, respectively) points to the role of structural factors in fiscal deterioration. This is worrying and underlines the need for structural measures in order to restore public finances on a durable basis.

Apart from temporary and non-recurrent revenue, an analysis of the fiscal condition has to take also into consideration any windfall revenues. The latter are not affected by the economic cycle and cannot be attributed to particular discretionary measures, thus they should not be considered structural revenue. For example, as a result of the property boom of 2006-2008, the government benefited from higher real estate-related revenue. If this revenue were to be considered structural, a large part of the fiscal surplus (3.5% of GDP) recorded in 2007 – more specifically, 2.2% – would be considered structural as well, giving the false impression that this revenue would continue permanently. With the decline in construction activity as from 2009, government revenue

fell sharply. Such misconceptions pose a risk to the fiscal condition: if government expenditure increases permanently under the impression that it can be financed with windfall revenues, then, once the latter are reversed, the fiscal condition will deteriorate, given that public expenditure is harder to reverse because of the political cost of contractionary measures.

All of the above underline the importance of calculating the structural fiscal balance in the analysis of the fiscal condition of Cyprus. Even though methodologies might be subject to weaknesses, the additional information obtained is very significant and provide a valuable input to rational fiscal planning.

8.5 Central government revenue and expenditure over time

This section examines key revenue and expenditure items of the central government over 1970-2010¹⁸. The analysis draws on central government data, rather than general government data, because of the availability of longer relevant data series. It should be mentioned that the results of the analysis based on the central government data would not have been materially different if general government data had been used. Table 8.1 illustrates the way in which selected revenue and expenditure items, which are analysed in detail over the next two sub-sections, provide a complete picture of the central government accounts on a cash basis¹⁹.

8.5.1 Central government revenue over time

This sub-section looks at the evolution of the main components of central government tax and non-tax revenue over the years 1970-2010. Regarding the tax policy of the Republic of Cyprus, it should be noted that the country's favourable tax regime, coupled with its openness to foreign investors, is a key feature of the growth model of the Cyprus

18. The data reported in this section include SSF revenue and expenditure.

19. See **Appendix 8.2** (p.350).

TABLE 8.1 Central government accounts on a cash basis, 2010
(% of GDP)

(1) REVENUE AND GRANTS (2+9)	37,3
(2) Current Revenue (3+7+8)	37,3
(3) Tax revenue, of which: (4+5+6)	31,2
(4) Direct taxes	10,8
(5) Indirect taxes	14,4
(6) Social security contributions	6,0
(7) Non-tax revenue	5,5
(8) Grants	0,6
(9) Capital Revenue	0,0
(10) EXPENDITURE (11+19)	42,2
(11) Current Expenditure (12+13+14+15+16+17+18)	38,9
(12) Purchases of goods and services	3,1
(13) Wages and salaries	10,8
(14) Subsidies	0,5
(15) Interest payments	2,6
(16) Social security payments	7,3
(17) Other transfers ⁽¹⁾	14,0
(18) Unallocable ⁽²⁾	0,6
(19) Capital Expenditure	3,3
(20) BUDGET BALANCE (1-10)	-4,9

Source: Ministry of Finance.

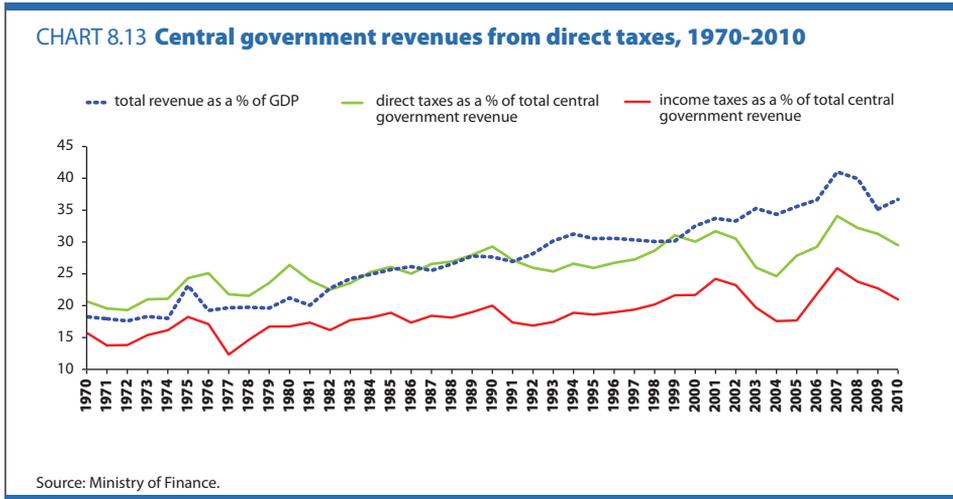
(1) See footnote 27, page 333.

(2) Includes, mainly, defence expenditure.

economy. The favourable tax regime was an important factor in the transformation of the economy from an agricultural-based one during the 1960s into an industrial-based one by the mid-1980s and, later, in the growth of the tertiary sector based on the provision of financial services. The maintenance of this favourable tax regime testifies to the importance of government expenditure containment in order to avoid tax rate increases that, among other effects, can discourage foreign investors.

Tax revenue

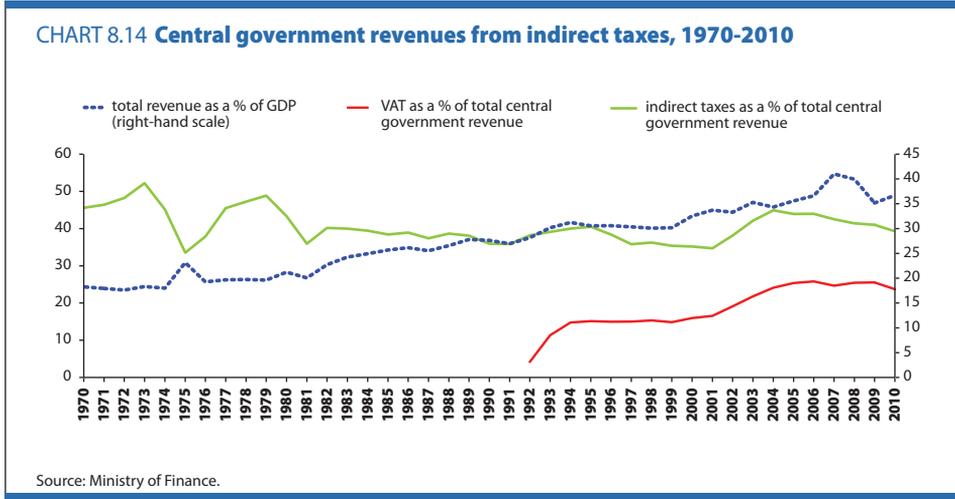
The three main components of tax revenue refer to direct taxes, indirect taxes and contributions to the SSFs. The sub-sections that follow focus on each one of these components in turn.



Direct taxes

Chart 8.13 shows central government revenue from direct taxes²⁰ and their main subcomponent, income tax revenue. This subcomponent includes personal income tax (of self-employed and employees) and corporate tax, as well as capital gains tax. Apart from income tax, direct tax also comprises, among other taxes, real estate-related taxes (see **Chart 8.16**, p.330), the special contribution to the Defence Fund, stamp duties and penalties. **Chart 8.13**, shows that direct taxes account for about one third of central government revenue. The large increase in direct taxes during 2006-2008 was due to real estate-related revenue, on account of the surge in the number of transactions in the construction sector as well as the hike in real estate prices. The increases in real estate-related revenue were of a temporary nature and were followed by a marked decline during 2009-2010, which brought about a drop in total

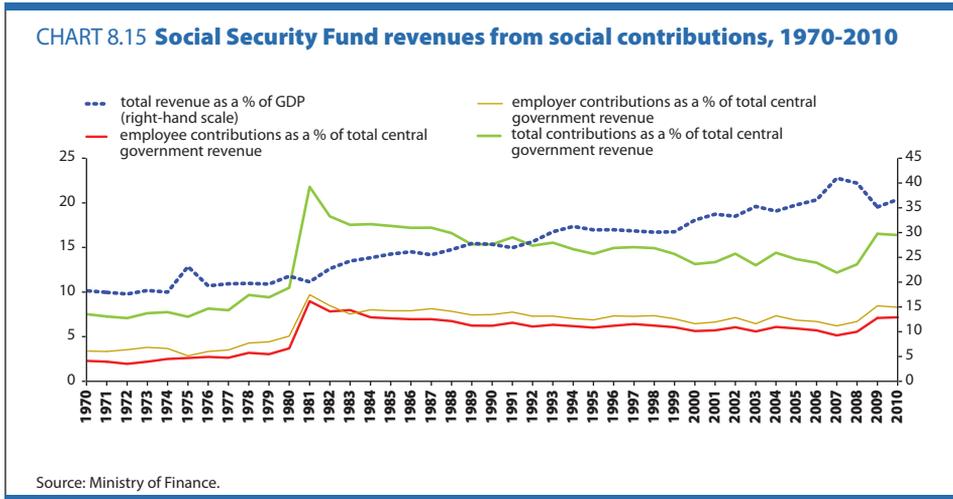
20. Personal income tax is subject to a progressive tax structure, comprising, as from 1991, three brackets with the respective rates being those of 20%, 30% and 40% but lowered to 20%, 25% and 30% in 2003. In 2011, an additional income tax bracket was introduced, for incomes higher than €60,000, with a tax rate of 35%. The tax-free income threshold was gradually raised from €8,500 in 1995 to €19,500 in 2010, leading to a significant decline in the number of individuals that are subject to income tax. Dividends and interest are taxed in accordance with the *Special Contribution for the Defence of the Republic Law*, which was amended in 2011 (the tax rate on interest and deemed dividends was increased from 10% to 15% and from 15% to 17%, respectively). As of 1 January 2012, deemed dividends are subject to 20% tax for a period of two years. A capital gains tax, at a rate of 20%, is imposed on gains from the sale of property, including gains from the sale of shares. Regarding corporate tax, the applicable tax rate was reduced from 20-25% to 10% as of 1 January 2003. Along with Bulgaria, Cyprus has the lowest corporate tax rate in the EU. For semi-government organisations, the tax rate was lowered to 10% in 2009. In 2003 and 2004 an additional tax was imposed on corporate taxable incomes of over €1.7 million (see European Commission, 2011b).



direct tax revenue. Falling tax revenue was also due to the economic crisis, which entailed lower economic transactions, hence lower corporate profits and incomes.

Indirect taxes

Chart 8.14 supports the view that Cyprus relies heavily on revenue from indirect taxes, given that around 40% of total central government revenue in 2010 came from this component, 60% of which is accounted for by VAT. There are a number of VAT rates such as the zero VAT rate, various reduced rates and the standard rate. The standard VAT rate was introduced on 1 July 1992 (5%) and was subsequently raised to 8% in 1993, 10% in 2000, 13% in 2002 and 15%, the minimum required under the EU acquis, in 2003. VAT rates can be differentiated for economic policy purposes, as was the case in 2009-2010, when VAT on hotels and restaurants was temporarily reduced (to 5% from 8%), as well as the overnight stay fees levied by local authorities, in an attempt to mitigate the effects of the crisis on tourism. *The Value Added Tax Law* (2011) provided for a further increase in the standard VAT rate to 17% as from 1 March 2012.



Moreover, a reduced VAT rate of 5% on food and pharmaceuticals was introduced, in line with the EU acquis, on 10 January 2011. Other indirect tax revenues include, among other taxes, receipts from consumption taxes, import duties, registration fees relating to business and professional licenses, fees paid to the Department of Lands and Surveys that are classified under indirect taxes, as well as employer contributions to the national Social Cohesion Fund.

Contributions to the Social Security Funds

Chart 8.15 shows contributions to the SSFs as a percentage of total central government revenue. What stands out in the chart is the 1981 surge in total social security contributions, which peaked at about 22% of total central government revenue. This increase stemmed from the second social insurance reform²¹ of 1980, which introduced the proportional scheme, linking contributions (and benefits) to wage income. The next major reform was made in 2009, reflected in a new

21. The first social insurance scheme in Cyprus was introduced in 1957. Its coverage was limited to about 45% of workers and only four out of the nine types of benefits. Both contributions and benefits were determined at a flat weekly rate, irrespective of the insured person's earnings. The scheme was financed by contributions, from employees, employers and the government in equal shares. This formed the basis for the first reform in 1964. The reform mainly featured the extension of compulsory insurance to all workers (employees and self-employed) and the gradual extension of coverage to all types of benefits in addition to medical care and family allowances), while the calculation of benefits remained unchanged. For further information, see Social Insurance Services (2007).

increase in social insurance contributions which reached about 17% of total central government revenue. This reform introduced measures to enhance the long-term sustainability of the pension system, mainly geared towards boosting revenue through a gradual rise in contribution rates by 1.3 percentage points every five years, starting from April 2009 and up to January 2039, and, to a lesser extent, towards containing expenditure by stricter old age pension eligibility criteria.

Regarding the allocation of the financing of the scheme into employers, employees and government contributions following the 2009 reform, the total percentage contribution of employers amounts to at least 8.5% of employees' gross wages. In more detail, total employer contributions, as shown in **Chart 8.15**²² (p.328), include contributions to the SIF (6.8%), the Redundancy Fund (1.2%) and the Central Holiday Fund²³. Employers must also pay payroll tax (2% of gross wages) to the national Social Cohesion Fund, which is classified under indirect tax revenue. Employees contribute 6.8% of their wages and the self-employed 12.6% of their imputed income. As from 1 October 2011, employees in the broader public sector also contribute 2% of their total pensionable earnings to the Widows and Orphans Fund (up from 0.75% and 1.75%, respectively, that applied previously) for the purpose of transferring the pension of a deceased employee to the widowed spouse and dependent children. Moreover, social security contributions for employees both in the public and the private sector and for self-employed persons are topped up by the government contribution at a rate of 4.3%, which is not shown in the chart.

Real estate-related tax revenue

With regard to real estate-related central government tax revenue,

22. It should be noted that employers also pay a contribution of 0.5% to the Human Resource Development Authority Fund. However, this contribution is not included in the total SSF revenue, as the Authority is not a public organisation that falls under the central government definition.

23. The contribution to the Central Holiday Fund is paid in full by the employer. It is calculated as a percentage of the employee's wages and varies according to the number of days off that the employee is entitled to. For instance, the minimum percentage contribution for employees working on a five-day week is 8%.

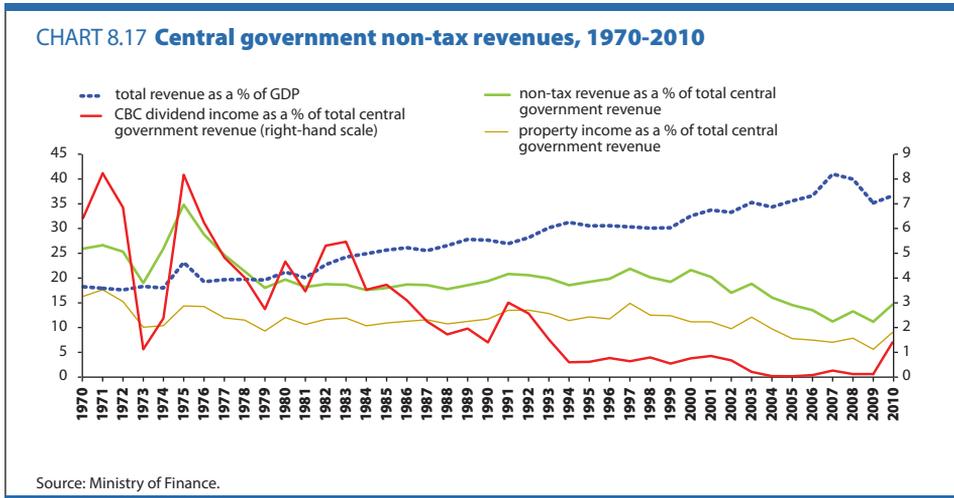
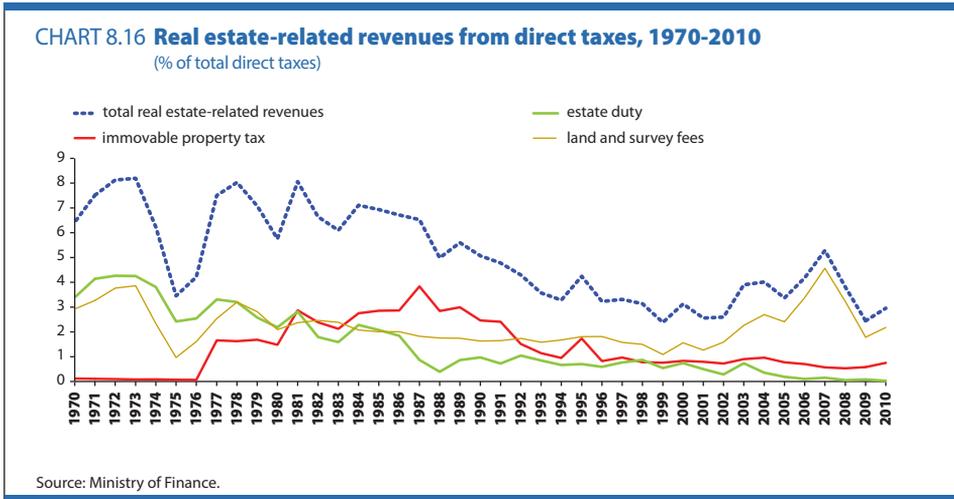


Chart 8.16 confirms the sharp increase in revenue from fees and duties payable to the Department of Lands and Surveys²⁴ on account of the surge in real estate transactions during 2006-2008, which generated windfall revenues. Concerning the immovable property tax, it is noted that an amendment to the relevant law in 2011 introduced higher tax rates and increased the number of tax brackets.

24. The Department of Lands and Surveys collects revenue related to real estate, which however is classified either under indirect taxation or under non-tax revenue. **Chart 8.16** shows direct tax revenue only.

Non-tax revenue

Chart 8.17 (p.330) shows the major item of central government non-tax revenue, namely property income, which includes dividends paid by the CBC and semi-government organisations. Other items include various administrative fees, charges and fines.

The increasingly divergent paths of total central government revenue and total non-tax revenue over time observed in **Chart 8.17** (p.330) confirm the declining share of non-tax revenue relative to tax revenue. Revenue from dividends paid by the CBC followed a downward trend until 1994 (broadly stabilising thereafter until 2009), but rose significantly in 2010 on account of the exceptionally high profits of the Bank materialising in 2009. These profits were mainly the result of the investment policy pursued after Cyprus' entry into the euro area and the fact that Cyprus pound coins were not exchanged into Euros following the December 2009 deadline.

8.5.2 Central government expenditure over time

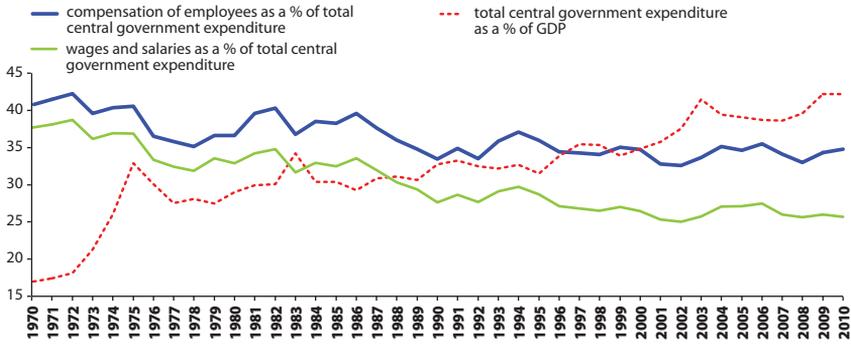
This sub-section examines the evolution of key central government expenditure items over 1970-2010.

Compensation of employees

Chart 8.18 (p.332) presents the expenditure for compensation of employees, as a percentage of total central government expenditure, along with its main component, wages and salaries²⁵. The central government expenditure for compensation of employees has been declining over time, from around 39% in the 1970s to around 34% during 2000-2010. This trend primarily reflects the significant increase in total central government expenditure over time, from 16.9% of GDP in 1970 to 42.2% of GDP in 2010. Over that period, the total number of central

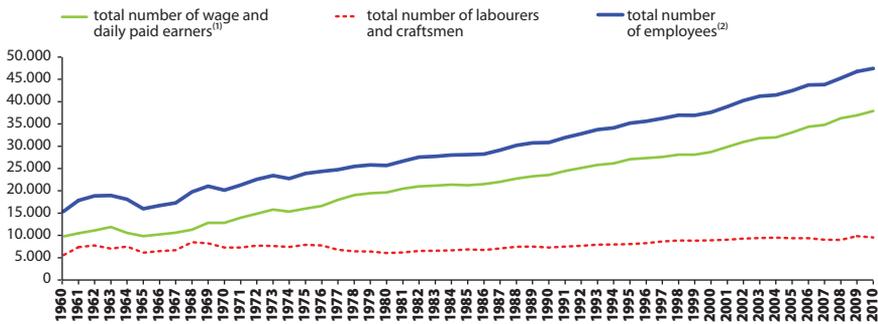
25. See footnote 14, p.317.

CHART 8.18 Central government expenditure for compensation of employees, 1970-2010



Source: Ministry of Finance.

CHART 8.19 Number of central government employees, 1960-2010



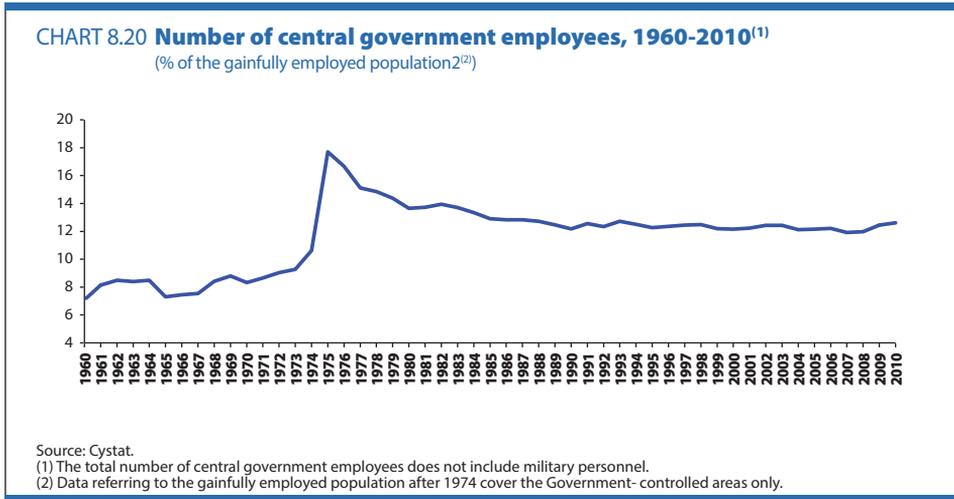
Source: Cystat.

(1) The total number of wage and daily paid earners is the sum of permanent and regular employees, as well as casual, administrative, clerical and technical employees (daily paid and on contract).

(2) The total number of central government employees does not include military personnel.

government employees more than doubled, as can be seen in **Chart 8.19**, but stabilised (at least from the mid-1980s) as a percentage of the gainfully employed population²⁶ (**Chart 8.20**, p.333). It is clear that this trend is unsustainable given that expenditure for compensation of employees already represents an enormous cost to the government. This highlights the need for the adoption of structural measures, such as the

26. The gainfully employed population is defined as the economically active population excluding the unemployed, Cypriot citizens employed in British military bases, the Navy, Army and Air Force Institutes (NAAFI) and the United Nations Peacekeeping Force in Cyprus (UNFICYP), as well as Cypriots temporarily employed abroad after the Turkish invasion.



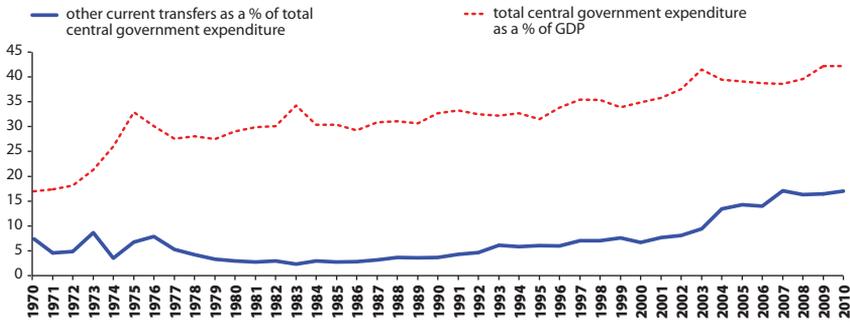
reduction in the size of the public sector, a more efficient use of human resources as part of a wider reform of the public service (see, e.g., International Monetary Fund, 2009a) and wage moderation. On the positive side, 2011 saw the adoption of measures for the suspension of increments and COLA on wages and pensions of the broader public sector as from 1 January 2012 and for two years, as well as measures for the reduction of public sector employment (e.g. abolition of vacant posts and restriction of recruitments).

Other current transfers

Chart 8.21 (p.334) shows central government expenditure for other current transfers²⁷, which comprises social transfers other than payments of the SSFs. Specific components include child benefits and student grants, special grants to pensioners and cash benefits to displaced persons. As shown in the chart, the increase in other current transfers as a percentage of total central government expenditure is steep, from 4.7% in 1992 to 17.0% in 2010, gathering pace as from 2002. This reflected the effect of the 2002 tax reform, which involved the abolition

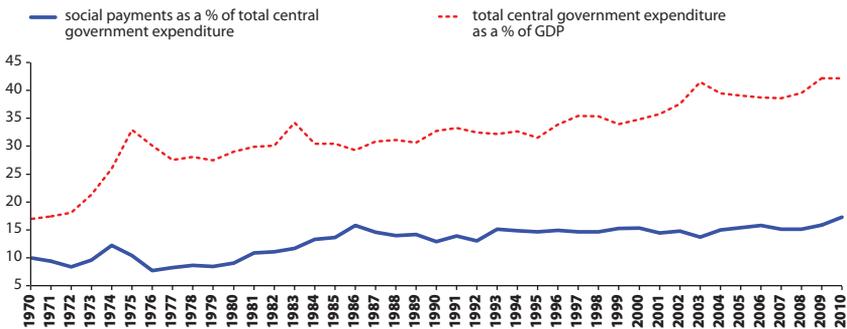
27. The expenditure item "Other transfers" in **Table 8.1**, p.325, includes the expenditure item "other current transfers", as well as expenditure for pension and gratuities, social pension, grants to semi-government organisations and local authorities and government contributions to international organisations.

CHART 8.21 Central government expenditure for other current transfers, 1970-2010



Source: Ministry of Finance.

CHART 8.22 Social Security Fund expenditure for social payments, 1970-2010



Source: Ministry of Finance.

of tax allowances and, instead, the introduction of respective grants, such as the annual child benefit, and an increase in the amount of various types of public assistance, e.g. extension of the student grant. It is worth mentioning, on a positive note, the ongoing efforts of the government to control social spending by applying means testing and income criteria, as well as the adoption of laws in 2011 for the targeting of student grants and child benefits.

Social Security Payments

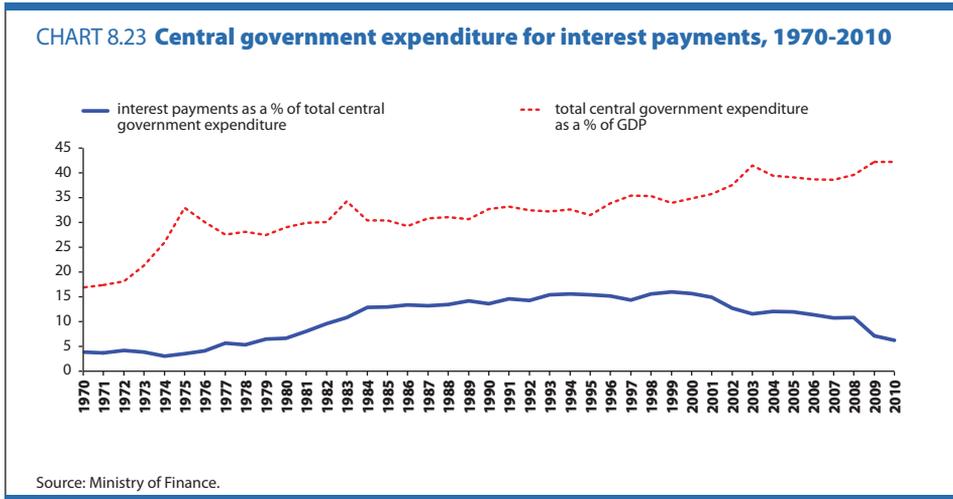
Chart 8.22 (p.334) shows SSF expenditure for social security payments (comprising various benefits and allowances, such as orphans benefit, missing person's allowance, marriage and funeral grants, as well as various types of pensions, e.g. old age pension, survivors pension, disability and invalidity pension, etc., other than social pension). Social security payments, as a percentage of total central government expenditure, increased from 10% in 1970 to 17.3% in 2010. This partly reflected the maturation of the General Social Insurance System, population ageing and the system's reform in 1980²⁸. In this respect, a significant development was the introduction of the regular adjustment of pensions, in particular basic pensions, in line with the earnings index. Expenditure for social security payments is not independent of the government expenditure for compensation of employees, as government contributions to the SIF and public servants' benefits both depend on the general level of wages.

Interest payments

Central government expenditure for interest payments is shown in **Chart 8.23**²⁹ (p.336). This expenditure item, as a percentage of total central government expenditure, has increased from 3.8% in 1970 to 6.2% in 2010. As seen from the Chart, central government interest payments increased significantly in the decade following the Turkish invasion, on account of the dramatic growth of public debt. This reflects the massive effort of the government to support and reconstruct the economy after the devastating consequences of the Turkish invasion. From the mid-1980s to 2001, the growth rate of interest payments slowed down, in line with the decline in public debt growth. From 2001 onwards, interest

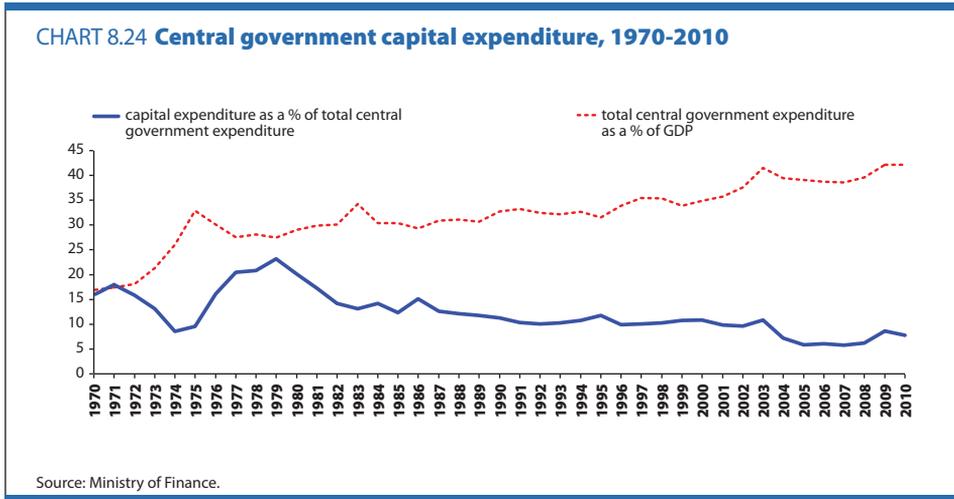
28. As already mentioned, the reform of the social insurance scheme in 1980 increased both social security payments and contributions to the SIF. The main features of the new social insurance scheme, which was introduced in October 1980, were compulsory coverage of all employees and proportionality, i.e. contributions and benefits are directly related to wage income.

29. Central government expenditure for interest payments includes interest paid to the SSFs and AFs in connection with the relevant holdings of intra-governmental debt (see **Chart 8.25**, p.338). By contrast, general government expenditure for interest payments does not include interest paid relating to intra-governmental borrowing.



payments followed a downward trend, mainly due to the liberalisation of interest rates on 1 January 2001, which led to gradual declines in domestic interest rates as part of the path toward convergence to EU and euro area standards. During 2001-2008, the significant direct effect of lower domestic interest rates on interest payments is accounted for by the fact that, on average, about 85% of public debt (including intra-governmental debt) was issued in the domestic market, with almost half of this representing short-term debt. As a result, the change in interest rates directly affected the part of domestic debt with short-term maturities. For the remaining part of domestic debt with longer maturities, the full effect of low interest rates did not become visible before 2010, when interest payments as a percentage of total central government expenditure fell to historically low levels (last seen before 1980). This mainly reflected the relative rise in the share of short-term debt, as well as the low interest rates that prevailed between 2008 and 2010, thereby facilitating the decline in interest payments on short-term borrowing and floating-rate debt (see Ministry of Finance, 2011).

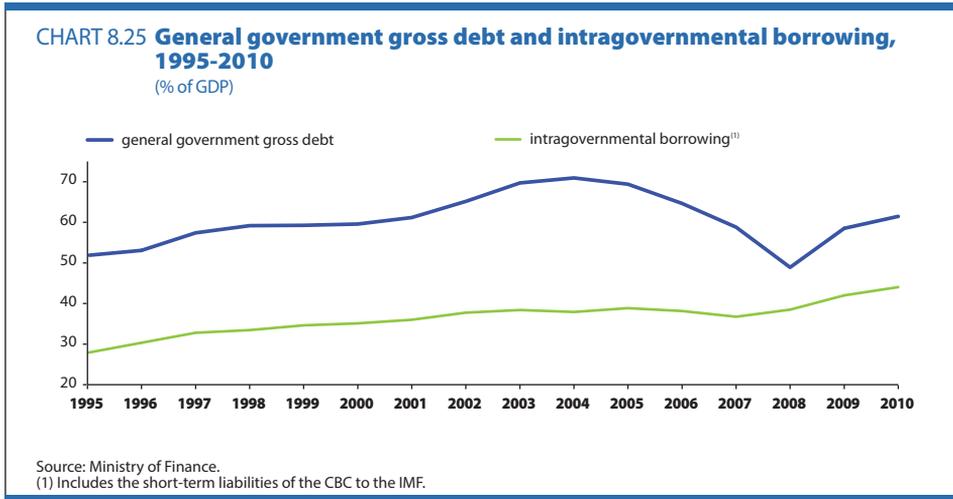
As is the case with expenditure for social security payments, expenditure for central government interest payments is not independent of the expenditure for compensation of employees, which,



as mentioned above, is an important driver of government deficit and public debt. In particular, expenditure for compensation of employees accounts for about one third of total central government expenditure and, as such, any fluctuations in the level of total expenditure have a direct and significant bearing on public debt and, in consequence, on the debt servicing burden (in the form of higher expenditure for interest payments).

Capital expenditure

Chart 8.24 shows the central government capital expenditure as a percentage of total expenditure. A marked decline can be observed as this percentage fell from 15.9% in 1970 to 7.8% in 2010, after peaking at 23.2% in 1979. This decline could be considered to be, in part, expectable, insofar as it reflected the catching-up process of the Cyprus economy with EU Member States: in its early stages of development, there was greater need for public investments, which decreased with time. It is possible, on the other hand, that this decline is also partly attributable to the increasing contribution of the private sector in development and infrastructure projects. To the extent, however, that



central government capital expenditure was reduced to compensate for persistently high wage bill and other current expenditure, this trend would be a source of concern. Regarding the increase observed in 2009, it should be noted that, as a result of the economic downturn and in accordance with the European Economic Recovery Plan, the government raised the implementation rate of its development budget (to 77%), consisting mainly of infrastructure projects.

8.6 Public debt and challenges for fiscal sustainability in Cyprus

The accumulation of primary deficits increases public debt. General government debt (the so-called consolidated gross debt) consists of the aggregate debt of central government and local authorities, excluding intra-governmental debt, which comprises contributions of the SSEs³⁰ and Administrated Funds (AFs)³¹ to central government³². Intra-governmental debt, as a percentage of GDP, was on the rise during 1995-2010, from about 28% in 1995 to 44% in 2010 (see **Chart 8.25**).

30. In addition to the SIF, funds include the Unemployment Benefits Account, the Central Holiday Fund, the Termination of Employment Fund and the Insolvency Fund for the protection of employees' rights in the event of the employers' insolvency.

31. Administered Funds include the Government Hourly Employees Provident Fund, the Human Resource Development Authority Fund, the Turkish Cypriot Properties Fund, the Agricultural Insurance Organisation Fund and the Cyprus Hunting Fund.

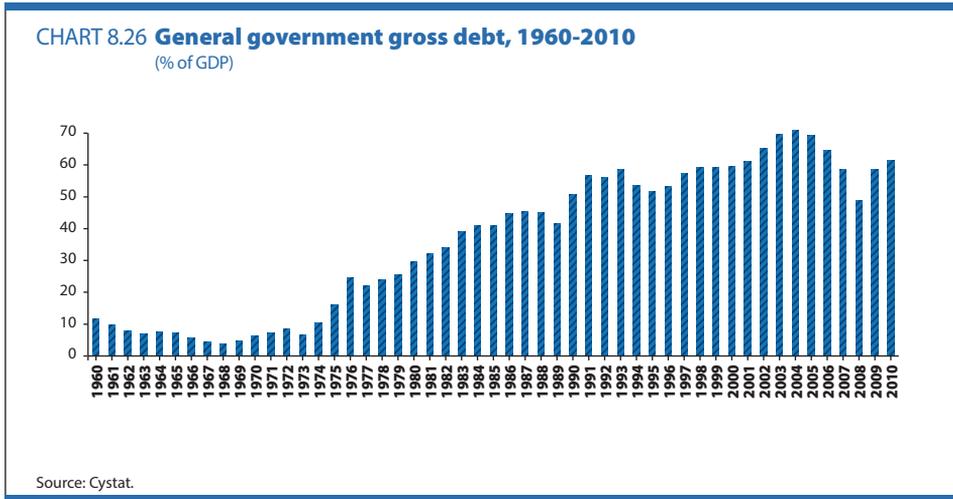
32. General government debt is net of the CBC's short-term debt obligations to the IMF.

From a historical perspective, **Chart 8.26** (p.340) shows a large increase in public debt in the aftermath of the Turkish invasion, reflecting the government's immense effort to support and reconstruct the economy, after the devastating consequences of the Turkish invasion, as already mentioned in **Section 8.5** (p.324), which examined the evolution of central government expenditure for interest payments. An upward trend can be observed in public debt as a percentage of GDP over time, coinciding with a similar trend in government expenditure. During 2005-2008, the debt-to-GDP ratio improved, mainly on account of primary surpluses (see **Chart 8.9**, p.319) and high growth rates (see **Chart 8.11**, p.322), followed by a significant decrease to a twenty-year low of 48.9% of GDP in 2008 (partly as a result of the contraction of sinking funds³³). The significant fiscal deterioration³³ of 2009 and the contraction of GDP reversed this downward path, with the public debt ratio rising considerably to 58.5% of GDP. In 2010, given a primary deficit and subdued economic growth, the public debt ratio rose further to 61.5% of GDP.

Partly owing to the successive downgrades of the Republic of Cyprus rating by all three credit rating agencies since November 2010, government borrowing costs increased in 2011 and it is expected that interest rates will rise further in the medium term. Public debt is therefore likely to grow further from 2011 onwards, on account of higher debt servicing costs in the form of higher interest payments. According to the European Commission's autumn economic forecast published in November 2011, the debt ratio is projected to reach 64.9% of GDP in 2011 and is expected to remain on an upward trajectory, reaching about 71% of GDP by 2013.

Turning to the outlook for public debt, after the severe fiscal deterioration in Cyprus (and almost all over the world) in the past few years, and in the context of the successive downgrades of the sovereign rating (as well as of a number of other euro area countries), fiscal sustainability considerations have taken on particular importance. However, the

33. See **Appendix 8.3** (p.351).



concept of fiscal sustainability is not clearly defined and is open to interpretation. Broadly speaking, fiscal sustainability can be defined as the ability of a government to service its debt obligations over the long-term (see, e.g., Giammarioli et al., 2007).

The remainder of this section examines long-term fiscal sustainability (over a horizon up to 2030) using the general government gross consolidated debt-to-GDP ratio as the relevant ratio for the debt projection exercise. The analysis is based on the equation for the stock of gross debt as a percentage of GDP and on specific assumptions for macroeconomic (implicit interest rate and GDP growth rate) and fiscal (primary balance) variables. A given path of the public debt can prove to be unsustainable if, over the projection horizon, the debt ratio rises uncontrollably, especially if the initial level is already high. For reasons of simplification, changes in the fiscal burden related to population ageing (see **Section 8.2.4**, p.313) are not taken into consideration. Taking into account the increasing financing needs to cover for ageing-related spending, then the projected debt ratios would have been even higher.

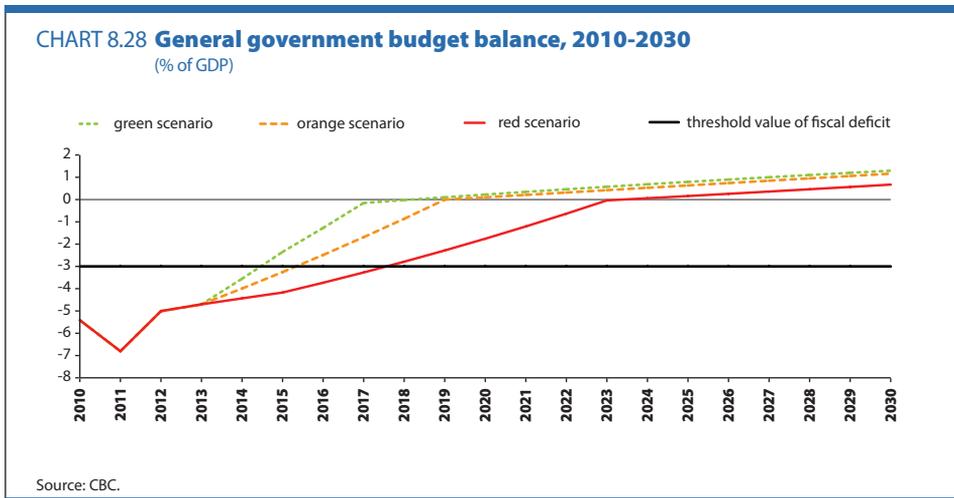
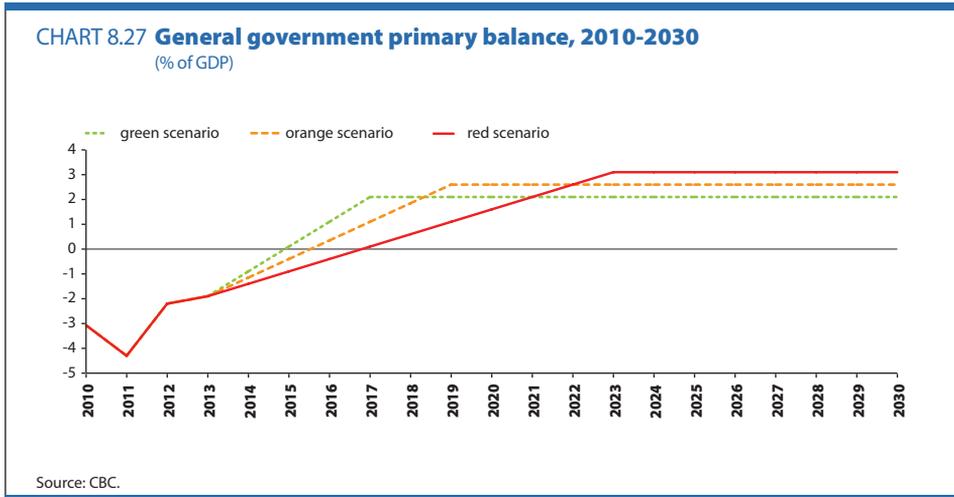
Long-term fiscal sustainability issues have been explored extensively in the theoretical and empirical literature (see, e.g., International

Monetary Fund, 2009b, and Attinasi et al., 2010 for the G20 and the euro area, respectively). Based on the relevant long-term methodology of the ECB³⁴, three scenarios were simulated for the evolution of Cyprus' public debt until 2030. The purpose of the exercise is to provide a rough estimate of the possible evolution of the debt ratio and thus of the extent of fiscal consolidation that could be required in order to put public finances on a sustainable path. The analysis underlines the importance of the aforementioned macroeconomic and fiscal variables in debt dynamics.

Before moving on to the analysis, it is important to note three points of caution: first, this long-term simulation exercise is a partial equilibrium analysis that cannot capture the impact on the economy of feedback effects between fiscal policy, the real economy and the financial sector; second, the results are highly sensitive to the specific assumptions made, especially in respect of the rate of economic growth and the interest rates that markets will demand in order to invest in securities issued by the Republic of Cyprus; and third, as already mentioned, the actual risks to fiscal sustainability are even higher, given the expected strong pressures on public finances from population ageing, without further reform of the pension system.

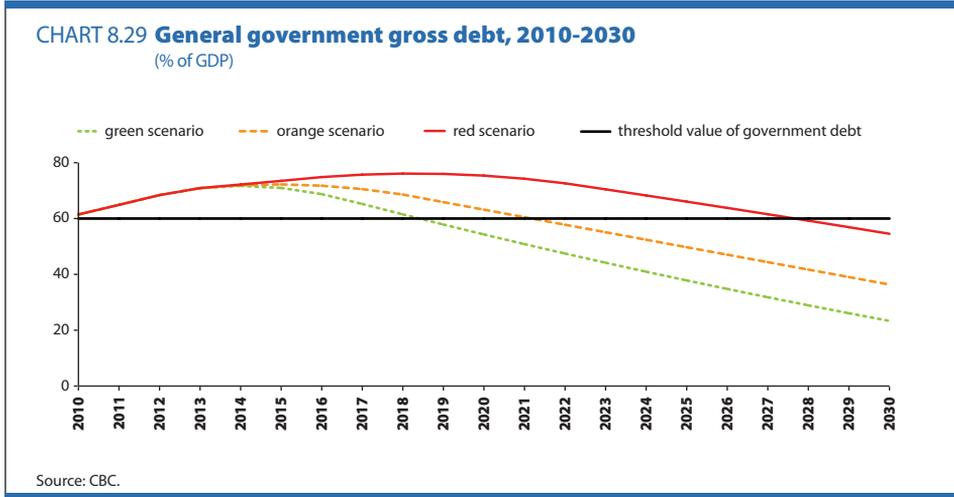
The analysis uses three alternative scenarios for the evolution of the primary balance. In more detail, during 2011-2013, the primary balance develops in all three scenarios according to the European Commission's autumn economic forecast published in November 2011. The optimistic (green) scenario assumes an improvement of the primary balance by 1.0% of GDP annually from 2012 up until 2017, when the medium-term target of a balanced budget is achieved. The central (orange) scenario considers a fiscal adjustment of 0.75% of GDP from 2014 to 2019. Finally, the adverse (red) scenario assumes an improvement of 0.5% of GDP between 2014 and 2023. Fiscal developments according to the three scenarios are presented in **Chart 8.27** (p.342),

34. See **Appendix 8.4** (p.351).



while **Chart 8.28** shows the evolution of the budget balance under the alternatives scenarios.

The results of the scenarios regarding the evolution of Cyprus’ public debt ratio are illustrated in **Chart 8.29** (p.343). According to the optimistic scenario, debt peaks at 71.7% at the end of 2014 whilst, in the central scenario, the peak (72.2% of GDP) occurs at the end of 2015. Based on the central scenario, the reference value for public debt (below 60% of GDP) is achieved in 2022. According to the adverse



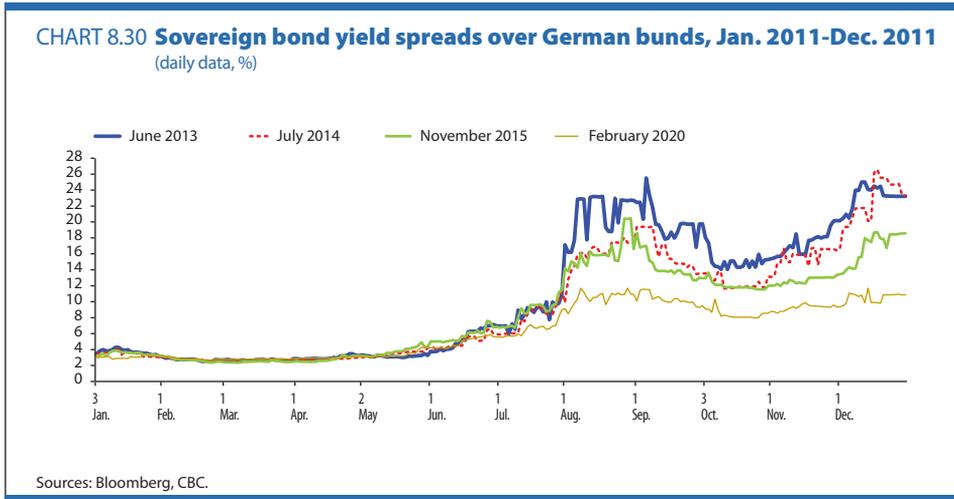
scenario, government debt peaks at 76.1% of GDP in 2018 and falls below 60% in 2028.

In the light of this analysis, the Republic of Cyprus should redefine its fiscal policy as soon as possible, in order to put its public debt ratio on a steady downward path. The immediate retargeting and re-formulation of fiscal policy are crucially important in this respect, not only because of the commitment of the Republic of Cyprus to the EU, but also in order to alleviate the budgetary burden on future generations from interest payments to service the public debt. Even with a fiscal consolidation of around 0.75% of GDP annually (under the central [orange] scenario), the debt ratio could potentially return to levels below 60% only after eleven years or so. Therefore, the annual fiscal consolidation effort will have to be higher than envisaged in the central scenario, in order to ensure a faster reduction of the debt ratio to the reference value of 60% of GDP or lower. Moreover, for a country like Cyprus, the economy of which relies heavily on the provision of financial services, investor confidence in fiscal sustainability is of the utmost importance, as it is directly related to government’s ability to support the banking system, if necessary. In fact, an economy facing such circumstances

might perhaps need to maintain its debt-to-GDP ratio even below the 60% reference value specified by the SGP.

The fiscal consolidation measures adopted by Parliament in the second half of 2011 are an important step in the right direction as part of the efforts to redefine fiscal policy towards setting the public debt ratio on a sustainable path. It should also be stressed that developments in the primary balance during 2011-2013, which underlie all three scenarios and which are based on the European Commission's autumn 2011 economic forecast, do not adequately reflect the full impact of the approved consolidation measures, as certain measures have not been included as well as the assumptions of the European Commission regarding the effectiveness of those measures incorporated in the forecast. Specifically, the European Commission's forecast does not take account of the measures regarding the targeting of social benefits and the increase in the standard VAT rate from 15% to 17% (together forming the bulk of the second package of measures) or the third package of measures, which was approved by Parliament after the publication of the forecast. Had all the consolidation measures been incorporated in the European Commission's forecast, the evolution of the primary balance during 2011-2013 would have been more favourable than the one underlying the long-term analysis of public debt, thus implying more favourable developments for the period 2014-2030.

It should be noted that any concerns as to the long-term sustainability of the public finances of the Republic of Cyprus can lead to difficulties in securing liquidity to meet short-term financing needs. As a result, the extent to which significant financing needs over the coming years are a source of fiscal vulnerability will depend on the ability of the government to borrow from the domestic and international markets at a reasonable cost. In the presence of significant financing needs, the high and rising Cyprus sovereign bond spreads over German bunds can lead to higher average financing costs for the



government and could trigger a liquidity crisis, if borrowing costs were to reach intolerable levels. Specifically, the yields of Cyprus long-term government bonds rose to historically high levels in the summer of 2011, thus constituting recourse to foreign borrowing impossible as from May 2011. For example, the spread of the 10-year Cyprus bond yield maturing in February 2020 over the corresponding German bund (see **Chart 8.30**) reached 11.7% on 8 August 2011, the highest level observed since the Cyprus bond was issued (with an interest rate of 4.7% and with the yield spread standing at the time at 1.4%).

It should be noted that the sovereign bond yields observed in the summer of 2011 are not quite representative of the stance of international markets towards Cyprus, because the domestic market is very illiquid, meaning that it can be affected even by small transactions. On the other hand, these yields can provide a relatively good idea of the interest rate that Cyprus will be called upon to pay next time it borrows from international markets. Furthermore, the practice of recourse to domestic borrowing that was observed over 2011 could possibly entail risks, such as a drying-up of domestic liquidity and higher interest rates on government borrowing, which might in turn lead to higher borrowing costs for the private sector. It should be

pointed out that, although securing a loan from the Russian Federation is important given that it would help meet the government's financing needs, it would not solve the structural problems of public finances. All the above considerations highlight the need to get our fiscal house back in order and on a sustainable track, so that the solvency of the government is not brought into question, which could lead to difficulties in securing the necessary funds to cover financing needs.

8.7 Concluding remarks

One of the major challenges currently facing the Cyprus economy is the large increase in the fiscal deficit and its consequences. According to the European Commission's autumn economic forecast of November 2011, between end-2007 and end-2011 the fiscal deficit is expected to rise by about 10 percentage points. The most alarming implications of the recent fiscal deterioration are the successive downgrades of the ratings of the Republic of Cyprus and Cypriot banks and the exclusion of the state from international financial markets as from May 2011. The main cause of the fiscal problem has been the steep rise in structural public expenditure in the past few years. According to the Budget for 2012 as tabled in Parliament on 13 October 2011, between 2007 and 2011, central government expenditure (excluding expenditure for the repayment of loans) is expected to increase by 36.4%, while the corresponding increase in nominal GDP is expected to be 14.4% and in real GDP just 3.3%. Obviously, this trend has to be reversed immediately. It is encouraging that the fiscal consolidation measures adopted by Parliament in the second half of 2011, especially measures that aim to cut down on expenditure, are significant steps in the right direction, i.e. in re-gearing fiscal policy towards sustainability.

The long-term benefits of fiscal consolidation are more or less indisputable and mainly include a reduction of government financing

needs, implying lower long-term interest rates (on account of lower demand and lower country risk premia) and a release of budget resources that can be used to finance productive expenditure or growth-inducing tax cuts. In view of increased market concerns about the high and increasing levels of Cyprus' public debt, resulting in the country being shut out of international financial markets as from May 2011, it becomes obvious that the credible commitment of the Republic of Cyprus to fiscal consolidation is the only road to restoring market confidence in the country and a necessary condition for sustainable growth, which will ultimately ensure a sustainable fiscal balance.

As far as social policy is concerned, the introduction of income criteria to all social schemes, aimed to achieve a better fiscal policy targeting and structure, is urgently necessary. If a welfare state is to be maintained and reinforced, social expenditure must be carefully targeted. This would allow the state to help the weaker strata of the population, while at the same time achieving a containment of public expenditure. Therefore, fiscal consolidation does not necessarily translate into less of a welfare state. The government's efforts to improve the targeting of various social benefits, including measures for targeting student grants and child benefits which already have been adopted by Parliament, is an important step towards reducing public expenditure over the medium term. That said, such targeting of social benefits based on means-testing and income criteria will be more effective and socially fair, if accompanied by an effective combating of tax evasion.

Another large and inelastic expenditure item is the government compensation of employees, which should cause concern, given not only its negative contribution to public finances, but also the adverse impact on Cyprus' production costs, especially compared with the other euro area countries. The International Monetary Fund has proposed less recruitment of public employees and a better use of the existing

workforce within the context of a wider reform of public administration. On the positive side, the containment of the size of the public sector, the results of which are expected to become visible over the medium-term, and the two-year freeze on wages in the broader public sector are worth noting. Although the freeze is temporary in nature, it is expected to have a permanent effect on the prospects of government compensation of employees, as any increases to be granted as from 2014 will start off from a lower level.

Regarding the fiscal policy framework, it is very difficult to evaluate the annual Budgets in the form they are submitted to Parliament, in particular their expenditure side. Without a binding three-year Medium-Term Fiscal Framework (MTBF) that will provide estimates of expenditure over a horizon of at least three years, there will inevitably be many gaps in the analysis. Moreover, until the final implementation of the MTBF (expected in 2014), it is likely that supplementary budgets will continue to be submitted to Parliament during the year, impeding the government's efforts to reduce total expenditure. In terms of the long-term usefulness of the MTBF, the Framework should include credible commitments regarding the reduction of fiscal deficit and public debt, along with fiscal rules that will help create fiscal space. Specifically, credible expenditure ceilings could enable larger fiscal consolidation in good times, so that if Cyprus was to enter an economic crisis again, the government would have more room for manoeuvre and could adopt an expansionary fiscal policy without exceeding the reference values for the deficit and debt provided for in the SGP. It is a welcome development that the Ministry of Finance, based on EU instructions, is preparing a draft law establishing national fiscal rules and enshrining a MTBF at the level of general government in national legislation.

At the same time, fiscal consolidation efforts should take into account the pressing problem of the financing of pension funds, especially in view of population ageing. In this respect, the introduction of a permanent

contribution by employees in the broader public sector to occupational pension schemes is an important first step towards ensuring the fiscal sustainability. Given, however, the marked population ageing, further measures that relate both to occupational pension schemes and the General Social Insurance System are necessary.

In conclusion, Cyprus is called upon to implement fiscal innovations and structural reforms in a very difficult economic conjuncture, given in particular the successive downgrades of the Republic of Cyprus rating since November 2010, the cut-off in the access to international financial markets as from May 2011 and the negative effects of the Greek PSI on the Cyprus economy. Therefore, a carefully thought-out, long-term plan is urgently needed. Delays in implementing the structural changes for restoring sound and sustainable public finances and market confidence will only serve to make the unavoidable corrective action more painful. The government's ongoing efforts to achieve fiscal consolidation and formulate and implement growth-enhancing measures aimed to restart the economy are commendable, as well as the effort, in collaboration with the CBC, to ensure optimum management risks in the financial system.

Appendices

Appendix 8.1

It is important to distinguish between general government, central government and the broader public sector. Central government consists only of Ministries, constitutional services, constitutional powers/authorities, independent powers such as the judiciary and the Presidency and various non-profit semi-government organisations such as the Cyprus University of Technology, the Open University, the University of Cyprus, the Cyprus Tourism

Organisation, the Cyprus Athletic Organisation, the Cyprus Theatrical Organisation and School Committees. Following the revision of the definition of central government by CyStat in 2011, in view of the autumn EDP notification, a number of other organisations have also been classified under central government: the Investment Promotion Agency, the Cyprus Cultural Foundation, the Cyprus Broadcasting Corporation, the Cyprus News Agency, the Research Promotion Foundation and the Bank of Cyprus Oncology Centre. The criterion used for classifying a public sector organisation within the central government perimeter is that the government grant exceeds 50% of its total revenue. General government includes central government, extra-budgetary funds (e.g. the Public Loans Fund), local authorities and the SSFs. The broader public sector comprises general government plus publicly owned companies and enterprises (e.g. the Electricity Authority of Cyprus and the Cyprus Telecommunications Authority).

Appendix 8.2

It should be noted that general government data differ from central government data (compiled by CyStat and by the Ministry of Finance, respectively) for three reasons: (i) in terms of methodology, general government data are compiled on an accrual basis, while central government data are compiled on a cash basis; (ii) regarding coverage, and as already mentioned in **Appendix 8.1** (p.349), general government is a broader concept of the public sector given that it includes, in addition to central government, the SSFs, various non-profit semi-government organisations and local authorities; (iii) in terms of classification; public revenue and expenditure are classified differently in the two data sets, as unlike the practice followed by the Ministry of Finance, CyStat applies the common accounting principles of the European System of National and Regional Accounts in the Community (ESA 95).

Appendix 8.3

Sinking funds are interest-bearing accounts which were created in the past and kept at the CBC with the aim of repaying specific government loans. Every year and up to the date of repayment of the particular loan, the government deposits pre-determined amounts into these accounts, i.e. the date the respective part of government debt becomes due and payable. Before the accession of Cyprus to the EU, the amounts of such deposits were deducted from government debt, although part of the debt would be repaid in the future. When Cyprus joined the EU, this practice was inconsistent with the Eurostat's methodology; as a result, these amounts are accounted for as part of government debt, until actual repayment, whereupon the respective sinking funds cease to exist. In 2008, sinking funds shrank considerably, reflecting sizeable repayments or relevant government debt in that year. After 2008, a further shrinking of sinking funds was observed, although repayments involved much smaller amounts.

Appendix 8.4

The methodology used for the simulation of debt dynamics is discussed in more detail in the March 2010 issue of the Monthly Bulletin of the ECB. According to this methodology, the path of public debt as a percentage of GDP depends on the evolution of the implicit interest rate on government debt, the primary balance, the deficit-debt adjustment and the nominal GDP growth rate. The evolution of public debt as a percentage of GDP is expressed by the following equation:

$$\Delta b_t = \frac{i_t - g_t}{1 + g_t} b_{t-1} - p_t + dda_t$$

where:

b = general government gross debt as a percentage of GDP

i = average implicit interest rate on government debt

g = annual growth rate of nominal GDP

p = primary balance as a percentage of GDP

dda = deficit-debt adjustment as a percentage of GDP

To simplify the analysis, all three scenarios used in the simulation exercise assume that the deficit-debt adjustment is equal to zero throughout the projection horizon. Each of the scenarios is based on different assumptions regarding the path of the average implicit interest rate and of the GDP growth rate.

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CHAPTER 9 ABBREVIATIONS

CBC: Central Bank of Cyprus

COLA: Cost Of Living Adjustment

CPI: Consumer Price Index

CYP: Cyprus pound

CYSTAT: Statistical Service of Cyprus

ECB: European Central Bank

ECU: European Currency Unit

EEC: European Economic Community

EEZ: Exclusive Economic Zone

EMU: Economic Monetary Union

EU: European Union

GDP: Gross Domestic Product

HICP: Harmonised Index of Consumer Prices

NAIRU: Non-Accelerating Inflation Rate of Unemployment

OCA: Optimum Currency Area

VAR: Vector Autoregressive Model

VAT: Value Added Tax

9. Inflation and the importance of price stability: analysis and the effects on the domestic economy

Demetris Kapatais, Lena Cleanthous-Petoussi*

9.1 Introduction

The performance of Cyprus in terms of price stability over the last fifty years has been impressive, all the more so in the context of rapid economic growth and full employment conditions (Syrichas, 2008). Linking the Cyprus pound to a strong peg – be it a single currency or a basket of currencies - has contributed towards anchoring inflation expectations, thereby alleviating any second-round effects of temporary shocks and thus further facilitating the achievement of price stability (Syrichas, 2008 and Orphanides, 2008). Since its establishment, the Central Bank of Cyprus (CBC) has managed, via the stability of the exchange rate, to ensure low inflation, which has been the cornerstone for sustainable macroeconomic stability in the island. This has also played a crucial role in the fulfillment of the country's aspiration to join the euro area in 2008 (see **Chapter 5**, p.159 and **Chapter 6**, p.199).

Price stability is of paramount importance, as it is a key indicator of the macroeconomic situation in a country. According to the European Central Bank (2008) “price stability supports higher living standards by reducing uncertainty about general price developments, thereby improving the transparency of the price mechanism. Thus consumers and enterprises can more easily recognize price changes which are not common to all goods (so-

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called “relative price changes”). Moreover, price stability contributes to general welfare by reducing inflation risk premia embedded in interest rates, by rendering activities, which aim at hedging against inflation risks, unnecessary and by reducing the distortive effects of taxation systems and social security systems. A significant impact of inflation is the uncertainty caused over time when price changes are important. The changing and unpredictable inflation rates make long term planning difficult for consumers and enterprises, thus discouraging savings and investment and resulting in market inefficiencies. Finally, price stability prevents the arbitrary distribution of wealth and income associated, for instance, with the erosion of the real value of nominal claims as a result of inflation. Large erosion of real wealth and income due to high inflation can be a source of social unrest and political instability”.

Analytically, high inflation causes distributional effects, as a result of the redistribution of income from creditors (banks) to debtors, who are typically characterised by a higher marginal propensity to consume, hence a lower marginal propensity to save. This has a negative impact on investment and in general, on long-term economic growth.

At an international level, the objective of price stability is associated with the negative experiences in the 70s and 80s, periods which were marked by high and volatile inflation coupled with subdued job creation, a phenomenon known as «stagflation». The prevalent view among academics and policymakers was that monetary policy should focus on ensuring price stability, which in turn would facilitate economic decisions and a more rational allocation of resources, thus ensuring the necessary conditions for sustainable economic growth.

It should also be noted that the independence of a central bank is utterly linked with price stability, since it is seen as enhancing the credibility of the central bank’s anti-inflationary policy. Policy credibility is therefore vital to keeping inflation at bay, thus contributing to the attainment of broader economic goals, such as smoothing swings in output growth and employment rates, whilst maintaining these rates at high and sustainable levels.

In light of the above considerations, most central banks in advanced economies, including the European Central Bank (ECB), have embraced two breakthroughs in monetary policy making, namely setting price stability as the primary objective of monetary policy and central bank independence.

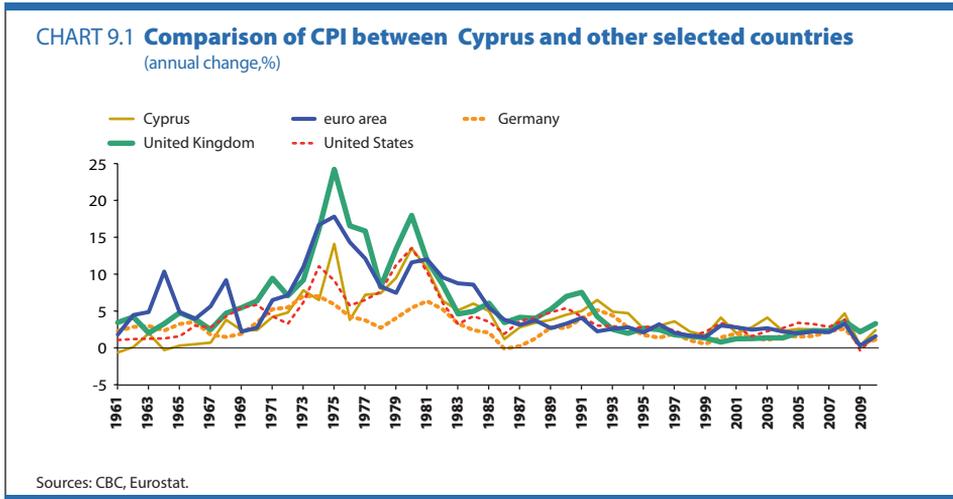
The chapter focuses on the period 1960-2010 and is a first attempt to comprehensively analyse and assess how Cyprus has dealt with inflation, the key determinants of price developments, domestic and external, the importance of price stability, especially in relation to maintaining sustainable competitiveness of the Cyprus economy, as well as the impact of the exchange rate, fiscal and financial policies in Cyprus on inflation developments. In particular, **Section 9.2** discusses various factors that can influence inflation and provides an explanation of the Consumer Price Index (CPI) and its sub-components. **Section 9.3** (p.373) compares the two measures of inflation, i.e. the CPI and the Harmonised Index of Consumer Prices (HICP). **Section 9.4** (p.375) provides a historical overview of inflation as measured by the CPI, over the period 1960-2010, while **Section 9.5** (p.385) analyses and compares the domestic HICP with the corresponding measure of inflation in the euro area. **Section 9.6** (p.394) provides information on the HICP excluding its most volatile sub-components. The chapter ends with **Section 9.7** (p.397) with a review of the key conclusions derived from the main text.

9.2 International environment and characteristics of domestic inflation

9.2.1 Developments in the international environment

Chart 9.1 (p.360) compares inflation in Cyprus with that of Germany, UK, US and the euro area. In general terms, one can conclude that the observed price increases in Cyprus' major trading partners were broadly in line with domestic price developments.

In particular, during the period 1961-1971, although the Cyprus



pound was pegged to the sterling, the average annual inflation in Cyprus was closer to that of Germany rather than the UK. This can be partly attributed to the fact that the European Common Market had surpassed the UK as Cyprus's major economic partner (Michaelides, 2009). The divergence between domestic and UK inflation was one of the main factors that led Cyprus to abandon the sterling peg in 1972. Between 1972 and 1992, the Cyprus pound was linked to various currency baskets, reflecting several combinations of the currencies of its major trading partners. During that period, the average annual inflation in Cyprus ranged between the German and the UK inflation rates, while it stood at almost the same levels as the corresponding US rate. Furthermore, while Germany, the US and Cyprus managed to eliminate stagflation early enough by achieving high growth rates during those two decades, the UK embarked on a path of robust growth and low inflation only after 1990. In 1992, the CBC decided to move on the unilateral pegging of the Cyprus pound to the European Currency Unit (ECU), i.e. a basket composed of the currencies of the six founding Member States of the European Economic Community (EEC) plus the currencies of the UK, Denmark, Greece, Ireland, Spain and Portugal. Given that the ECU consisted of both strong and weak currencies by

TABLE 9.1 Comparison of various indicators with an impact on inflation over time
(percentage change, %, period average)

	1963 -2010	1963 -1970	1971 -1980	1981 -1990	1991 -2000	2001 -2010
Consumer prices	4,25	1,47	7,88	4,90	3,83	2,61
Index of rates of pay (real terms) 1980=100	4,62	3,80	7,78	5,14	3,42	2,62 ⁽¹⁾
Index of rates of pay (money terms) 1980=100	9,17	5,29	16,38	10,31	7,39	5,31 ⁽¹⁾
Gross output / no of persons engaged (manuf)	9,37	6,87	10,88	10,73	11,48	6,39
M1	11,90	10,69	13,64	11,45	9,42	15,00 ⁽²⁾
M2	13,18	10,58	16,16	14,39	12,42	11,26 ⁽²⁾
Gross domestic product (current prices)	10,18	9,50	13,82	12,92	8,54	5,97
USD/CYP	-0,10	-1,81	1,85	-2,03	-2,82	5,74 ⁽²⁾
Change in consumer prices of the world	10,98	5,01	11,37	17,09	12,84	3,80
Unemployment rate	3,17	1,48	4,67	2,93	2,92	3,51
Import unit value world	3,99	0,80	14,39	1,07	-0,85	3,97
Indirect tax	12,04	9,53	16,13	13,93	11,10	9,52
Productivity	3,50	5,69	6,37	3,15	1,83	0,90
Unit labour cost	-	-	-	6,37	4,39	2,89

Sources: Syrighas (2008), CBC.

(1) Data refer up to 2009.

(2) Data refer up to 2007.

about 75% and 25% respectively, the fixed exchange rate of the Cyprus pound vis-à-vis the ECU, supported by the greater harmonisation of the UK with the EEC, led average inflation in Cyprus to levels closely to those in Germany and the UK. From 1992 onwards, inflation rates in all four countries (US, Germany, UK and Cyprus) slowed down relative to previous years and have hovered at much lower levels ever since (Michaelides, 2009). It is also worth noting that since the creation of Economic Monetary Union (EMU), inflation in the euro area has remained lower and more stable, thereby boosting investment, employment and economic growth in all euro area countries (Lopez and Papell, 2011, and European Union website).

9.2.2 Determinants of domestic inflation

A first observation of the statistical data in **Table 9.1**, as well as of the structural characteristics of the economy, reveals some of the key

determinants of inflation in Cyprus over time. More analytically, the sum of imports and exports in Cyprus, as a small, open economy is well above 100% of its Gross Domestic Product (GDP). As a result, world price developments have a significant impact on domestic inflation. For instance, the significant increase of 11,5% in international oil prices during the 1970s led to an increase in the cost of imports, which was largely responsible for the hike in domestic inflation during the aforementioned period (Syrichas, 2008).

At the same time, the high degree of trade openness of the Cyprus economy implies that domestic price developments have also been influenced by exchange rate movements. For instance, an appreciation of the Cyprus pound vis-à-vis other currencies would render import prices more attractive than the prices of similar domestic products, thereby shifting consumers' choices accordingly. Lower import prices therefore, helped to contain domestic inflation in two ways: first, through an increase in the volume of cheaper imported goods and, second, through a subsequent decline in domestic prices, in the context of increased competition and lower export demand caused by the appreciation of the Cyprus pound (see **Box 9.1**, p.363). The slowdown in inflation recorded during the 1980s, especially in the first five years, can be partly attributed to the substantial appreciation of the Cyprus pound against other currencies (Syrichas, 2008). More specifically, during the period 1981-1990, the US dollar depreciated by 2% vis-à-vis the Cyprus pound, after it had appreciated by 1,9% in the preceding decade.

Wage developments have historically been another important factor behind inflationary pressures in Cyprus. Both in nominal and real terms, wage growth has outpaced the improvement in productivity, which averaged 3,6% in the last fifty years. In particular, from 1963 to 2008, wages in Cyprus registered an average annual increase of 9,3% and 4,7% in nominal and real terms, respectively. The upward trend in wages can be directly related to two prominent features of the Cyprus economy

Box 9.1 Competitiveness within the euro area

Monetary union in the euro area, whereby the conduct of monetary policy is common to all member states, implies that a euro area country seeking to restore its competitiveness should pursue appropriate policies to ensure that its general level of prices is lower compared with the euro area average. Consequently, domestic products have to become cheaper than imported products so that exports increase, imports decrease and the current account deficit narrows. Conversely, a competitive country could reduce its export surplus through real appreciation, for instance by increasing wages. This would accelerate national inflation via higher labour costs and prices. Competitiveness in the euro area would be rebalanced amid flexible prices and wages (Zemanek et al., 2009).

The argument that a monetary union with heterogeneous members requires flexible markets goes back to the literature on optimum currency areas (OCA) and more specifically, to the seminal paper by Mundell (1961). Mundell showed that for a common currency area to be beneficial, monetary union member states need to have flexible labour markets to adjust to asymmetric shocks. That is, sudden changes in relative prices have to be followed by a gradual readjustment in the cost of labour in the enterprise sector to restore relative competitiveness. It should be noted, however, that in contrast to Mundell's case, where imbalances are created due to sudden shocks, Zemanek et al. (2009) argue that imbalances within EMU have not emerged suddenly through a shock, but gradually in the course of persistently asymmetric wage policies.

Assuming that productivity growth is similar across all member countries, wage flexibility is crucial for balancing competitiveness in the euro area, as the common currency has reduced transaction costs for intra-euro area trade and has enhanced price transparency across

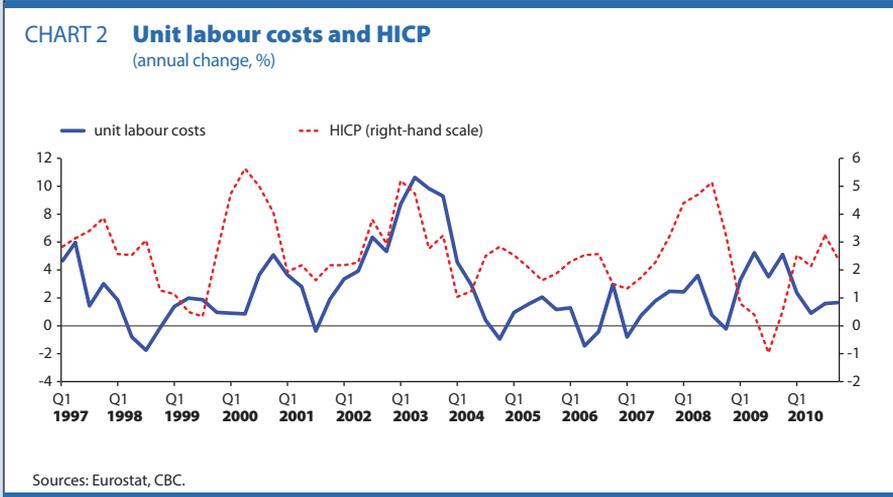
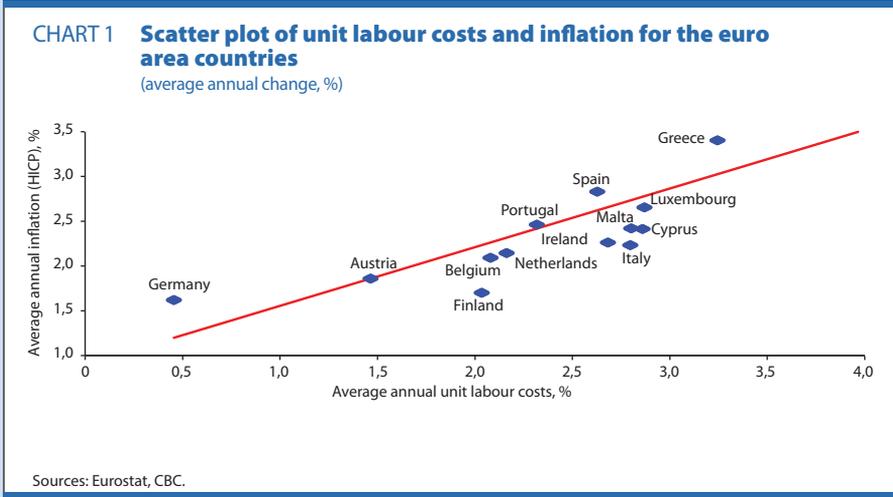
borders (ECB, 2008 and Badinger, 2007). Moreover, globalisation and strong competition from China and Central and Eastern European countries have further increased the pressure on euro area countries, both on the less competitive as well as the relative competitive ones (Zemanek et al., 2009).

Despite a common monetary policy, structural differences in wage growth and inflation among members of the euro area have continued or even increased in some cases. One could attribute this to the different levels of national wages and productivity. In Germany for example, the relevant high level of unemployment, partly a legacy of its unification, restrained the growth of real wages, while German productivity increased. In contrast, wage growth in Cyprus, Spain, Italy and Greece remained high, reflecting the existence, as in the case of Spain (Lopez-Salida et al., 2005) and Cyprus, of a wage indexation system and/or increased capital inflows to these countries. It is also indicative that from the beginning and until the end of the 2000s, although productivity growth in Cyprus stood at about the same levels as the euro area average (10,6% and 8,6%, respectively), unit labour cost¹ grew at a higher pace in Cyprus, as the growth in compensation per employee reached 31,8% in Cyprus, far outpacing the 19,5% corresponding growth in the euro area. This implies an appreciation of the real effective exchange rate of the Cyprus currency, a loss in the competitiveness of the Cyprus economy against other euro area countries and the rest of the world, as well as the build-up of current account imbalances.

Chart 1 (p.365) illustrates the dispersion between the average annual growth rate of unit labour costs and average annual inflation² across euro area countries over the period 2001-2010. One can see that countries with low growth in unit labour cost, such as Germany and Austria, are

1. Unit labour cost refers to compensation per employee as a percentage of productivity.

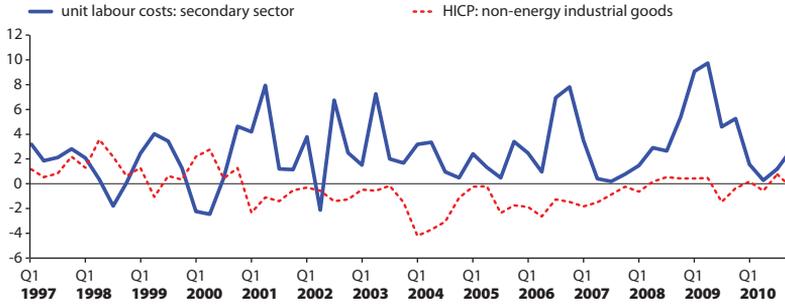
2. The relationship between unit labour cost and inflation in Cyprus and the other euro area countries is analysed using the Harmonised Index of Consumer Prices (HICP) rather than the national CPI. Explanation of the HICP and analysis of the difference between the two measures of inflation can be found in **Section 9.3** (p.373).



also among the countries enjoying low inflation. In contrast, Greece, Cyprus, Luxembourg, Malta and Spain have seen high unit labour cost growth and relatively higher inflation. The red trend line indicates a strong correlation between unit labour cost growth and inflation in the euro area.

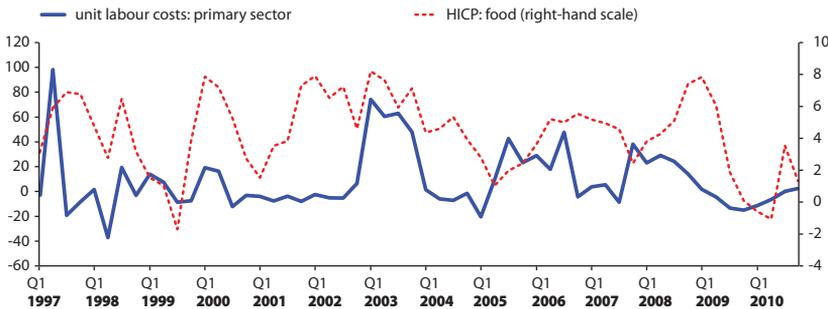
With regard to Cyprus, examining the relationship between unit labour cost in the whole economy and HICP inflation, on a quarterly

CHART 3 Unit labour costs (secondary sector) and HICP (non-energy industrial goods)
(annual change, %)



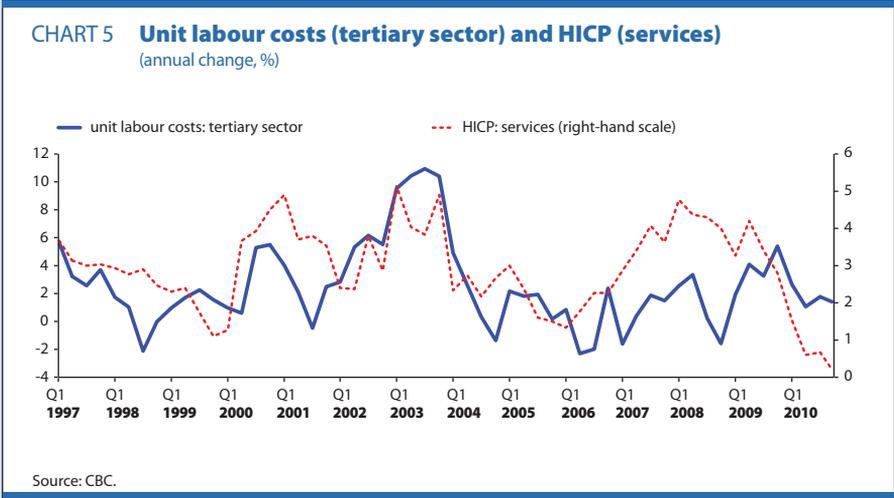
Sources: Eurostat, CBC.

CHART 4 Unit labour costs (primary sector) and HICP (food)
(annual change, %)



Source: CBC.

basis from 1997 to 2010, the conclusions are rather ambiguous. As shown in **Chart 2** (p.365), in general, although the two variables appear to move broadly together, they have occasionally followed diverging paths. These mixed findings call for a more detailed approach to the relationship between unit labour cost and inflation. In theory, one would expect labour cost to have the strongest direct impact on prices when it represents a substantial portion of the cost



of production and when producers have some control over the setting of prices (Brauer, 1997). In light of the above, **Charts 3, 4** (p.366) and **5** compare the three HICP sub-components, i.e. non-energy industrial goods, the overall food component and services, with unit labour cost in the primary, the secondary and the tertiary sector, respectively.

Concerning non-energy industrial goods, the strong presence of international competition in the domestic market impairs firms' ability to increase output prices in response to an increase in unit labour cost in the manufacturing sector. This effect is more visible in industries with high import penetration, as the presence of imports tends to lead to lower domestic inflation. In **Chart 3** (p.366) the correlation of the two variables, i.e. inflation in non-energy industrial goods and unit labour costs in the secondary sector, turns out to be negative, which provides some support to the above theory.

However, a fairly different picture is drawn for food prices and, most notably, for services prices, as the relationship between these two inflation components and unit labour cost in the primary and tertiary sectors, respectively, is much stronger and positive, unlike in the case of non-energy industrial goods (see **Charts 4**, p. 366 and **5**).

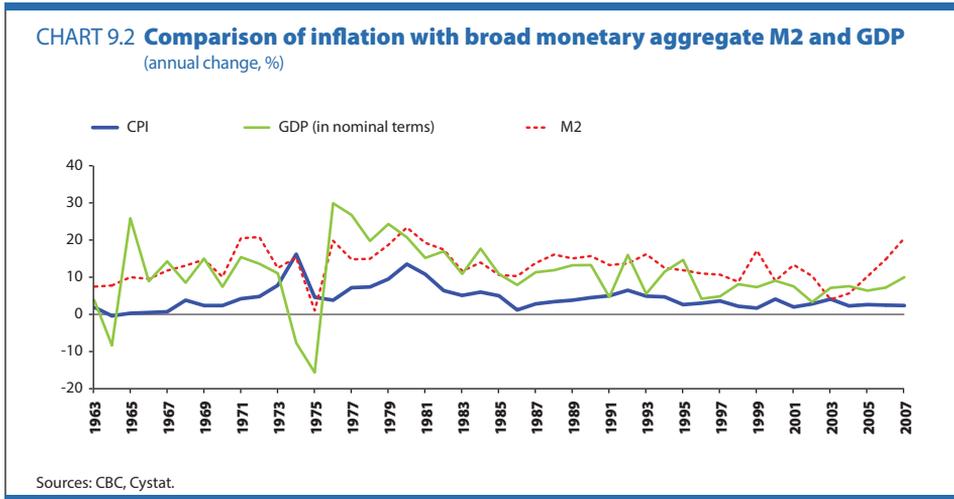
Arguably, the above results could be partly attributed to the fact that these HICP sub-components contain domestically produced goods and services, which are typically much less exposed to international competition.

In theory, causality in the relation of unit labour cost and prices could run in either direction. For instance, firms whose unit labour cost is rising more rapidly than their productivity growth could at some point be expected to raise product prices. However, higher price inflation could itself trigger more rapid labour cost growth through explicit or implicit contractual arrangements (such as cost-of-living allowances in Cyprus) or through the influence of inflation expectations on the wage-setting process (Brauer, 1997).

To sum up, the above analysis underscores the importance of a higher degree of flexibility both in prices and in the labour market, especially for a small, open economy like Cyprus. In other words, keeping inflation and labour cost growth at low levels could help the country to enhance its competitiveness against the other euro area countries and the rest of the world, thereby leading to higher and more sustainable economic growth on the island.

since the island's independence; the low unemployment and the wage indexation system, known as the Cost of Living Adjustment (COLA) (Syriachas, 2008).

Regarding credit expansion over time, this has been broadly in line with GDP growth, suggesting that inflation in Cyprus cannot be attributed to excessive monetary growth. However, the picture has changed in the last two decades, since the broad monetary aggregate (M2) has grown faster than GDP growth (see **Chart 9.2**, p.369), indicating that, as of 1990, monetary developments might have also contributed, to a certain extent, to rising inflation (Syriachas, 2008 – see **Box 9.2**, p.370).



Nevertheless, it should be noted that the sizeable growth of the broad monetary aggregate recorded during the period 2001-2009 was mainly due, as detailed in **Chapter 6**, p.199, to the private sector’s increased demand for credit, in particular for housing loans, as a result of the construction boom that followed the Cyprus’s accession to the European Union (EU) in 2004, and the subsequent surge in real estate prices. This pattern was not seen in inflation, given that real estate prices are not included in its measurement¹.

9.2.3 Components of the Consumer Price Index (CPI)

The Consumer Price Index (CPI) is measured as a weighted average of prices for a basket of consumer goods and services, with weights reflecting the respective average share of each item in the total expenditure of households (Pashardes and Hadjispyrou, 2003). The breakdown of the overall CPI by economic category, as illustrated in **Chart 9.3** (p.372), certainly provides a useful insight into price developments in Cyprus.

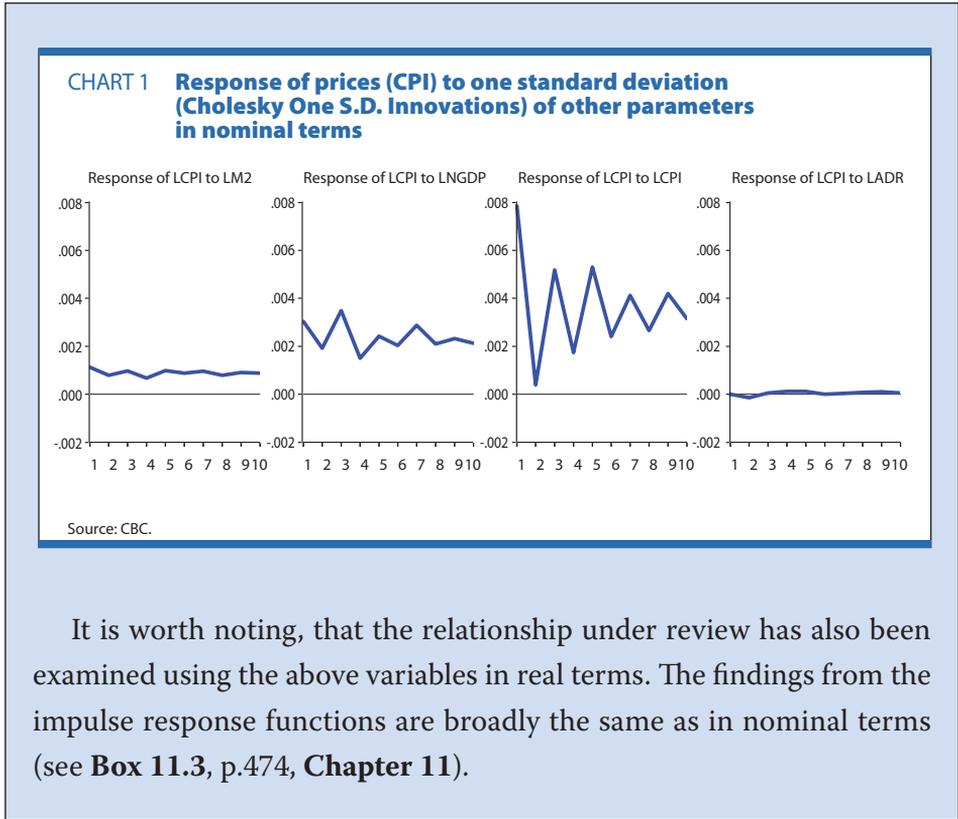
1. Under the CPI definition, only household final consumption expenditure is included in the index. As regards housing costs, a home is costly to buy but it can be used for years, so the time of purchase and the time of consumption of house are not correlated. Moreover, CPI is a reflection of changes in the prices of commodities calculated on a monthly basis, something which is very difficult to apply in real estate prices (Global Times, 2010). Typically, real estate price movements are used by monetary authorities to better assess the prospects of inflation (Bean, 2003). It should be noted that the same approach is used by the majority of other countries. However, in an effort to ensure a better representation of the average household consumption expenditure in the euro area, work is underway to develop the statistics needed to include changes in real estate prices in a consistent way for measuring the Harmonised Index of Consumer Prices (HICP) across all European countries (ECB website).

Box 9.2 Estimation of a VAR model for the monetary sector of the Cyprus economy for the period 1995-2007

The relationship of money supply, price inflation, interest rates and output has been estimated using a VAR (Vector Autoregressive) model. This model builds on the model developed by Spanos, Andreou and Syrichas (1997). The initial estimation was based on yearly data covering the period 1960-1994, due to lack of quarterly GDP data at the time of conducting the study, while current estimation is based on quarterly data for the period 1995-2007. The present box examines the behaviour of prices vis-à-vis changes in other parameters. A more thorough analysis of the methodology used and the findings of this model is provided in **Box 11.3** (p.474) of **Chapter 11**.

The data series used for the purposes of this study are the Consumer Price Index (CPI) as a proxy for prices, monetary aggregates M1 and M2 as proxies for money supply, the nominal and real GDP as proxies for output, and the average deposit rate (ADR) as derived from commercial banks' balance sheets.

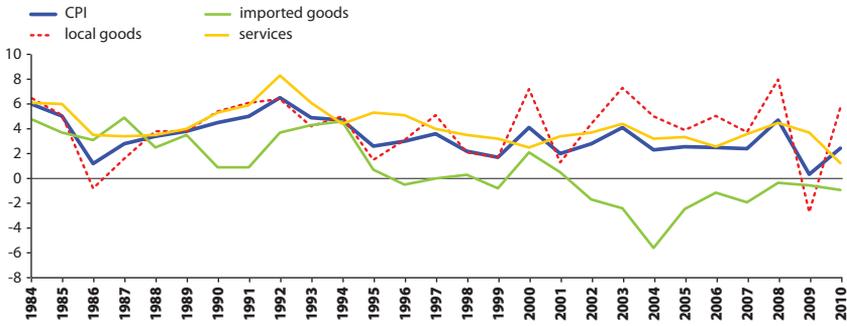
The main conclusions of the analysis in terms of prices are outlined by the impulse response functions in **Chart 1** (p.371). An impulse response function captures the CPI's response to a money supply, output and interest rate shock, respectively. More specifically, a shock to M2 equal to one standard deviation seems to lead to an increase in the CPI in the first period, while for the rest of the reviewed period the CPI remains around that level. A similar trend can also be observed in the CPI's response to a shock in the nominal GDP equal to one standard deviation. On the other hand, changes in ADR do not seem to affect prices (CPI), although it should be noted that the results may be influenced by the statutory interest rate ceiling of 9,0%, which was in effect until 2000.



It is worth noting, that the relationship under review has also been examined using the above variables in real terms. The findings from the impulse response functions are broadly the same as in nominal terms (see **Box 11.3**, p.474, **Chapter 11**).

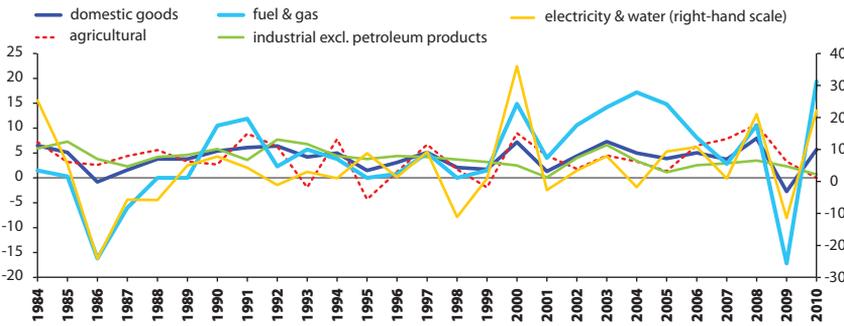
As shown in the aforementioned chart, most of the CPI’s volatility during the period 1984-2010 stemmed from price movements exhibited by locally produced goods, which are primarily responsible for the spikes observed in the CPI over that period (Syriachas, 2008). Conversely, domestic inflationary pressures were dampened on the back of imported products, especially over the last decade of 2000. Here, it should be noted that oil prices are not included in the component of imported goods but in the component of locally produced goods, as part of the overall production process. More specifically, in 2004, a 5,6% drop recorded in the prices of imported goods contained the increase in overall inflation by one percentage point. On the other hand, services inflation has remained broadly stable, with an average annual rate of about 4% during the period 1984 - 2010.

CHART 9.3 Percentage change of CPI by economic origin
(annual change, %)



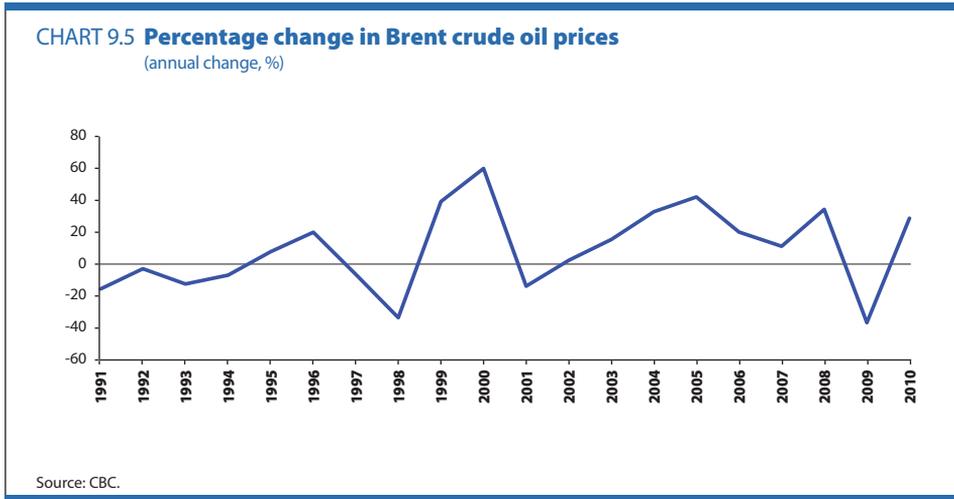
Sources: CBC, Cystat.

CHART 9.4 Percentage change of local goods by economic origin
(annual change, %)



Sources: CBC, Cystat.

Analysing the category of locally produced goods (see **Chart 9.4**), agricultural products are extremely volatile as a result of the changing weather conditions and their significant short-term impact both on agricultural output and respective prices. The importance of the prices of agricultural products in the CPI is evidenced by the fact that in 2000 agricultural products, with a weight of less than 8% in the CPI, had a 17% contribution to the rise in inflation. Furthermore, the categories of oil products and electricity also exhibit considerable volatility, since they are strongly affected



by international oil price movements. For instance, in 2000 when the price of Brent crude oil (see **Chart 9.5**) rose by about 60%, i.e. the highest annual increase recorded since 1991, electricity and water prices surged by 36% relative to the previous year.

9.3 Comparison of the domestic Consumer Price Index with the domestic Harmonised Index of Consumer Prices²

Among the obligations of EU member states, is the compilation of a Harmonised Index of Consumer Prices (HICP) so as to provide a comparable measure of inflation among member countries. This particular measure of inflation also serves as a measure of economic convergence under the relevant Maastricht criterion for Member States aspiring to join the euro area. According to the price stability criterion, a country’s average inflation rate cannot exceed by more than 1,5 percentage points the average inflation rate of the three best performing EU Member States in terms of price stability. Therefore, EU Member States, including Cyprus, compile two inflation indices, the national CPI, which already existed for each country, and the HICP. Thus, these two indices provide two different inflation figures.

2. Main source: Central Bank of Cyprus (2001-2010).

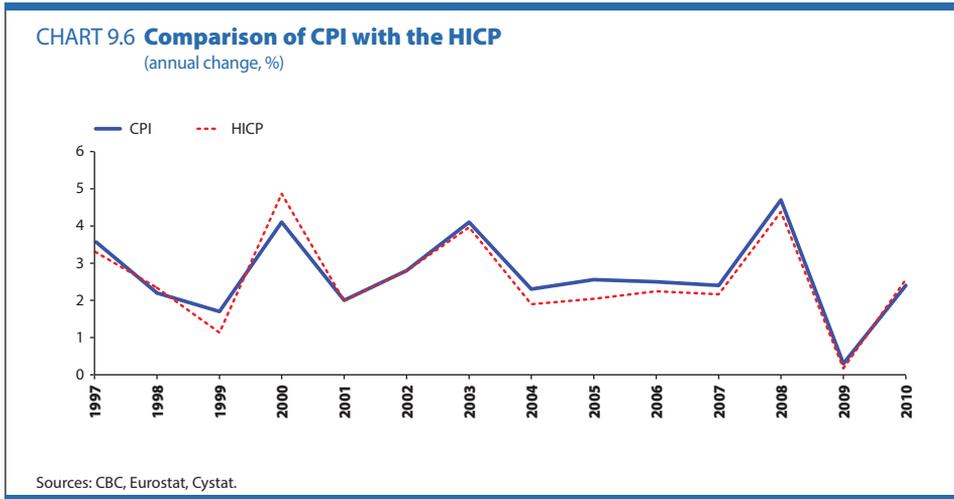
For the purposes of its monetary policy, the CBC monitored, examined and extensively analysed developments using both the HICP and the CPI³. The CPI is of particular interest for the domestic economy, as it provides the basis for the calculation of COLA. Consequently, the CBC deemed it necessary to monitor both indices, first in order to detect any second-round effects on domestic prices (based on the CPI measure) from COLA and, second, to meet the Maastricht inflation criterion (based on the HICP measure) as a prerequisite for Cyprus's entry into the euro area. However, as from 1 January 2008, when Cyprus finally joined the euro area and the CBC relinquished its domestic monetary policy tool, the HICP assumed a central role for the CBC, which, together with the central banks of the other euro area countries, participates in the formulation of a single monetary policy at the euro area level. The main differences between the HICP and the domestic CPI are the following:

- (i) Different population coverage and different weights of goods and services: the HICP covers all items of consumer expenditure which take place in Cyprus (including expenditure by foreign visitors, as well as spending on foundations, e.g. nursing homes, religious organisations, etc., and excluding expenditure by local residents when abroad). By contrast, the national CPI covers only Cyprus households' consumer spending.
- (ii) Different revision frequency for weights and covered items. HICP weights are updated on an annual basis, whereas CPI weights are updated every five years, unless significant year-on-year changes occur in the weights of specific items.
- (iii) Imputed rents, i.e. the imputed rental value of owner occupied housing, are not included in the HICP, unlike what is the case with the CPI⁴.

In light of the above differences, HICP inflation in Cyprus exhibits some divergences compared with domestic CPI inflation (see **Chart 9.6**, p.375).

As already mentioned, and as seen from the chart, the two indices have

3. The abovementioned consumer price indices are compiled and published by the Statistical Service of Cyprus (Cystat).
 4. The national CPI included the full amount of imputed rents until 2005. From January 2006 onwards, only a part of imputed rents is included in the national CPI.



followed the same path, except for occasional slight divergences. For instance, in 2006, HICP inflation stood at 2,2%, while CPI inflation was 2,5%. This gap was due to (i) the different weight and contribution of hotels and restaurants in the two measures of inflation and (ii) to imputed rents, which are not included in the HICP but are captured by the CPI.

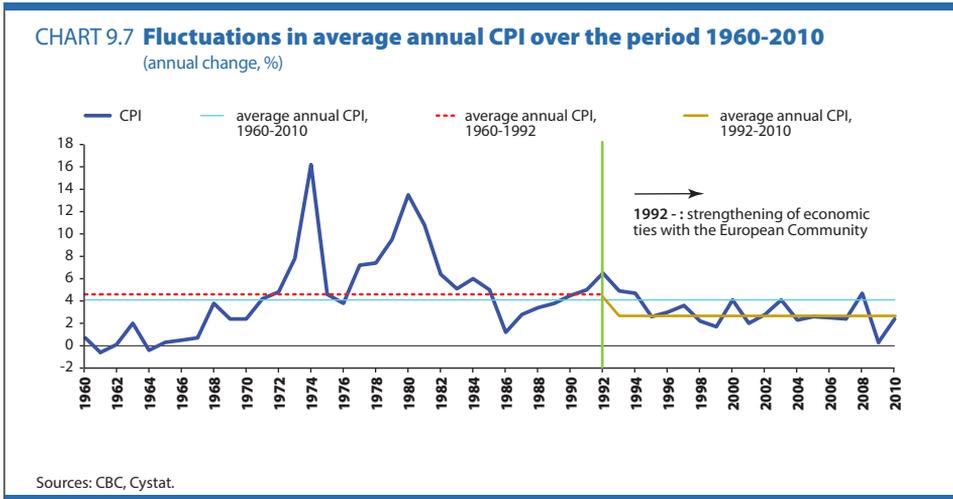
9.4 Detailed developments in the Consumer Price Index⁵

9.4.1 Inflation in the period 1971-1980

The last fifty years, inflation in Cyprus has been contained, with domestic prices increasing at an average annual rate of around 4% (see **Chart 9.7**, p.376). Specifically, during the first decade of the establishment of the Republic of Cyprus, inflation has fluctuated around 1% and even turned negative in two cases, namely in 1961 and in 1964. Nevertheless, the Cyprus economy did see occasional surges in inflationary pressures, for example in the 1970s when inflation soared, mainly reflecting the impact of the two global oil shocks, which led to substantial increase in raw materials and labour costs (Syrichas, 2008).

In particular, CPI inflation in Cyprus increased by 7,8% in 1973 from

5. Main sources: Central Bank of Cyprus (1970-2000), Quarterly Economic Review (2000a and 2000b) and Central Bank of Cyprus (2001-2010).



4,8% in 1972, owing to the oil price boom and the associated surge in global inflation, which was passed through to the Cyprus economy via the higher cost of imports. It should be noted that the wholesale price index for imported goods in the first half of 1973 almost tripled, compared with one year earlier. At the same time, the hike in domestic inflation was also due to domestic factors, such as increased labour cost in certain economic sectors, as well as the sharp increase in the prices of some agricultural products because of the facing of drought by the island during that period.

The existing problems in the Cyprus economy intensified in 1974, amid the global economic and energy crisis and, most importantly, in the wake of the Turkish invasion in the summer of 1974. Inflationary pressures mounted in the first half of the year, on account of a surge in international oil prices and in the prices of other imported goods and materials, as well as strong domestic demand. The government, in its effort to contain price hikes, imposed administered prices and set maximum profit margins on a number of goods, while it issued a decree determining a ceiling on prices for certain other categories of goods. Despite the sharp decrease in incomes as a consequence of the Turkish invasion, prices continued their upward trend through the second half

of 1974, mainly because of shortages in some commodities, inducing the authorities to expand the list of administered prices. Overall, CPI inflation rose substantially in 1974 to 16,2%.

During the second oil crisis in 1979-1980, the increase in labour cost and in the prices of imported raw materials, compounded by the rising cost of oil products, played a major role in the rise in domestic prices, while stronger domestic demand pushed inflation rates further upwards (see **Box 9.3**, p.378). More analytically, in 1980 fuel and electricity prices surged by 54,1% and 35,2% respectively, while overall inflation rose to 13,5%. The government at the time adopted a set of measures aimed at containing domestic price pressures, i.e. by imposing a statutory credit ceiling or by controlling bank credit to the private sector⁶.

9.4.2 Inflation in the period 1981-1990

Inflationary pressures moderated slightly in 1981, with the rate of increase in CPI declining to 10,8% from the record high observed in 1980, mainly on account of a slowdown in domestic demand and the weaker increase in international oil prices. In contrast, the growth rate of nominal wages remained elevated for the fifth consecutive year and stood at 16,0% in 1981.

Inflation continued its downward trend during 1982, with the CPI increasing by just 6,4%. This significant slowdown observed in CPI inflation was driven, primarily, by external factors, while domestic wage costs continued to fuel domestic inflation. In view of the favourable developments in inflation, and after two years of strict control in the form of a statutory credit ceiling, monetary authorities shifted back to indirect control over monetary aggregates by applying minimum liquidity requirements.

Over the next three years, the rate of increase in import prices dropped dramatically to 3,7% in 1985 from 6,7% in 1982, mainly reflecting the depreciation of the US dollar and lower energy prices, as

6. For a detailed discussion of the monetary policy measures adopted by the CBC in the abovementioned period, see **Chapter 6** (p.199).

Box 9.3 **The Phillips curve and the case of Cyprus**

The Phillips curve shows the inverse relationship between the rate of inflation and the rate of unemployment in an economy. In particular, Phillips (1958), on the basis of data covering the period 1861-1957 (concerning the United Kingdom), wrote a paper to examine the relation of wages/inflation with unemployment. In the paper, Phillips found a consistent inverse relationship between money wage changes and unemployment: when unemployment rate is high, wages increase slowly and thus inflation is low, and vice-versa. This trade-off served as a powerful tool in the hands of both Keynesianists and other macroeconomists, and became a stepping stone for a further investigation of this relationship for other economies as well.

After a few years, Friedman (1968), Phelps (1970 and 1972) and Phelps et al. (1970), objected in part to the results of the aforementioned theory, arguing that a government cannot sustain a lastingly high rate of inflation in order to keep unemployment low. According to those writers, if the economic policy of a country targets higher growth than its potential or equilibrium rate, then workers will inevitably view higher inflation as normal, thus adjusting their wage expectations upwards.

Several studies seem to agree with Friedman and Phelps, as evidenced by the experience from the 1970s when many countries were faced by high inflation coupled with high unemployment, a problem known as “stagflation”. That was inconsistent with traditional theories based on the Phillips curve.

Lucas (1972, 1976) and Sargent (1971) claimed that the original Phillips curve does not take into account the rational expectations of consumers and suggested a modified curve, known as the

“expectations-augmented Phillips curve”. This curve implies that the more quickly workers’ expectations of price inflation adapt to changes in the actual rate of inflation, the more quickly unemployment will return to the natural rate, and the less successful the government will be in reducing unemployment through monetary and fiscal policies.

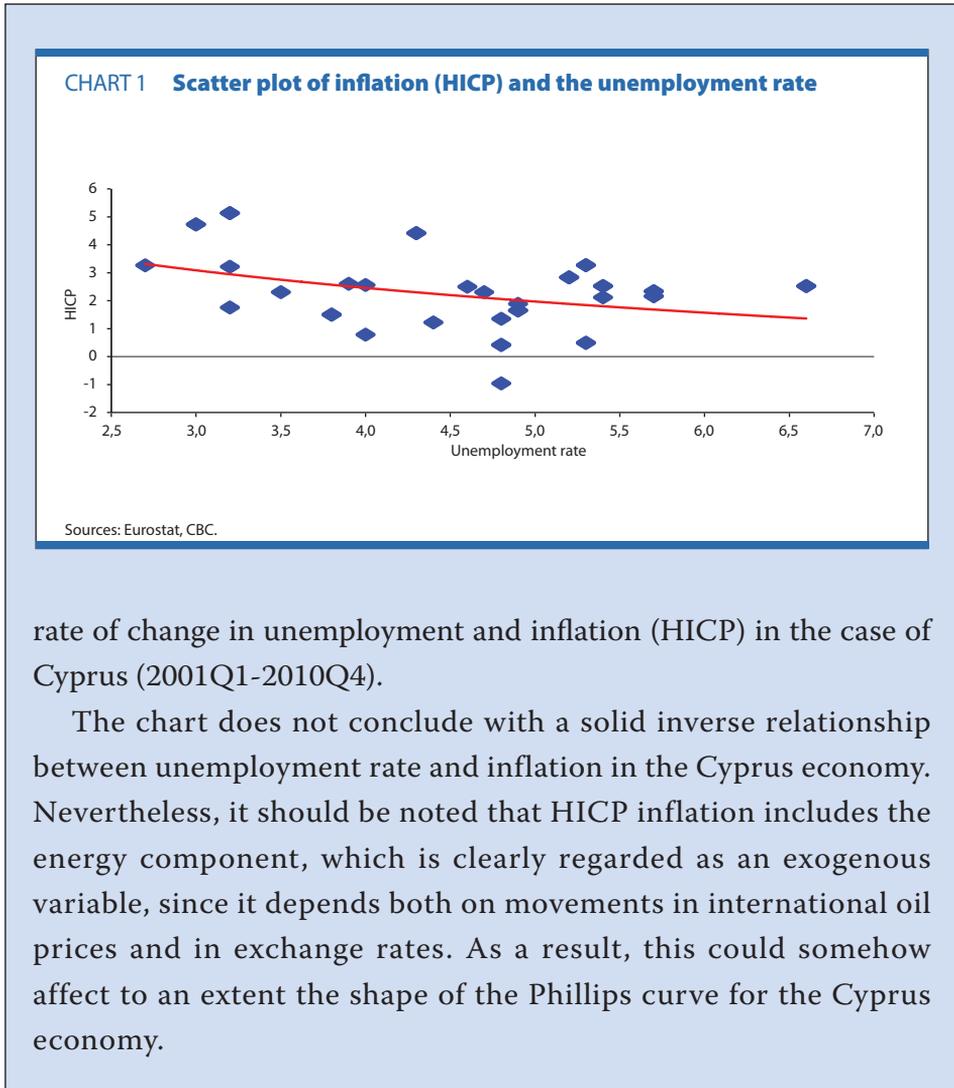
Up to these days, most economists accept the central idea of both Friedman’s and Phelps’s analyses: there is a specific rate of unemployment that, if maintained, would be compatible with a stable rate of inflation. Many, however, call this as the “non-accelerating inflation rate of unemployment” (NAIRU) because, unlike the term “natural rate,” NAIRU does not suggest that an unemployment rate is socially optimal, unchanging, or impervious to economic policy.

Furthermore, recent new classical theories resting on the “expectations-augmented Phillips curve” assume that prices adjust freely and that expectations are formed rationally—that is, without systematic error. These assumptions imply that the Phillips curve should be very steep or almost vertical and that deviations from NAIRU should be short-lived.

In sum, in the late 1990s and more recently, Clarida, Galí and Gertler (1999a and 1999b), as well as Blanchard and Galí (2007) argued that a trade-off between inflation and unemployment is possible in an economy, given that prices are sticky and do not adjust immediately. This relationship is also known as the “New Keynesian Phillips curve” and is consistent with the idea of the “expectations-augmented Phillips curve”, that is, an increase in inflation may lead to a temporary, but not permanent, decline in unemployment.

The Phillips curve for Cyprus

Chart 1 (p.380) illustrates a simple statistical correlation between the



rate of change in unemployment and inflation (HICP) in the case of Cyprus (2001Q1-2010Q4).

The chart does not conclude with a solid inverse relationship between unemployment rate and inflation in the Cyprus economy. Nevertheless, it should be noted that HICP inflation includes the energy component, which is clearly regarded as an exogenous variable, since it depends both on movements in international oil prices and in exchange rates. As a result, this could somehow affect to an extent the shape of the Phillips curve for the Cyprus economy.

well as the sharp decline in the growth rate of wages and salaries. Those developments contributed to a further deceleration in inflation, which fell to 5,0% in 1985.

Subsequently, other factors such as plummeting international oil prices in early 1986 and the ensuing adjustment in the domestic prices of some oil products and of electricity, coupled with subdued private consumption, led to a considerable slowdown in inflation. At the same

time, the continued weakening of the US dollar vis-à-vis the Cyprus pound also helped to contain inflation at low levels, reaching 1,2% in 1986. Specifically, the drop in inflation from 13,5% in 1980 to a post-1960 low of 1,2% in 1986 can be partly attributed to the depreciation of the US dollar against the Cyprus currency by nearly one third and, more generally, to a 9% appreciation of the nominal effective exchange rate of the Cyprus pound.

9.4.3 Inflation in the period 1991-1999

From 1987 and until the early 1990s, inflation in Cyprus followed a gradual upward trend, with domestic prices rising by 6,5% in 1992. The recovery of economic growth rates to the levels observed prior to the Gulf War, the higher domestic demand at full employment conditions, the exceptionally high prices of fresh fruit and vegetables as a result of adverse weather conditions, as well as the introduction of the Value Added Tax (VAT) at a rate of 5%, were the main drivers of rising inflation in 1992. However, it should be noted that following the CBC's decision to unilaterally peg the Cyprus pound to the ECU in 1992, in an effort to further support EU accession, inflation in Cyprus hovered at much lower levels from 1993 onwards. In particular, the annual rate of inflation averaged 2,9% during the period 1993-2010, compared with 4,6% during the period 1963-1992. The primary objective of the CBC was to keep inflation at levels well below the Maastricht criterion, and thus secure full EU and euro area membership for the country.

The downward trend of inflation, which started in 1993, continued in the following years, despite the increase in the VAT rate from 5% to 8% in October 1993 and the imposition of further consumption taxes in 1994. More specifically, in 1995 inflation moderated to 2,6%, below the reference value of the Maastricht criterion, which was 3% for that year. The lower prices of domestic agricultural products were the main factor behind the slowdown in inflation. Favourable weather conditions

throughout 1995 and the subsequent recovery of agricultural production paved the way for a decline in agricultural prices. An additional factor that contributed to the moderation of inflation was a substantial weakening in the rate of increase in industrial import prices, which stood at 0,7% in 1995 from 4,6% in 1994, mainly reflecting the low inflation that prevailed in the EU at the time and the strength of the Cyprus pound vis-à-vis the US dollar and the sterling. Developments in import prices were reflected in the evolution of the implicit import deflator, which slowed to 2,6% in 1995, following an increase of 4,1% in 1994. During the remaining years of the decade, inflation averaged broadly at its 1995 levels.

9.4.4 Inflation in the period 2000-2010⁷

Turning to the last decade, CPI inflation increased sharply to 4,1% in 2000, from 1,7% in 1999. The most important, albeit temporary, factors that contributed to this rise were both exogenous and endogenous. In particular, high oil prices had an indirect upward effect on electricity prices, while the appreciation of the US dollar and the sterling vis-à-vis the Cyprus pound exerted a direct upward effect on imported inflation. Besides, the protracted drought that had hit the island since the late 1990s took a heavy toll on the agricultural sector, leading to increases in agricultural prices. Lastly, the rapid pace of domestic credit expansion, in terms of both consumer and housing credit, fuelled a rise in demand in the economy, thereby pushing the inflation rate further upwards.

The rise in inflation during 2002 and 2003 was mainly attributable to the VAT increases, aimed at ensuring harmonisation with the European acquis in the run-up of Cyprus to EU accession. This rise was partly offset by the lower prices of imported cars, on the back of reduced consumption taxes, as well as the economic slowdown observed in 2002. The November 2003 cuts in consumption taxes for most of the motor

7. The latest available data during the writing of this chapter refer to end 2010. At the time of publishing the present book, the CPI stood at 3,3% in 2011 compared with 2,4% in 2010.

vehicle categories played an important role in containing inflation in 2004. In particular, lower car prices helped to bring inflation down by one percentage point, to 2,3% in 2004.

It should be noted that the further liberalisation of imports following Cyprus's accession to the EU, coupled with heightened competition in world trade, had a strong impact on inflation developments, especially in 2006, despite the sizeable increases in oil prices relative to 2005 (averaging \$65,39 per barrel in 2006, against \$54,43 per barrel in 2005). As a result, CPI inflation declined only marginally in 2006, to 2,5% from 2,6% in 2005.

In 2007, although strong economic activity and robust domestic demand led to a sharp rise in the prices of domestic industrial goods and services, inflation in Cyprus continued to decline marginally relative to 2006, partly because of a further reduction in consumption tax rates for motor vehicles, effective from November 2006. Strong inflationary pressures, which had started to build up in late 2007 and persisted into the first half of 2008, posed a serious challenge to the Cyprus economy.

Upon the entry of Cyprus into the euro area in 2008, as discussed more extensively in **Chapters 5** (p.159) and **6** (p.199), the CBC relinquished its domestic monetary policy tool as a mean of containing prices, in the context of a euro area-wide monetary policy. The 4,7% spike in domestic inflation, as measured by percentage changes in the CPI, was mainly due to a historical peak recorded in international oil prices, which reached \$140/barrel in July 2008, as well as to the higher prices of food commodities during the first half of 2008. Underlying the high rate of inflation in 2008 were also excess domestic demand and an expansionary fiscal policy, which led to a steep growth in credit and monetary aggregates in general. Moreover, Cyprus tended to have a positive inflation gap relative to its euro area partners, due to the existence of COLA, which as a rule was not applied in the other euro area countries. Specifically, the prices of domestic goods rose by 7,4%,

against 3,9% in 2007, while the prices of oil products increased by 10,5%, compared with 2,8% in 2007.

Adverse developments in the international financial environment, which deteriorated in September and October 2008 with the intensification of the financial turmoil in international markets, following the collapse of Lehman Brothers, led to a global economic downturn. The impact, which was felt mainly after the second half of 2008, was reflected in worsened consumer confidence, lower exports and worldwide subdued investment expenditure. Unfavourable economic conditions persisted in 2009, forcing governments and central banks around the globe, amid low inflationary pressures, to continue their interventions in order to support the financial system and the economy in general, by adopting expansionary fiscal and monetary policies, as well as other non-standard measures. In 2009, consistent with the weak international environment, CPI inflation slowed down considerably and increased only marginally to 0,3%, mainly on account of plummeting international oil prices, as well as the appreciation of the euro vis-à-vis the US dollar. In this regard, it should be noted that domestic inflationary pressures persisted and continued to erode the competitiveness of the Cyprus economy. Indeed, the breakdown of the CPI by economic category illustrated that, while in 2009 the prices of imported goods and oil products dropped by 0,6% and 17,2%, respectively, the prices of domestic goods and services continued to rise by 0,8% and 3,7%, respectively.

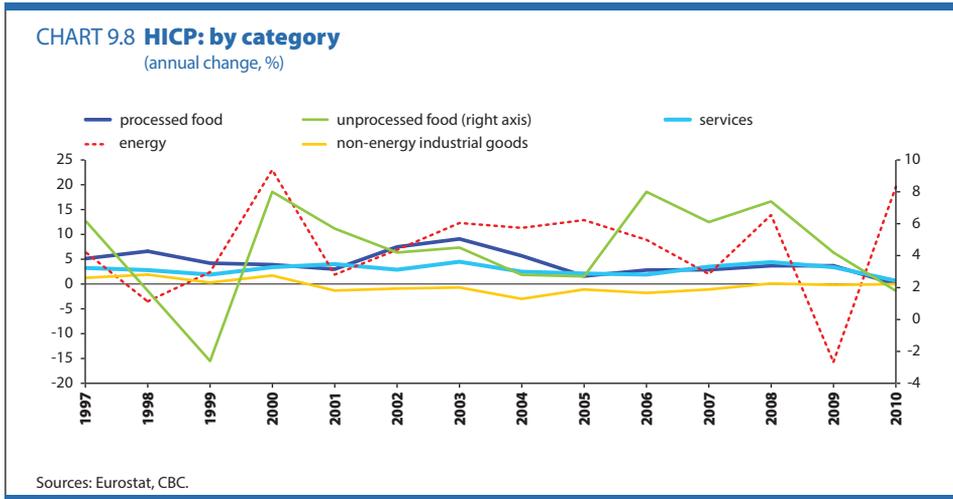
Lastly, in 2010 CPI inflation accelerated to 2,4%, mainly due to a base effect stemming from the very low prices of crude oil one year earlier. The upward trend in inflation was also supported by the depreciation of the euro against the US dollar, as well as by the introduction of several taxes and other charges in 2010, resulting in a surge in the prices of domestic fuels and electricity. By contrast, non-oil industrial imports had a dampening effect on domestic inflation in 2010, as their prices decreased by 0,9%.

9.5 Breakdown of domestic HICP and comparison with the euro area HICP⁸

The HICP is composed of five main components, the weights of which sum up to 1000: (i) processed food; (ii) unprocessed food; (iii) non-energy industrial goods; (iv) services; and (v) energy. From **Chart 9.8** (p.386) one can infer that the high volatility of the HICP is primarily attributed to considerable movements observed in the energy component and, to a lesser extent, to fluctuations in the food component and, in particular, in the unprocessed food component. In contrast, processed food prices tend to be less volatile than the unprocessed food ones, followed by non-energy industrial goods and, lastly, services' prices. Furthermore, it should be recalled that non-energy industrial goods, which largely consist of tradable goods, have helped over time to contain domestic inflation, by counterbalancing, in part, the higher inflation observed in non-tradable goods (see **Box 9.1**, p.363).

The contribution of each subcomponent on the total HICP depends on its respective weight. According to the HICP compilation methodology, weights are revised at the beginning of each year on the basis of households' consumer habits. **Table 9.2** (p.387) shows that during 2010 services in Cyprus became increasingly important, in line with the upgrading of the Cyprus economy into a financial centre in Europe and the Mediterranean. The energy component also seems to have increased its weight in the consumer basket. On the other hand, the weight of the overall food component appears to have declined, while a substantial drop is also observed in the relative importance of non-energy industrial goods, mainly on account of a weakening in domestic manufacturing activity. In 2010, the weights of the aforementioned five components of the Cyprus HICP, as reported in **Table 9.2** (p.387), were 126,54, 84,62, 285,10, 379,99 and 105,75, respectively. Similar changes in HICP weights can be observed for the euro area as a whole, although

8. Main sources: Central Bank of Cyprus (2001-2010) and Central Bank of Cyprus (2008a, 2008b, 2009a, 2009b, 2010a and 2010b).



the increases recorded during the decade of 2000s were smaller than in the case of Cyprus (**Table 9.3**, p.372).

For comparability and analysis purposes, **Chart 9.9** (p.388) illustrates the evolution of the total HICP index in Cyprus and the euro area for the period during which data are available. It can be concluded that in most cases the domestic HICP has been more volatile than the respective euro area index. Moreover, the differential between the domestic and the euro area HICP inflation has remained positive, on average, with some exceptions such as 2009.

Analytically, inflation in Cyprus during 2010 was 100 b.p. higher than the euro area average, after it had been 10 b.p. lower than the respective euro area inflation in 2009⁹. This reversal was mainly accounted for by a surge in the prices of oil products, as well as the introduction of taxes and other charges on energy in 2010. As mentioned above, Cyprus depends more heavily on oil products than the euro area average and, consequently, any movements in those prices have a stronger impact on total domestic HICP than on the euro area HICP (see **Tables 9.2** and **9.3**, p.387). It should be noted, that the

9. The latest data available at the time of drafting this chapter were for the year ending 2010. At the time of the publication of the present book, the domestic HICP reached 3,5% in 2011, compared with 2,6% in 2010. The surge in inflation during 2011 relative to 2010 reflects, mainly, an increase in the VAT rate from 0% to 5% on food products and pharmaceuticals in January 2011, a hike in tobacco consumption tax in December 2010, the continuous rising oil prices, as well the surge in electricity prices following the tragedy in Mari on 11 July 2011. The HICP inflation gap between Cyprus and the euro area remained positive in 2011, although it narrowed to 80 b.p.

TABLE 9.2 Subcomponents of domestic HICP: weights

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Non-energy											
industrial goods	361,01	346,13	341,62	339,42	329,25	320,84	290,53	295,78	296,89	290,83	285,10
Energy	62,94	74,91	74,65	80,86	87,05	86,87	110,94	114,15	115,46	120,31	105,75
Unprocessed food	97,67	94,05	95,85	93,89	91,53	90,34	86,39	84,70	82,87	83,66	84,62
Processed food	142,14	138,27	136,26	137,70	140,61	135,82	132,45	128,10	127,03	126,53	126,54
Services	336,24	346,65	351,62	348,12	351,57	366,12	379,69	377,27	377,74	378,67	397,99
HICP	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000

Source: Eurostat.

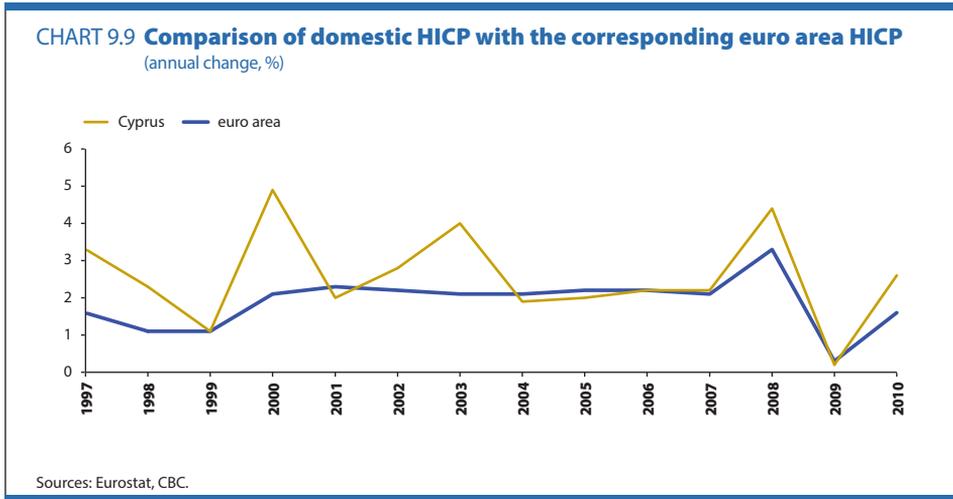
TABLE 9.3 Subcomponents of euro area HICP: weights

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Non-energy											
industrial goods	325,21	316,00	318,88	315,50	310,10	310,32	307,41	300,04	297,87	297,24	292,94
Energy	84,34	90,41	81,23	82,49	81,32	85,97	91,99	96,15	98,15	95,71	95,59
Unprocessed food	78,51	76,98	78,23	75,77	76,90	75,38	74,35	76,30	76,03	74,55	72,96
Processed food	121,45	118,58	118,21	117,14	118,36	120,24	118,40	119,28	118,97	118,77	118,71
Services	390,50	398,02	403,44	409,09	413,33	408,09	407,84	408,23	408,97	413,73	419,79
HICP	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000

Source: Eurostat.

persistence of this differential for an extended period of time may entail risks to domestic economic growth and competitiveness in relation to the euro area. In spite of the above, it is worth noting that since the beginning of the 2000s the gap between domestic HICP inflation and the corresponding euro area inflation has gradually narrowed, on the back of the country's harmonisation to the EU acquis. For instance, in 2000 the differential of HICP inflation between Cyprus and the euro area stood at 280 b.p., declined to 190 b.p. in 2003 and narrowed further to 110 b.p. in 2008.

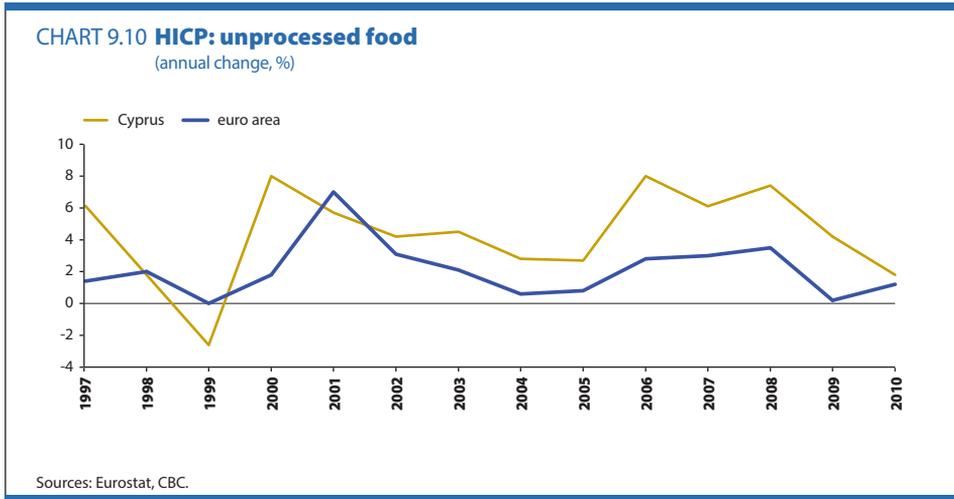
At the same time, one should bear in mind that the higher volatility of domestic HICP inflation compared with the euro area can be explained by, among other things, the fact that the latter is a weighted



average of a number of countries. This implies that any idiosyncratic changes at the national level are eliminated by opposite idiosyncratic changes in other countries.

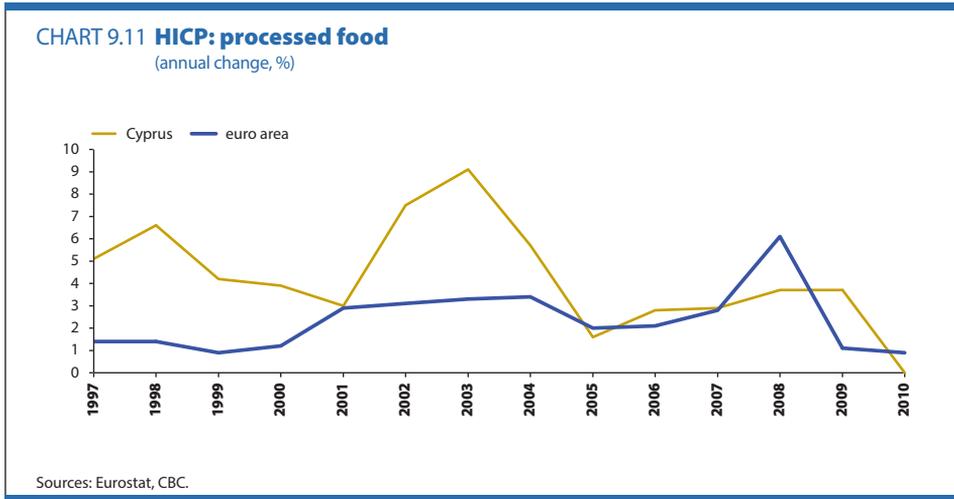
In order to further explore the reasons for which, over time, domestic HICP inflation is higher than that of the euro area, the differences across the five abovementioned HICP components in Cyprus and the euro area are further analysed below.

Specifically, the unprocessed food component (see **Chart 9.10**, p.389), which in Cyprus is considered to be the second most volatile component in terms of price changes after the energy component, it increased on an annual basis by 8% in 2000 compared with an increase of 1,8% in the respective euro area component. The surge observed in this component was due to the adverse weather conditions that were prevailing on the island at that time (drought), resulting in a higher rate of change in the prices of agricultural products and, in particular, of fresh fruit and vegetables. In 2008, the annual rate of inflation in the unprocessed food component reached 7,4%, compared with 3,5% in the euro area. The rise in the domestic component could be mainly attributable to the increase observed in fruit's and vegetables' prices by 15,5% and 10,8%, respectively, compared with 6,2% and 1%, respectively, in the euro area.

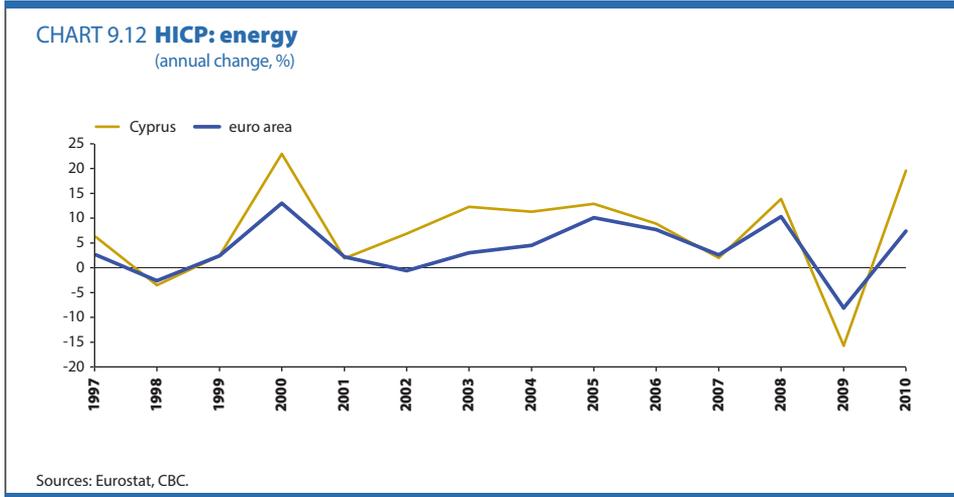


During the following two years, inflation in this component decelerated considerably to 1,8% at end-2010, due to the marked deceleration in the price of meat on the one hand and the drop in fruit’s prices on the other. Conversely, although the growth rate of unprocessed food prices in the euro area slowed down to 0,2% in 2009, it recorded an annual increase of 1,2% in 2010, albeit remaining at lower levels than the corresponding Cyprus’s rate.

Processed food and unprocessed food make up the overall food component of the HICP. Focusing on the processed food component (see **Chart 9.11**, p.390), it appears to exhibit lower volatility over time compared with the other food category. In particular, the highest annual growth rates recorded by the processed food component were 7,5% and 9,1% in 2002 and in 2003, respectively, while the corresponding euro area rates stood at only 3,1% and 3,3%, respectively. In 2010, domestic processed food prices recorded nil annual growth compared with a positive growth of 3,7% in 2009. This was mainly due to a substantial slowdown in the growth rate of milk and cereals’ prices, as well as to a significant drop in the prices of non-alcoholic beverages. By contrast, the euro area processed food inflation registered a slight deceleration of 0,9% in 2010 compared with 1,1% in 2009.



Turning to industrial goods prices, the annual growth rate of domestic energy prices (see **Chart 9.12**, p.391) averaged 23% in 2000, 12,3% in 2003 and 13,9% in 2008, while the corresponding euro area growth rate was 13%, 3% and 10,3%, respectively. Most of the volatility in the domestic energy component stems from movements in fuel and electricity prices. Specifically, fuel prices registered an annual growth rate of 9,1% in 2003 and 12% in 2008, while over the same periods the annual growth rate in electricity prices was 10,3% and 23,1%, respectively. In contrast, energy prices declined by 15,7% on an annual basis in 2009, mainly on account of plummeting international oil prices, as well as the appreciation of the euro vis-à-vis the US dollar, which caused domestic fuel and electricity prices to fall sharply. In 2010, energy inflation recorded a rapid growth of 19,6% and was the main source of domestic inflationary pressures compared with an increase of 7,4% in the euro area. The increase observed in domestic energy prices was mainly due to a base effect stemming from the very low crude oil prices recorded in the previous year, the depreciation of the euro against the US dollar, as well as a number of taxes and other charges imposed in Cyprus during the year under review (fuel consumption tax, increases in the basic price of electricity, other electricity tariffs/rates, etc.).

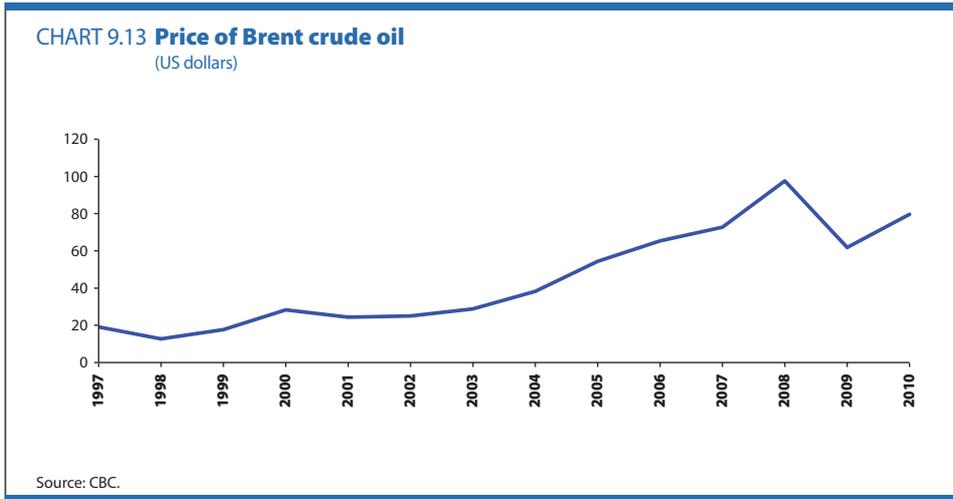


In light of the above, the energy component is directly linked with movements in international oil prices and the exchange rate. To illustrate this, **Charts 9.13** (p.392) and **9.14** (p.393) depict developments in international oil prices and the exchange rate on an annual basis.

In particular, the international oil price (in US dollars) reached a historical peak in 2008, at \$97,7 per barrel. The impact of this development was partly offset by the strengthening of the euro vis-à-vis the US dollar, with the exchange rate standing at \$1,47 per euro in 2008, up from 1,37 in 2007¹⁰. In 2009, the average oil price fell sharply to \$61,9 per barrel, followed by a simultaneous decline in the EUR/USD exchange rate to \$1,39, which partly counterbalanced the lower oil price in euro terms. Finally, the domestic inflationary pressures in 2010, stemming from the rapid growth of the energy component, reflected the increase in international oil prices to \$79,6 per barrel, due to a base effect from its low prices in 2009 on the one hand, and the further depreciation of the exchange rate of the euro against the US dollar to \$1,33 on the other.

Non-energy industrial goods inflation registered a negative

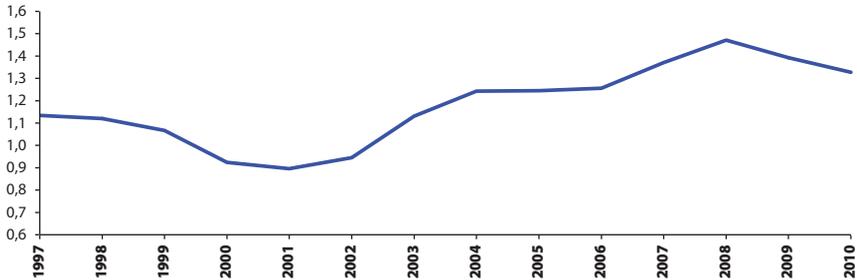
10. The international oil price in euro terms rose by 25,2% in 2008, compared with 2007 (from EUR53,1 to EUR66,5 per barrel), while in US dollars it increased by 34,4% (from \$72,7 in 2007 to \$97,7 per barrel in 2008).



average annual growth rate -1,5% between 2001-2004. What's more, in the period 1997-2010 the largest drop in non-energy industrial goods' prices of 3% was recorded in 2004 (see **Chart 9.15**, p.393). In more detail, motor vehicle prices in 2004 exhibited a substantial annual decline of 12,9%, compared with a decline of 8,8% in 2003, on the back of lower motor vehicle consumption taxes in 2002-2003. It should be noted that in 2004 non-energy industrial goods' prices in the euro area increased by 0,8%. In 2010, the domestic non-energy industrial goods component recorded nil growth compared with a negative growth of 0,2% in 2009, mainly on account of a smaller average annual decrease in the prices of domestic clothing and footwear. The corresponding euro area component increased by 0,6% and 0,5% in 2009 and in 2010, respectively.

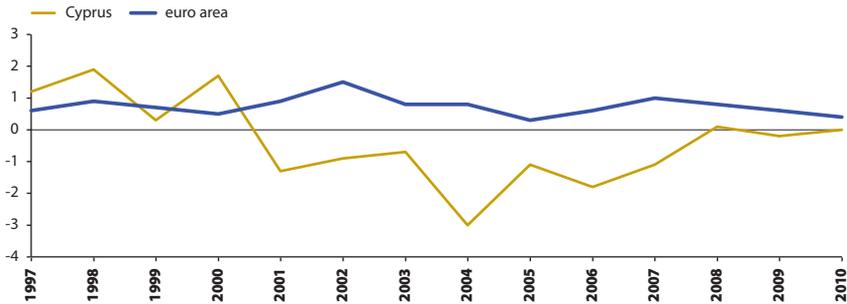
The domestic services component (see **Chart 9.16**, p.394) has historically fluctuated in positive growth rates. In 2003 when, as previously discussed, the basic VAT rate was raised from 13% to 15%, services inflation peaked registering an annual growth rate of 4,5% compared with 2,5% in the respective euro area component. As a result of the VAT reform, prices in the health sector, road and air transport, accommodation services and restaurants and cafés increased substantially. In 2010, services' prices

CHART 9.14 Exchange rate of US dollar against the euro



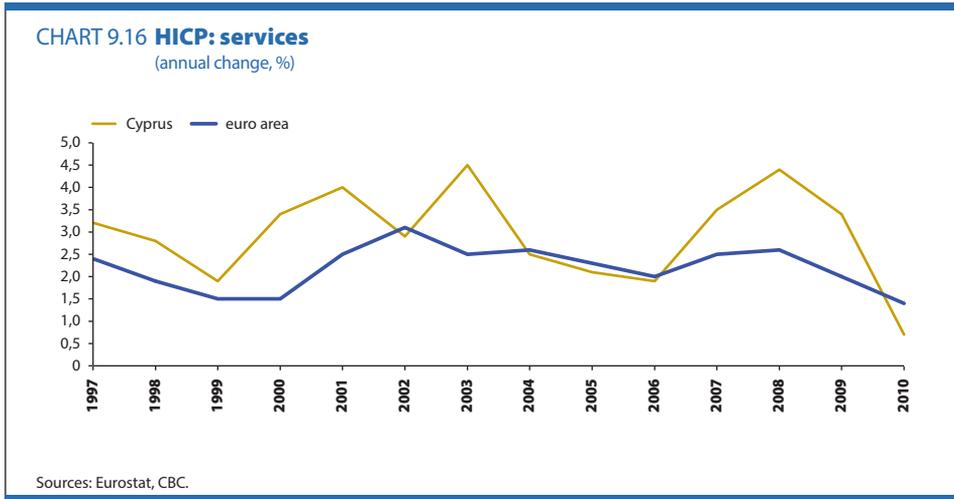
Source: CBC.

CHART 9.15 HICP: non-energy industrial goods (annual change, %)



Sources: Eurostat, CBC.

increased by 0,7%, on an annual basis, compared with 3,4% in 2009, while in the euro area services inflation declined to 1,4% in 2010, from 2% in 2009. In particular, the tourist accommodation services' prices in Cyprus fell sharply by 11,5%, on average, in 2010, while the prices of air transport declined by a massive 20,2%, mainly in the context of increased competition from the entry of new air carriers in the Cyprus airline market. The drastic price reductions observed in the above components were part of an effort to revive the tourism market and attract new visitors.

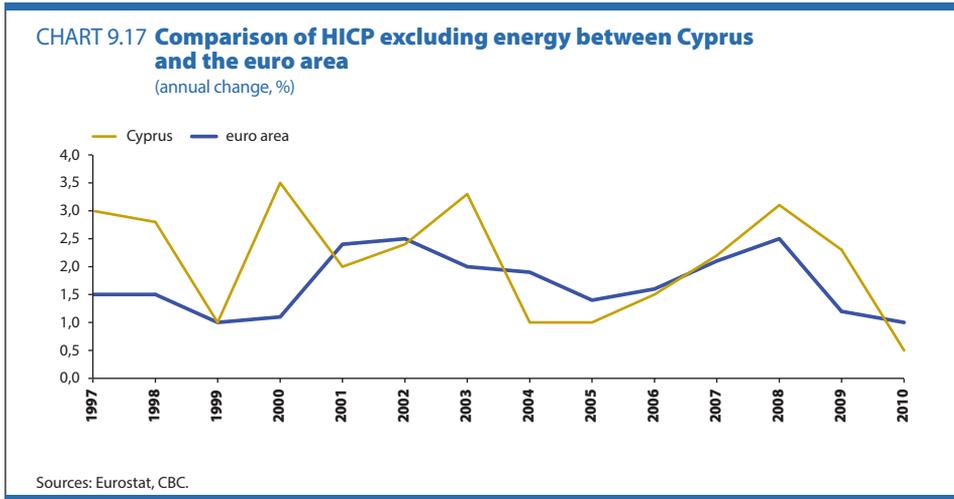


In the euro area, the rate of increase in the prices of accommodation services remained unchanged at 0,2% in both periods of 2009 and 2010, while air transport prices fell slightly by 1,1% in 2010, compared with a decline of 1,8% in 2009.

9.6 HICP excluding its more volatile components

The volatility of the HICP, as discussed in the previous section, stems predominantly from the energy component, followed by the overall food component. In accordance, the current section focuses on the HICP excluding energy, as well as the HICP excluding energy and food. These indicators provide two different measures of core inflation.

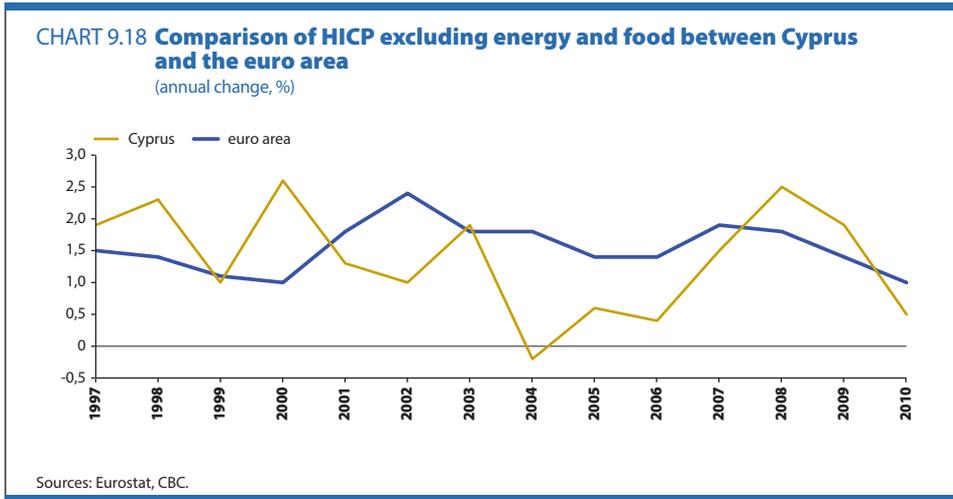
Looking at **Chart 9.17**, p.395, it is obvious that the gap between domestic HICP excluding energy and the corresponding euro area index is smaller, albeit still significant, than the gap between the respective headline HICP figures (see **Chart 9.9**, p.388). Nevertheless, the domestic HICP inflation excluding energy rose to 3,5% in 2000 compared with a mere increase of 1,1% in the corresponding rate in the euro area. As previously mentioned, this increase mainly reflects movements in food prices, because of the drought that hit Cyprus at



the time, as well as higher growth in services prices. A significant gap between the two indices was also observed in 2003, as a result of a VAT hike in Cyprus leading to a marked acceleration in the prices of domestic food and services. From 2008 onwards, the gap between the two indices narrowed slightly, which is partly attributable to the country’s entry into the euro area.

More specifically, in 2008 the HICP inflation excluding energy in Cyprus reached 3,1%, compared with 2,5% in the euro area. This differential was mainly due to considerable rises in domestic food and services prices, as a result of excess demand and the rounding-up of prices following the adoption of the euro on 1 January 2008. In 2009, the gap between the two indices widened, with the HICP excluding energy standing at 2,3% in Cyprus, compared with 1,2% in the euro area. The widening of the gap can be mainly attributed to stronger increases in the euro area food prices, both processed and unprocessed. In 2010, the gap was reversed, given that the domestic index slowed down to 0,5%, while the corresponding euro area index stood at 1%, largely reflecting a base effect in the growth rates of the domestic food and services components.

The HICP excluding its two most volatile components, i.e. energy



and food (see **Chart 9.18**), shows lower growth rates, while in several cases it has been lower than the respective euro area average inflation. This is mainly due to the fact that the energy and food components have a higher weight in the overall domestic HICP than in the euro area. Further analysing this, in 2000 the respective index reached 2,6% in Cyprus compared with a mere 1% in the euro area, primarily on account of significant increases observed in services prices in Cyprus. During the period 2004-2007, inflation as measured by HICP excluding energy and food, was higher in the euro area than in Cyprus. In particular, average annual HICP inflation excluding energy and food stood at 1,6% in the euro area compared with 0,6% in Cyprus. The gap was reversed in 2008 and 2009, notably as a result of higher services prices in Cyprus relative to the euro area. In 2010, the inflation gap was once more reversed, with the domestic HICP excluding energy and food increasing by only 0,5%, below the euro area average of 1%. The decline in domestic inflation was mainly driven by a significant slowdown in domestic services prices, which exhibited an average annual growth of 0,7% compared with 1,4% in the euro area.

9.7 General remarks and conclusions

In conclusion, over time, Cyprus, with a small, open, sensitive and rather vulnerable to exogenous factors economy, seems to have imported on average the inflation of its major trading partners. Although in some cases this might have led to stronger domestic inflationary pressures, over the last 20 years the closer linkage of the Cyprus economy with low-inflation EU countries, through the unilateral pegging of the Cyprus pound to the ECU and later the adoption of the euro, and the high degree of sustainable nominal and real economic convergence with core EU economies has helped to contain domestic prices through low imported inflation. At the same time, it has contributed to achieving robust growth and high level of employment in the Cyprus economy.

Nevertheless, several factors governing the economic environment in Cyprus, such as the existence of COLA and wage increases often above productivity growth, exert upward pressure on domestic inflation and undermine the country's competitiveness and growth potential. Therefore, in order to contain domestic inflation at low levels, it is necessary to boost productivity (mainly through permanent structural reforms) and ensure that wage increases are in line with developments in productivity. It should also be noted that domestic inflation has been strongly affected by fluctuations in international oil prices, due to the high oil dependency of the Cyprus energy sector. Against this background, a considerable improvement of the economic growth prospects and the living standards in Cyprus would be achieved from a further and more effective use of renewable energy sources (e.g. wind and solar energy), as well as the exploitation of hydrocarbons from the country's Exclusive Economic Zone (EEZ).

Following Cyprus entry in the euro area, the need to maintain inflation at low levels and at the same time ensure price stability has become all the more urgent. Higher domestic inflation within a

common market using a single currency implies more expensive domestic goods and services that will eventually be replaced in the European and international markets, job losses and larger fiscal deficits (Orphanides, 2007).

In sum, the relinquishment of the domestic monetary and exchange rate policy tools, as a means of containing domestic inflation and shielding competitiveness, further highlights the importance of fiscal policy and structural reforms in the economy. In particular, the containment of government expenditure and the implementation of structural reforms to enhance productivity are key tools to containing inflationary pressures, ensuring price stability, and safeguarding the competitiveness of the Cyprus economy (Orphanides, 2007).

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CHAPTER 10 ABBREVIATIONS

- CBC: Central Bank of Cyprus
CCCI: Cyprus Chamber of Commerce and Industry
COLA: Cost Of Living Allowance
CYSTAT: Statistical Service of Cyprus
EU: European Union
GDP: Gross Domestic Product
IMF: International Monetary Fund
IRC: Industrial Relations Code
LFS: Labour Force Survey
ULFS: LFS unemployment rate
OEB: Cyprus Employers & Industrialists Federation
PASDYD: Pancyprian Public Employees Trade Union
PEO: Pancyprian Federation of Labour
RU: Registered Unemployment
SEK: Cyprus Workers Confederation

10. The labour market

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10.1 Introduction

Human resources are among the most important inputs, if not the single most important one, in the production process in an economy. Particularly in Cyprus, they have always played a primary role, given the lack or scarcity of other resources, such as land and raw materials, and resulting specialisation of the economy in the tertiary sector.

The quality of human resources and their ability to contribute to the production of goods and services is a vital element of the standard of living and well-being of citizens. Thus, to ensure sustainable economic growth, the labour force should adapt to the changing conditions and needs of the economy. This has always been the case also in Cyprus, as its human resources initially adapted to the specialisation of the economy in tourism in the early 1980s and subsequently to the supply of high-skill services in other sectors. The educational level of Cyprus population has increased over time and is higher than the respective level for the European Union (EE), making a decisive contribution to this gradual adaptation process.

This chapter discusses the population and labour force of Cyprus, as

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well as the level of education, that is, the parameters that effectively demonstrate the available “quantity” and “quality” of the country’s labour force. It then focuses on the characteristics of the Cypriot labour market, such as industrial relations. Lastly, it provides a detailed review of developments in unemployment and employment, and examines the concept of productivity and the wage level.

10.2 Population and labour force in Cyprus

The labour market of a country is closely related to its population and labour force. Changes in population numbers (e.g. due to migration or the birth rate) affect the size of the labour force, while population characteristics (e.g. age) can affect labour force participation.

This section looks back at the evolution and characteristics of the population of Cyprus over time, before focusing on the country’s labour force.

10.2.1 Population

The population of Cyprus is one of the smallest in the EU, although it has grown since the Turkish invasion in 1974 at five times the growth rate of total EU population. This increase is mainly attributable to net migration into Cyprus and, to a lesser extent, the natural increase of the population¹.

When Cyprus became an independent republic, the population of Cyprus was 574 thousand citizens and grew year-on-year by 0.7% on average until 1973, reaching 632 thousand (**Table 10.1**, p.405)². As seen in the table, after the events of 1974, the population declined substantially, since many Cypriots migrated; by 1976 it had reached a trough, before picking up again, growing by an annual average of 0.8% in 1976-1982. Subsequently, in 1982-2001, the annual population growth was close to 1.6%, increasing slightly to around 1.8% in 2001-2011.

1. The natural increase of population is defined as the number of births minus the number of deaths.

2. Population data up to 1973 refer to Cyprus as a whole; thereafter it refers only to the areas controlled by the Republic of Cyprus.

TABLE 10.1 Cyprus population in census years
(thousands)

Year	1960	1973	1976	1982	1992	2001	2009*	2011
Age 0-14	208,5	182,2	126,6	130,7	156,1	151,3	135,7	n.a.**
Age 15-64	328,5	389,8	321,0	335,9	391,0	470,2	562,8	n.a.**
Age 65+	36,6	59,8	50,3	56,3	67,9	82,0	104,7	n.a.**
Total	573,6	631,8	497,9	522,8	615,0	703,5	803,2	838,9

Source: Cystat.

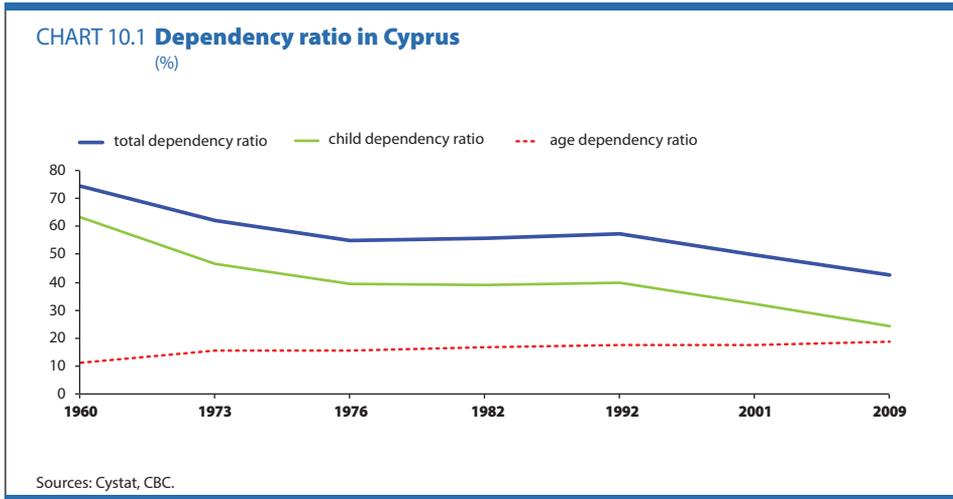
* 2009 data constitute the most recent estimates by Cystat.

** Not available.

As mentioned above, migration flows, mostly inflows, have had a significant impact on population in the past few years. In particular, according to Eurostat data, from 1990 to 2007, population growth was driven by net migration inflows and, to a lesser extent, natural population growth. During the 1980s, the annual natural population increase was about 6,000 persons, and the annual net migration into Cyprus was only 291 persons. This changed drastically in the first decade of the 21st century, when the annual natural growth slowed down to around 3,300 persons and net migration into Cyprus increased significantly to around 8,000 persons per annum. Moreover, the share of Cypriot nationals in total population, from 91% in 2001, fell to 79% in 2011 according to the most recent population census.

A significant characteristic of the population of Cyprus is that it is showing incipient signs of ageing, as can be seen from **Table 10.1**. While the number of people over 65 is increasing, in line with higher life expectancy, the number of people between 0 and 14 is falling, as a result of low birth rates. Furthermore, a rise is also evident in the number of people aged 15-64, i.e. the working age population, mainly due to labour immigration, particularly in the past decade. As regards the future prospects for the population, ageing is expected to continue, given that the total fertility rate³ is on a downward trend. While in 1990-1999 the average fertility rate was 2.1, compared with 2.4 in the previous decade, it declined further to 1.5 in 2000-2009.

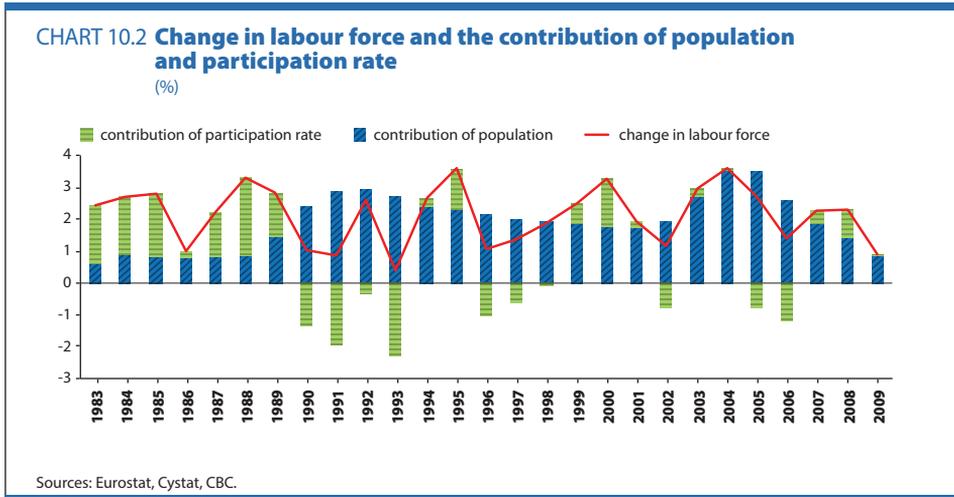
3. Total fertility rate gives the number of children a woman would have if she experienced the age specific fertility rates of a given year and she lived until the end of her reproductive life i.e. until her 50th birthday.



The age dependency ratio⁴ in Cyprus, after remaining broadly unchanged in 1976-1992, fell significantly from 1992 onwards (**Chart 10.1**). This reflected a decline in the population aged 0-14, due to the downward trend of fertility, and an increase in the population aged 15-64, mostly owing to labour immigration. This also resulted in lower child dependency ratios. It should be noted that the decline in dependency ratios has occurred in spite of the increase in the population aged over 65, which suggests the ageing of population. The latter caused a small increase in the old age dependency ratio. Generally speaking, changes in dependency ratios are indicative of social support needs stemming from changes in the age structure of a population, while periods with low dependency ratios provide an opportunity for a country to reap the benefits of lower social support needs.

Looking forward, the dependency ratio in Cyprus is expected to keep falling in the coming years, but should reverse course some time in the future due to population ageing. The latter is also evident in the ratio of people over 65 to people aged 0-14, which rose from 43.5 in 1992 to 77.2 in 2009, a trend that is expected to continue in the future. In the long run, the dependency ratio is expected to keep rising, as increases in old age dependency ratios would more than offset any declines in child

4. Age dependency ratio is the total number of persons under 15 years old and the elderly population aged 65 and over in relation to the population 15-64 years old (per 100 population 15-64 years old). It can be divided into the child dependency ratio (i.e. the ratio of persons under 15 to persons aged 15-64) and the old age dependency ratio (i.e. the ratio of persons of 65 and over to persons aged 15-64).

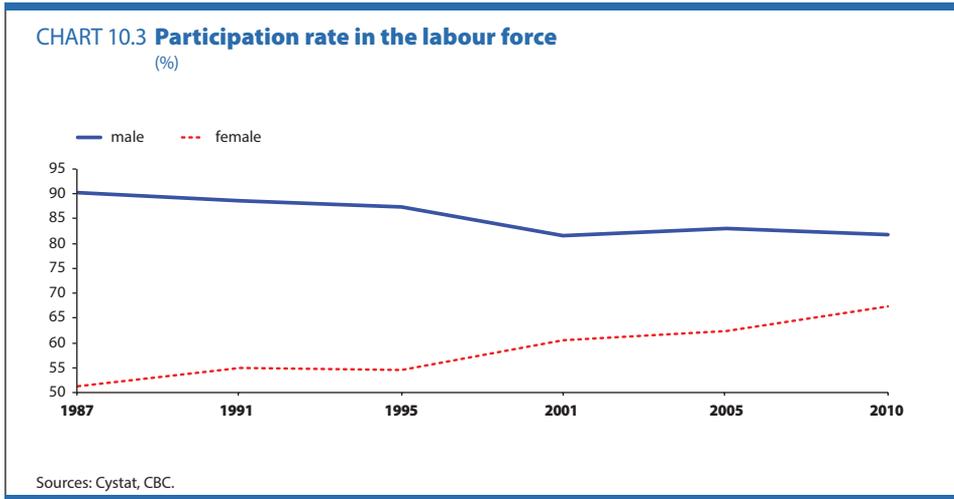


dependency ratios. Population ageing should have serious repercussions on the pension system of Cyprus. With this system, in its present form, the current contributions of workers fund pension payments; as the ratio of pensioners to workers rises, the existing system will find it hard to survive without any reforms.

10.2.2 Labour force

Reflecting developments in population, the labour force in Cyprus has followed an upward trend in the past 30 years, rising to 413 thousand in 2010 from 210 thousand in 1980, which corresponds to an average annual growth of 2.1%. Breaking down this growth into the contributions of the increase in population and the increase in the labour participation rate⁵, in the 1983-2009 period, for which there are available data, the former contributed 1.9 percentage points and the latter a mere 0.2 percentage point (**Chart 10.2**). The chart shows that until 1989, higher participation rates made the largest contribution, which rose from 68.5% in 1982 to 76.3% in 1989. Later, until 2009, the contribution of population became much larger, which is mainly attributable to net migration inflows. Accordingly, the contribution of the participation rate was very small after 1989, even negative in some years.

5. Labour Force = labour force participation rate × working age population => % Labour Force ≈ % participation rate + % working age population.

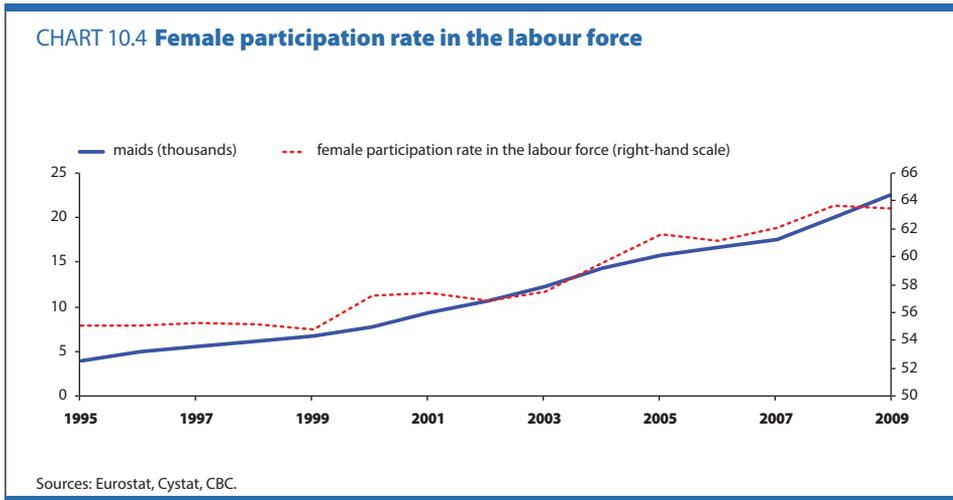


More recently, in 2005-2010, after entry into the EU, when the Cypriot economy experienced initially strong growth and then a downturn/recession, according to Labour Force Survey (LFS) data the labour force rose at an average rate of 2.4%. The increase was recorded at 3.6% in the three years from 2005 to 2007, before decelerating to 1.2% in 2008-2010. In the former three-year period, the labour force aged 55-64 grew significantly, due to increased in both the population of this age and their participation rate. This continued to a lesser degree in the following three years. Furthermore, the foreign labour force grew by a substantial 8.2% in 2005-2007 and even more strongly in the following three years; despite the economic crisis, the number of immigrant workers rose by 15.1% on average. On the other hand, the number of Cypriot workers rose by 3.2% in the former three-year period, before declining by 1.5% in 2008-2010, for the first time in many years.

Although the overall participation rate showed a slight upward trend in the past two decades, this masked divergent developments for male and female participation rates respectively (**Chart 10.3**)⁶.

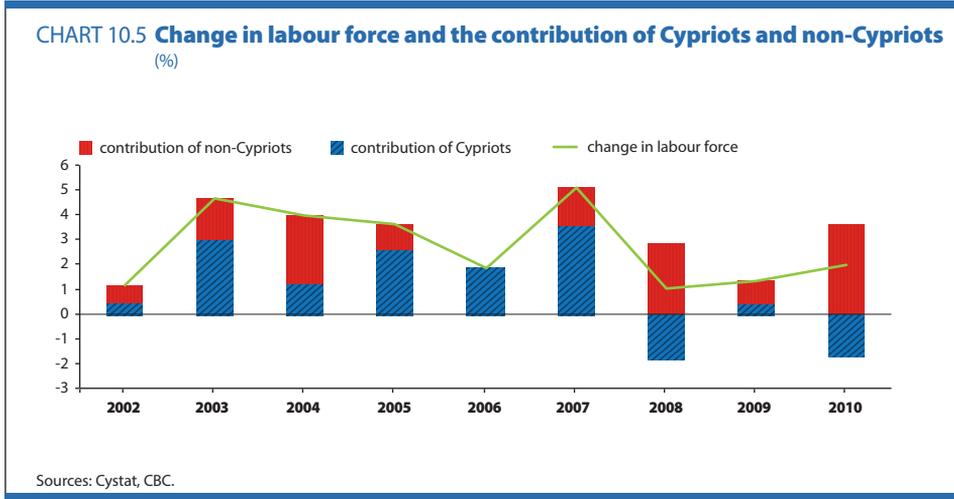
As seen in the chart, the increase in the labour force stemmed from the strong rise in the participation rate of women, while the respective

6. A break in the series occurred in 2000, when the Labour Force Survey became the source of data, replacing estimates and surveys conducted by CYSTAT.



rate for men declined slightly. The increase in female participation was also supported by their improved skills, as well as the higher number of foreign domestic workers. The latter contributed substantially to the higher participation of women in the labour force, both directly, as domestic workers are predominantly women, and indirectly, as the availability of domestic help enabled Cypriot women to seek paid work outside home. This is obvious in **Chart 10.4**, which shows that since 1995 both the number of domestic workers and the female participation rate have been on an upward path. In addition, according to the analysis of Michael et al. (2008), women in households with domestic help have a 20.5% higher probability to participate in the labour market, than those without domestic staff. The analysis refers to the 2002/2003 period, while a similar examination of the 1996/1997 period found that domestic staff had no effect on the decision of women to join the labour force. However, this is probably attributable to the fact that the employment of foreign household help was not yet so widespread at the time.

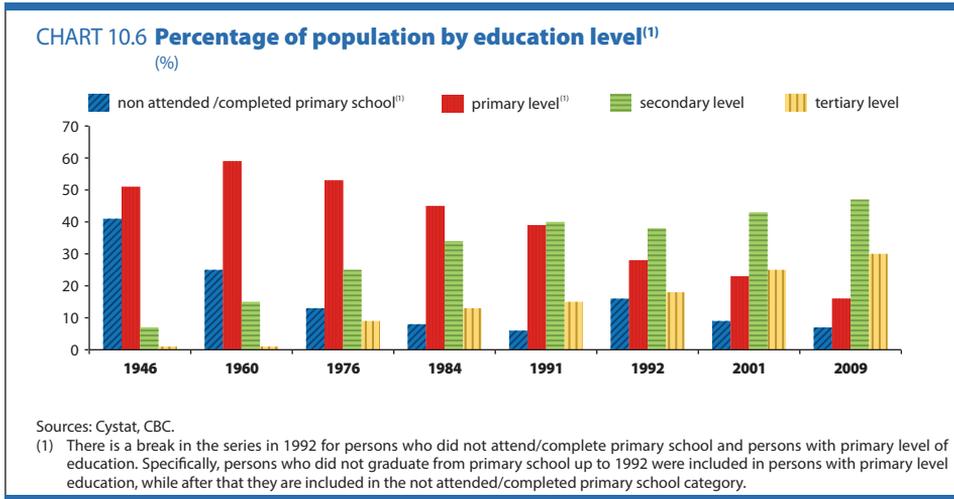
As already mentioned, the expansion of the labour force in the past few years is to a large extent associated with net migration inflows. In particular, the labour force rose by 2.7% per annum in 2002-2010, and



the average increase in foreign workers in the same period was 12.4%, against a mere 1.2% for Cypriot workers. The contribution of foreign workers to the increase in the labour force was 1.7% on average, while the contribution of Cypriot workers was close to 1.1% (**Chart 10.5**). Moreover, it is worth noting that in the 2008-2010 period, during which unemployment in Cyprus rose substantially, the contribution of Cypriot workers was negative on average, while the contribution of foreign workers was 2.5%. Thus, the share of foreigners in the labour force shows a marked upward trend, reaching 21.1% in 2010 from a mere 9.5% in 2002.

10.3 Characteristics of the labour force in Cyprus

The analysis in the preceding section focused on the available quantity of human resources in Cyprus. The quality of human resources, however, is equally important. This section examines the education level of the labour force in Cyprus, which is associated with its quality. It goes on to discuss in more detail the issue of foreign workers in Cyprus, who have been an integral part of the labour force since the previous decade.



10.3.1 Education

The education level in Cyprus shows a steady and dynamic upward course (**Chart 10.6**). The numbers of the individuals with secondary and tertiary education have been increasing, against a decline in the numbers of persons with only primary school education or no education at all (have never attended school). In 2009 people with secondary and tertiary education were 77% of the population aged 15-64, up from 56% in 1992 and 34% in 1976.

Broken down by gender, similar education levels can be observed for primary and tertiary graduates in 2009, as around 30% of men and women are tertiary graduates and almost 16% are primary graduates. On the other hand, men had a larger share in secondary graduates (51%), compared with women (43%) in 2009, while women have a larger share in the “no education” category (9%, against 4% for men). Although the education level of men and women is broadly similar, women show a stronger rate of increase in education levels over time. For instance, in 1976, 21% of women fell into the “no education” category, while the respective percentage for men was 6%. The large improvement in the education level of women was one of the reasons behind their increased

TABLE 10.2 Percentage of population aged 25-64 by education level in Cyprus and the European Union, 2004 - 2010 (1)⁽¹⁾
(%)

	Primary education		Upper secondary		Tertiary education	
	EE	Cyprus	EE	Cyprus	EE	Cyprus
2004	31,4	35,6	45,8	34,9	21,4	29,4
2005	30,5	33,4	46,6	37,9	22,4	28,8
2006	29,9	30,5	46,7	39,0	22,8	30,5
2007	29,1	27,9	46,8	38,9	23,4	33,1
2008	28,6	26,9	47,0	38,6	24,2	34,5
2009	27,9	27,6	46,7	38,3	25,1	34,1
2010	27,2	25,9	46,7	38,5	25,8	35,6

Sources: Eurostat, CBC.

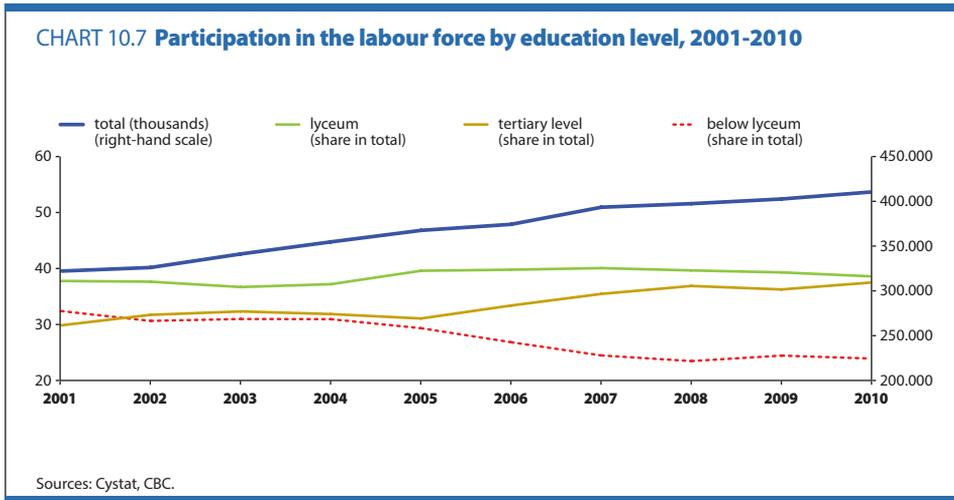
(1) The shares may not add up to 100% as some persons did not state their education level.

labour force participation, mostly through their participation in the services sector, which experienced buoyant growth.

When examining the education level by age, the education level is higher for the younger population, as was to be expected, which is also supported by the LFS data for 2010. Specifically, the population aged 25-34 with tertiary education reaches 48%, while the share falls to 23% for older people aged 55-64. It is worth noting that the share of women aged 25-34 with tertiary education is larger than the respective share for men, while the opposite is observed for the 55-64 age group.

Compared with the EU, the education level in Cyprus is high. In particular, the share of tertiary graduates in Cyprus exceeds that of the EU by 7 percentage points (**Table 10.2**), while the share of secondary graduates is 8 percentage points lower. As regards primary graduates, the shares are almost the same in the EU and Cyprus.

Looking at labour force participation by education level (**Chart 10.7**, p.413), the highest participation is recorded for secondary graduates, followed closely by tertiary graduates. Workers with below secondary education are almost half those with upper secondary education. Moreover, the chart shows a strong increase in workers with tertiary education: in 2001, they were less than those with below-secondary



education, but clearly exceeded the latter in 2010, converging rather with the share of the workers with upper secondary education.

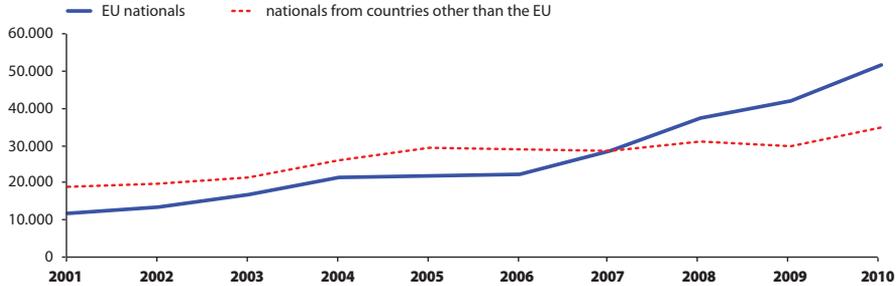
The strong increase in the education level in Cyprus helped the economy to expand to more demanding sectors of economic activity, such as accounting, legal and financial services, and gradually shift away from sectors where it had less of a comparative advantage, such as agriculture and light industry.

10.3.2 Foreign labour force

Foreign workers in Cyprus are now a very significant part of the economy, with their numbers still growing despite the negative course of the Cypriot economy after 2009. The inflow of foreign workers helped the economy of Cyprus in the period before the crisis, as job vacancies that were intended mostly for unskilled labour and were unattractive to Cypriot workers were filled, while also contributing to containing labour costs. However, in the context of the current crisis and with their number still increasing, foreign workers appear now to compete with the domestic labour force, mostly for low-skill jobs.

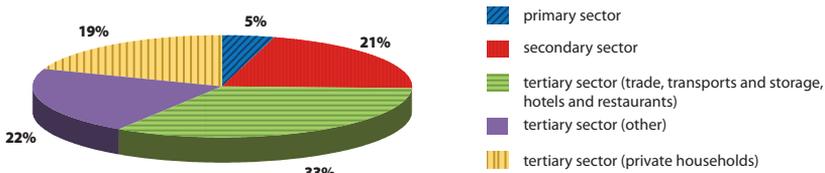
Since 2007, foreign workers from EU countries (**Chart 10.8**, p.414)

CHART 10.8 Foreign labour force in Cyprus, 2001-2010
(%)



Source: Cystat.

CHART 10.9 Foreign employment by sector, 2010
(% in total foreign employment)



Sources: Social insurance services, CBC

have outnumbered third-country nationals, while the opposite was the case in earlier years. The higher share of EU immigrants was also supported by the accession of Romania and Bulgaria to the EU in that year. Broken down by individual country of origin, foreign workers, according to social security data referring to October 2010, mostly came from Romania (27%), followed by Bulgaria (20%), Greece (18%) and the United Kingdom (9%).

The bulk of foreign workers (74%) are employed in the tertiary sector (**Chart 10.9**), mostly in retail trade, transport-storage, hotels and

restaurants. The share of foreign workers in the secondary sector reaches 21%, while only 5% of foreign workers are employed in the primary sector.

A geographical breakdown shows that the majority of foreign workers are located in Nicosia (42%), followed by Limassol (25%). The province with the smallest share in the number of foreign workers (8%) is Famagusta.

10.4 Characteristics of the labour market in Cyprus⁷

Apart from the quantity and quality of the labour force, the environment in which the labour force functions, i.e. the labour market, also plays a significant role in the production process of a country. A successful economy requires inter alia a labour market that functions smoothly, within a widely acceptable framework and with as few as possible distortions. This framework, as will be discussed in this section, relates to the organisation and operation of trade unions and employer associations, as well as the existence of a rational background for industrial relations. This section will also make a brief reference to the social security system of Cyprus.

10.4.1 Trade unions and employer associations in Cyprus

The development of trade unions in Cyprus dates back to the mid-20th century, despite the obstacles posed by the British colonial government. Initially the registered unions remained independent from each other and uncoordinated. In 1941, in a conference among trade unions, it was agreed to establish the Pancyprian Trade Union Committee and, later, the current Pancyprian Federation of Labour (PEO). The period until 1960 witnessed the establishment of the Cyprus Workers Confederation (SEK), as well as trade unions representing employees in semi-governmental organisations and the PASYDY (Pancyprian Public Employees Trade Union) for public sector employees.

7. **Section 10.4** draws on the website of the Department of Labour Relations of the Ministry of Labour and Social Insurance, as well as on Christodoulou (1992).

With the independence of the Republic of Cyprus, the right to organise and engage in collective bargaining was enshrined in the Constitution, while the Trade Unions Law came into effect in 1965.

Trade union membership, according to Soumeli (2008), reached 58% of total employees in 2006, although it has declined over time, from 76% in 1990. This does not reflect exits of members from unions, but rather the fact that new entrants in the labour market are less likely to join a union because they choose not to (as is typically the case with foreign workers) or because a union for their sector of employment may not exist. The largest trade unions in Cyprus are SEK and PEO, accounting for the majority of unionised employees, as they cover a wide range of economic sectors. Branches of the private sector with high union membership are banks, industry, construction and hotels, while membership reaches 100% for civil servants and employees of semi-governmental organisations. Lastly, trade union membership is associated with collective bargaining coverage as the latter is an incentive for joining a trade union, although not a prerequisite for being covered by collective agreements.

Coordination among employers became possible in 1960, when the Cyprus Employers & Industrialists Federation (OEB) was established, representing employers from all sectors of activity that account for over 60% of private sector workers. There is also the Cyprus Chamber of Commerce and Industry (CCCI), which was established in 1927 but its role was redefined by a new statute in 1963. CCCI represents the interests of Cypriot businesses and has a membership of more than 8,000 enterprises from all sectors of activity, while it is affiliated with more than 140 professional associations from the trade, industry and services sectors.

10.4.2 Industrial relations in Cyprus

Before its independence, Cyprus lacked developed structures and processes for labour dispute resolution. This began to change once the

Republic of Cyprus was established. In 1962, social partners, i.e. the government and the employee and employer organisations, signed a framework agreement which determined the procedures for labour dispute resolution.

The labour relations framework was further enhanced in 1977, when the social partners signed the Industrial Relations Code (IRC). The IRC is a voluntary agreement that specifies procedures for labour dispute resolution and mediation. Although the IRC is a voluntary agreement, it has always been respected by social partners in Cyprus.

On the basis of the industrial relations model of Cyprus, which is characterised as liberal and voluntary, employment terms are often determined by collective bargaining and agreements between employers and employees. Collective agreements, among other things, specify wage increases, and their duration is typically two to three years.

In the event of a labour dispute in the private or broader public sector, employees and employers may apply, through their respective unions and associations, to the Department of Labour Relations of the Ministry of Labour and Social Insurance for mediation. The mediator's role is to assist the parties to bridge their differences and reach a commonly accepted solution.

Private sector employees that are not covered by a trade union are protected by legislation, through minimum safeguards concerning employment terms and conditions such as minimum wage, working hours, etc. This is the case with various assistant jobs in retail trade, offices, healthcare, childcare, education and security. The minimum wage in Cyprus in the past years has been determined at about 50% of median wage. According to the latest decree of April 2011, the minimum monthly wage in Cyprus was set at €855, increasing to €909 for workers with a tenure of six months.

Furthermore, in the event of dismissal, employees are protected by legislation on employment termination. According to the law, an employer intending to dismiss an employee with a tenure of at least 26

weeks has to give a notice of one to eight weeks, depending on the tenure. This is a minimum period of notice required by law, while longer periods of notice may be provided for by collective agreements, custom or specific arrangements. Instead of a period of notice, the employer can pay the employee's wage for this period. Furthermore, during the period of notice, employees may be absent from work for a few hours in order to search for a job, and if they find one, they may quit without prior notice. In the event of dismissal without cause, the employee may claim compensation, in an amount determined by the Labour Court. Lastly, employees made redundant may claim pay from the redundancy fund.

Ultimately, the smooth functioning and qualitative development of the labour force can, under certain circumstances, hinge crucially on industrial peace. In Cyprus, mutual respect among employers and employees, as reflected in collective agreements over time, has made a substantial contribution to ensuring industrial peace. Certainly, it should be understood that the need to safeguard industrial peace cannot be an excuse for not adjusting collective agreements to the new conditions and needs of the economy; Nor should motivation for higher labour productivity be impaired for the sake of industrial peace. On the contrary, industrial peace has to be pursued in full awareness, on the part of both employers and employees, of current economic conditions. This need was recognised during the economic crisis that followed the Turkish invasion of 1974, and once again in the recent economic recession that was partly caused by the global economic crisis.

10.4.3 Wage-setting and wage indexation

As mentioned above, for employees covered by trade unions, wage increases are determined by collective agreements signed by employers and employees, following bargaining between their respective organisations. A significant factor in discussions on wage increases is the productivity of the economy.

Apart from these bargained wage increases, wages are also subject to wage indexation, the so-called Cost-of-Living Allowance (COLA). The COLA is designed to make up for the loss of purchasing power as a result of inflation for a specified basket of consumer goods; in this respect, adjustment of wages takes place on a biannual basis (every January and July). Wages are indexed to consumer price inflation, excluding since 1999 increases in excise taxes. Wages can be adjusted upwards or downwards, depending on the average change in the cost-of-living index in the last six months against the previous six months. The COLA coverage of employees is around 50% and typically corresponds to collective agreement coverage.

According to the International Monetary Fund (IMF, 2005), the COLA works better in a high- growth economy, where the downward stickiness⁸ of real wages does not constitute an effective constraint on the wage determination process, as real wages increase with productivity and workers released from industries unable to pay the rising wages are absorbed by other sectors in the expanding economy. However, in an environment characterised by less robust growth, this rigidity may become an impediment to the economy's ability to weather negative shocks. In this case, the COLA can significantly impair competitiveness⁹. For these reasons, the use of wage indexation has been discontinued in many countries, while others apply different systems of indexation. For instance, in Belgium wages are indexed to CPI excluding tobacco, alcoholic beverages and transport fuels, while the COLA amount in Malta is fixed, irrespective of the wage.

It should also be noted that apart from the IMF, the European Central Bank as well as the European Commission have also called for an abolition or at least relaxation of the COLA. Alternative types of wage indexation, in the light of practices applied in other countries, are the sliding-wage scale, exclusion of certain items from the relevant index, indexation to projected inflation, and indexation subject inflation exceeding a threshold point.

8. Wage stickiness is the failure of wages to adjust so that labour supply equals labour demand.

9. It is worth noting that after the Turkish invasion in Cyprus (alongside wage reductions) the COLA was suspended for three years. Moreover, against the background of economic weakness in Cyprus, it was agreed to freeze the COLA for civil servants as from 2012 for two years; soon other sectors of the economy followed, such as banking.

10.4.4 Social insurance

Employees in Cyprus are mandatorily insured with the social insurance scheme. Voluntary insurance is also available, i.e. for those who have ceased to work or those who mostly live in Cyprus and work abroad for a Cypriot employer.

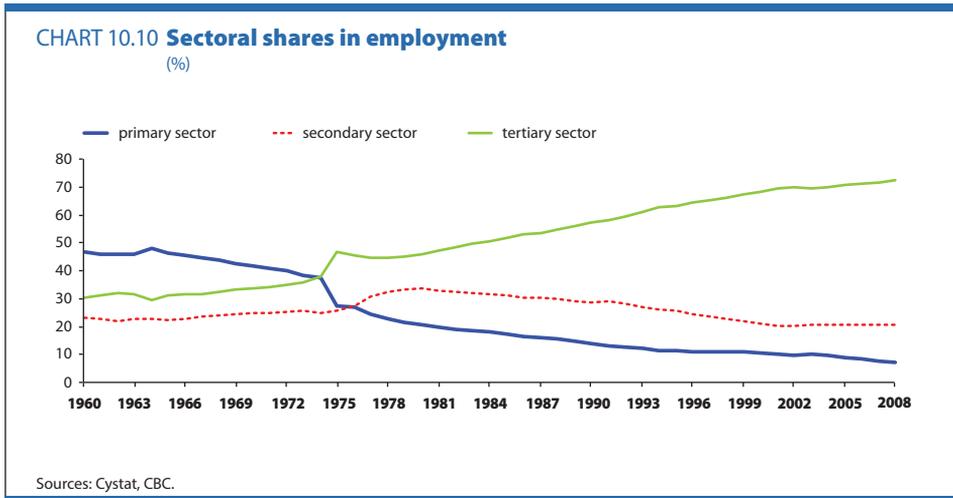
Social insurance contributions depend on earnings and are shared among employers, workers and the government. In the case of employed persons, the total contribution rate currently stands at 17.9% of gross earnings (the employer and the employee pay 6.8% each, and the government pays 4.3%¹⁰). The contribution rate for the self-employed is currently 16.9% (12.6% paid by themselves and 4.3% by the government).

The overall contribution to the social insurance fund, based on current legislation, will increase gradually until 2039, when it will have reached 25.7% for employees and 24.7% for the self-employed. The increases are part of a reform aimed to ensure the sustainability of the social insurance fund.

Entitlements under the social security scheme include grants for marriage, maternity, funerals, benefits sickness, unemployment (see next paragraph for further discussion), missing persons, pensions for old age, widow's, invalidity persons and orphan's benefit and employment injury benefits.

The unemployment benefit is payable to insured employees and voluntary contributors working for a Cypriot employer abroad. Unemployment benefits may be claimed for the days that the persons concerned are unemployed, able and willing to work, subject to certain eligibility requirements¹¹. The amount of the unemployment benefit is defined on the basis of the weekly average paid and credited gross insurable earnings during the preceding contribution year, and it is granted for 156 working days. The duration of unemployment subsidisation in Cyprus is shorter than the EU average.

10. In cases where the employee is covered by the employer's pension plan, the employer pays 10.15%, the employee 3.45% and the government 4.3%.



10.5 Employment

Reflecting brisk economic activity in 1980-2010, employment in Cyprus rose at a fast pace, averaging 2.4% per annum. New job creation was mainly accounted for by the tertiary sector, with an average employment growth rate of 4.0% per annum for that period, compared with 0.9% and 0.6%, respectively, for the primary and secondary sectors.

In this regard, the employment share of the tertiary sector shows an upward trend, while the shares of the other two sectors have been declining (**Chart 10.10**, p.420). Looking back at the evolution of sectoral shares in employment, in 1960 the primary sector accounted for about 50% of workers. Its share fell gradually thereafter and stood at just 8% in 2010. This development was due, among others, to the Turkish invasion of 1974 and the subsequent loss of a large part of the fertile land of the country. Employment flows out of the primary sector were mostly channeled into the tertiary sector, which recorded constantly growing shares, reaching 73% by 2010 from 30% in 1960. This upward trend was initially driven by tourism; later on, the specialisation of the Cypriot

11. In particular:

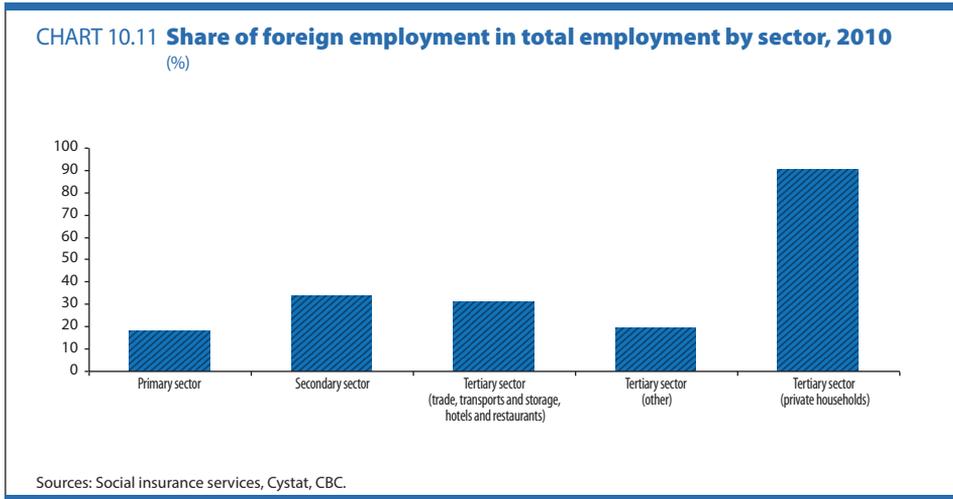
- the insured person has been insured for at least 26 weeks and has paid, up to the date of unemployment, contributions on insurable earnings not lower than 26 times the weekly amount of the basic insurable earnings; and
- the insured person has paid or been credited with contributions in the previous contribution year on.

economy in financial and other services (mainly accounting and legal services) also played a significant role. Since 1980 the secondary sector has been recording falling shares, mostly reflecting the competitiveness issues faced by the industrial sector as a result of failure to properly take advantage of the customs union of Cyprus with the EU (see **Chapter 2**, p.39, for further details). The share of this sector, after falling by 13 percentage points in 1980-2000, stabilised in the 2000s at around 20%, partly due to the strong performance of the construction sector of Cyprus during that period.

One characteristic of employment in Cyprus is the relatively large share of self-employment in total employment, which appears to have converged towards the EU average in recent years. In particular, this share in Cyprus was 24% in 1995 and fell to 17% in 2010. The respective EU share was 18% in 1995 and 15% in 2010. The self-employed are mainly concentrated in trade and agriculture.

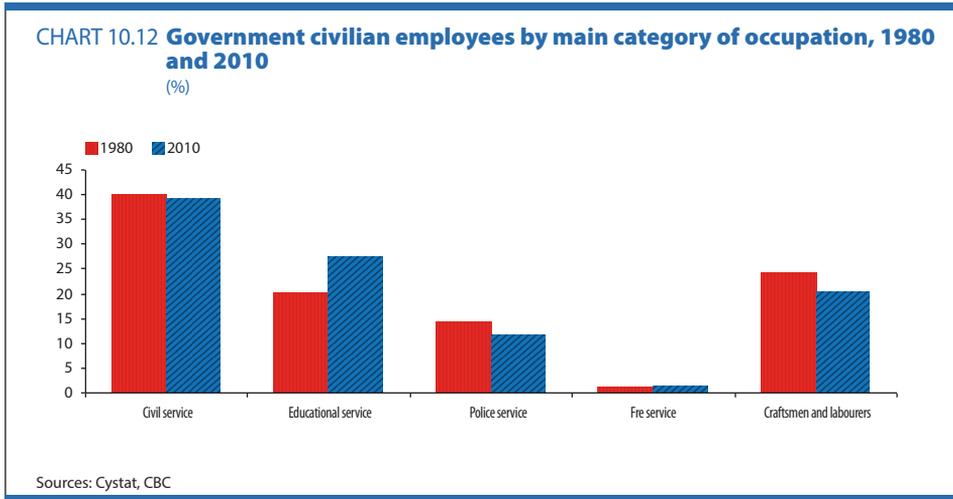
Increases in employment and, consequently, the labour force over the past years have, to a large extent, reflected the inflow of foreign workers (from the EU and third countries), as was also the case with the increase in population that was mentioned in a previous section. Specifically, according to social insurance data, the average annual increase in foreign workers in Cyprus in 1995-2010 reached 14.5%. In addition, according to the LFS, the influx of immigrant workers in recent years has caused a significant increase in the share of foreign workforce in total employment, from 9.7% in 2001 to 20.5% in 2010.

As regards the shares of foreign workers in total sectoral employment, the largest share in 2010 was recorded in the secondary sector (34%), followed by the tertiary sector with a share of 31% (**Chart 10.11**, p.423). In the tertiary sector, the share of foreign workers in the activities of households as employers of domestic personnel sector (domestic staff) is marginally over 90%, while foreign workers in trade, transport and storage, hotels and restaurants account for 30% of employment in this sector.



The increase in the foreign workforce has been an important factor supporting the growth of the economy. For instance, the higher availability of domestic staff enabled the women of Cyprus to join the labour force, which has had a positive effect on the productive capacity of Cyprus. Moreover, foreign workers, particularly in 2004-2008, helped to address labour shortages, mostly for low-skill jobs (construction, hotels and restaurants, retail trade), thus contributing to the containment of labour costs.

According to the study of Michael et al. (2005), if employment of foreign workers in 1995-2004 had remained at the 1995 levels, the average annual growth of Gross Domestic Product (GDP) would have been only 1.6%, against the actual figure of 3.4%. Moreover, Michael et al. (2008) found that the presence of immigrant workers in Cyprus has had no effect on total unemployment, which indicates that foreign workers fill vacancies in specific jobs. Moreover, Passiardes et al. (2001) showed that foreign workers reduce the possibility of Cypriot workers being employed in the primary and secondary sectors and increase the possibility of employment in the tertiary sector, i.e. foreign workers in the tertiary sector supplement rather than compete with Cypriot workers.



As regards employment in the public sector, civil servants in Cyprus represent a significant percentage of total employment. In particular, the share of civil servants (excluding the military)¹² in total employment was 12.7% in 2010, broadly unchanged from the 1990s. This share had been higher in the 1980s, which suggests that during that decade private sector employees increased faster than civil servants, though after 1990 both categories showed similar growth. Between 1980 and 2010, the average annual increase in the number of civil servants was 2%.

As regards job categories of civil servants, public administration is the largest category, with 40% of the total in 2010 (**Chart 10.12**). This share has been constant over time. The second largest category includes jobs in education, with a share of 28% of total civil servants in 2009, up by 8 percentage points relative to the 1980s. Technicians and unskilled workers are 20% of civil servants, while 13% is accounted for by the police and the fire service. The latter two categories have been declining compared with the 1980s.

Cyprus has the highest percentage of civil servants among the EU countries. In particular, according to a publication of the Ministry of Presidency of Spain (2010), the share of civil servants in the total population of Cyprus was 5.3% in 2010, well above the second highest

12. The analysis uses a series that does not include the military personnel, as this is available for a longer period of time.

share (for Malta and France) of about 3.8%. It should be noted that the respective EU average is 2.5%.

10.6 Unemployment

This section deals with the measuring of unemployment in Cyprus, as well as the relationship between the methodologies used. It also examines how the size of unemployment relates to other macroeconomic aggregates. In particular, it explores the relationship between unemployment and the job vacancy rate (Beveridge curve), the relationship between the rate of unemployment and the rate of inflation (Phillips curve), and the relationship between unemployment and economic activity and output (Okun's Law).

10.6.1 Measuring unemployment in Cyprus¹³

Unemployment in Cyprus is measured using two alternative methodologies: Registered Unemployment (RU), as calculated by the number of unemployed registered with the district labour offices on a monthly basis since 1960, and unemployment as calculated based on the Labour Force Survey (ULFS). During the period 1999-2003 the ULFS covered the second quarter of each year, but since the second quarter of 2004 it has been conducted on a regular quarterly basis. There is also a third method for measuring unemployment, the harmonised unemployment rate, as measured by Eurostat, which is a combination of the two above-mentioned methodologies.

The ULFS is considered the most correct measurement method of unemployment, as it is calculated in accordance with the relevant definition of the International Labour Organization. Specifically, the unemployed are those individuals who declare in a survey that they do not have a job, have been actively seeking employment for at least the last four weeks prior to their declaration, and that if a job becomes available they

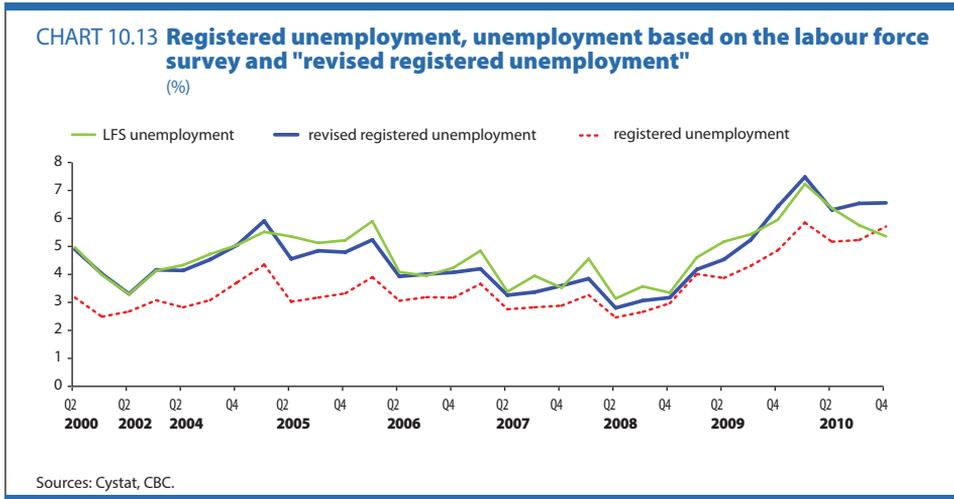
13. This subsection draws on Kyriacou et al. (2009).

are willing to accept it within 15 days. On the other hand, RU depends on those individuals who voluntarily register as unemployed at the district labour offices. Nevertheless, a significant disadvantage of the ULFS is that it is published three months after the reference quarter, in contrast with the RU which is published within a few days after the reference month.

Given the above, the two methodologies lead to different results, due to different measurements for three specific categories of the unemployed: the long-term unemployed, newcomers to the labour market, and people who have retired recently. The reasons behind these differences are associated with the lack of financial incentives to register in the lists of the unemployed. In the first two cases, i.e. the long-term unemployed and the newcomers to the labour market, there is no financial incentive to register with district labour offices, since the unemployed in these categories are not eligible for unemployment benefit. There is, of course, the incentive of better chances to find a job through the district labour offices, therefore it is expected that some proportion of the long-term unemployed and the newcomers are actually registered as unemployed. On the other hand, recently retired public sector workers, although not actively seeking work, have the option of declaring themselves unemployed and hence receiving unemployment benefit for up to six months after their retirement, until January 2010. Therefore, although they are not actually interested in finding a job, they register as unemployed in district labour offices. Based on the above, long-term unemployed and newcomers in the labour market, according to the LFS, exceed the unemployed as measured by the RU, while the opposite is the case with the recently retired. This is also confirmed by empirical data.

Taking into consideration the above analysis, if we add the existing RU the difference between the two methodologies ULFS and RU¹⁴, we arrive at a percentage of “revised registered unemployment” (RRU), which is close to the ULFS rate, that is considered the most correct measurement method (**Chart 10.13**, p.427). Naturally, it should be mentioned that since the ULFS is based on a sample survey, a statistical error should be expected. The correlation between the two appears to be disrupted in the third and fourth quarters of 2010, with the ULFS falling and the RRU

14. Revised Registered Unemployment = RU + (ULFS – RU) unemployed newcomers + (ULFS – RU) long-term unemployed + (ULFS – RU) recently-retired.



showing a slight increase. This may be attributable to persons registered with labour offices as unemployed so as to be eligible not only for the unemployment benefit but also for further help (e.g. from a Social Welfare Office), while they are not actively searching for a job¹⁵. This observation for those quarters is probably due to the economic crisis.

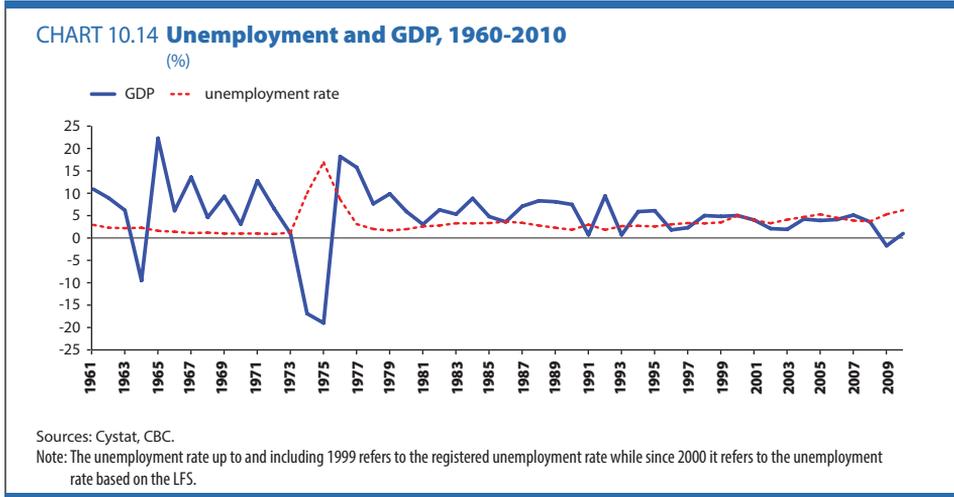
Another observation that can be made on the basis of **Chart 10.13**, is that the difference between the results of the two methodologies (ULFS and RU) is larger from the second quarter of 2002 to the first quarter of 2006, before declining from the second quarter of 2006 to the fourth quarter of 2008. The average gap in absolute terms during these periods is 5,236 and 3,190 unemployed persons, respectively. This appears to be related to cyclical factors that affect the long-term unemployed with a lag. In particular, the difference of the long-term unemployed between RU and ULFS had been rising from 2002 to 2005 and then decreased until 2009. On the other hand, the RU/ULFS gaps for the categories of newcomers and of the unemployed aged 60-64 stand at broadly similar levels.

10.6.2 The evolution of unemployment in Cyprus over time

Up until 1974, unemployment in Cyprus stood at very low levels¹⁶,

15. The disruption of this relationship in the third and fourth quarters is an issue which is under study.

16. In the analysis of unemployment, RU data are used for the years up to 1999, while ULFS data is used from 2000 onwards.



accompanied by high output growth rates (**Chart 10.14**). After the Turkish invasion in 1974, unemployment soared, while the GDP of Cyprus fell substantially. Unemployment returned to relatively low levels in 1977. It should be noted that one of the reasons behind this recovery in such a short time after the invasion was the emigration of Cypriot workforce. Until 2000 unemployment remained low in line with robust GDP growth. From 2000 onwards, unemployment increased from 2.8% in 1977-1999 to 4.3% in 2000-2008. This does not seem to be associated with the different methodologies for measuring unemployment, since RU in 2000-2008 was 4.1%. Rather it could partly reflect the fact that GDP growth in 2000-2008 was weaker than in 1977-1999, as well as the flow of immigrant workers into Cyprus, which may have affected a small portion of the local labour force during that period. In the recent period of economic crisis, unemployment rose significantly to 5.3% in 2009 and further to 6.2% in 2010. For a further discussion of unemployment during the crisis, see **Box 10.1**, p.429.

10.6.3 Unemployment correlations in Cyprus

Unemployment is a very important aggregate and could be correlated

Box 10.1 **The global economic crisis and the labour market of Cyprus**

The global economic crisis took its toll on the economy of Cyprus, as GDP contracted in 2009 for the first time after the Turkish invasion. This has had a negative effect on the labour market of Cyprus, with unemployment rising to very high levels.

This box explores how employment, unemployment and the labour force have been affected during the crisis. The analysis uses LFS data.

Unemployment

Unemployment in Cyprus reached a trough in 2008, when the unemployment rate fell to 3.7%, before rising to 5.3% in 2009 and to 6.2% in 2010 (**Table 1**, p.430). Further increases were recorded in 2011, with the unemployment rate reaching 7.4% in the first nine months of the year, the highest rate seen in the post-invasion period.

The increase in unemployment was broadly based across all age groups. In particular, the unemployment rate among young people aged 15-24 reached 16.7% in 2010 from 9% in 2008, and rose to 5.3% for people aged 25-64 in 2010, up by 2.1 percentage points from 2008.

Men appear to have been harder hit by the economic crisis than women in terms of the unemployment rate, although male unemployment remains lower in 2010, at 6%, compared with 6.4% for women. Specifically, the male unemployment rate rose by 2.8 percentage points between 2008 and 2010, whereas the increase was 2.2 percentage points for women.

As regards the duration of unemployment, the number of people remaining unemployed for over six months as a percentage of the total number of the unemployed reached a low of 26.8% in 2008. This was consistent with the strong performance of the the Cypriot economy between 2004 and 2008, implying that it was easier for the unemployed to return to employment. In 2010, with unemployment already on the rise

TABLE 1 Unemployment, 2006-2010

	2006	2007	2008	2009	2010
Unemployment rate					
Total	4,5	3,9	3,7	5,3	6,2
Age 15-24	10,0	10,2	9,0	13,8	16,7
Age25-64	4,0	3,3	3,2	4,5	5,3
Male	3,9	3,4	3,2	5,1	6
Female	5,4	4,6	4,2	5,5	6,4
Percentage in total unemployment					
Up to six months	59,6	67,8	73,2	70,8	61,6
6-11 months	19,1	17,6	15,5	18,8	18,6
12 months and over	21,3	14,6	11,3	10,4	19,8

Source: Cystat.

since 2009 due to adverse economic developments, the percentage of long-term unemployment increased to 38.4%. This figure is expected to continue rising in the future, due to the protracted negative course of economic activity. This is a matter warranting attention, as there is a risk of skills becoming obsolete as these persons remain out of job, making it harder for them to return to employment.

Employment

According to LFS data, the global economic crisis began to affect employment as from 2008, when the growth rate decelerated to 1.3%, from 5.8% in 2007¹ (Table 2, p.431). Employment fell in 2009, when GDP growth was negative, and recovered slightly in 2010.

Younger people seem to have been strongly hit, as their employment fell sharply in 2009 and 2010. Workers aged 25-64, on the other hand, still recorded positive employment growth although at decelerated rates compared with previous years.

Both men and women have been affected by the crisis. Male employment posted negative growth on average in 2009 and 2010, while

1. According to official CYSTAT data, employment accelerated marginally in 2008 compared with 2007. LFS data are of course subject to statistical errors, as they are derived from a sample survey.

TABLE 2 **Employment, 2006-2010**

	2006	2007	2008	2009	2010
Employment growth					
Total	2,7	5,8	1,3	-0,4	1,0
Age 15-24	2,9	-0,3	1,1	-7,3	-3,7
Age 25-64	3,1	6,3	0,9	0,2	1,3
Male	1,5	4,5	1,3	-0,9	0,2
Female	4,1	7,4	1,3	0,2	2,0
Cypriots	2,9	4,9	-1,8	-0,9	-2,9
Non-Cypriots	0,9	11,3	20,1	2,1	19,7

Sources: Cystat, CBC.

the growth of female employment remained positive, but was much weaker than in previous years.

A breakdown by nationality shows that Cypriots have been particularly affected by the crisis, recording negative employment growth in 2008, 2009 and 2010. This is possibly associated with the increase in the long-term unemployed and the ensuing discouragement and withdrawal from the labour market, with negative economic and social consequences that need further investigation. For non-Cypriots, on the other hand, the growth rate of employment, although markedly decelerating in 2009, returned to the double-digit figures of 2007 and 2008 in 2010.

Labour force

The growth rate of the labour force has remained positive during the crisis (**Table 3**, p.432), despite some deceleration, reflecting increases in both the working age population and the participation rate.

As regards the age structure of the labour force, the crisis affected strongly the young people aged 15-24, with the labour force in this category recording a significant decline in 2009. Furthermore, the labour force participation rate of young people fell during the years of the crisis.

From a gender perspective, both the male and the female labour force

TABLE 3 Labour force, 2006-2010

	2006	2007	2008	2009	2010
Labour force growth					
Total	1,8	5,1	1,0	1,3	2,0
Age 15-24	-1,5	-0,1	-0,2	-2,2	-0,3
Age 25-64	2,7	5,5	0,7	1,6	2,0
Male	1,0	4,0	1,1	1,1	1,1
Female	2,9	6,4	0,9	1,5	3,0
Cypriots	2,1	4,2	-2,2	0,5	-2,0
Non-Cypriots	0,1	11,1	19,7	5,1	20,4
Participation rate in labour force, 15-64					
Total	73,0	73,9	73,6	74,0	74,4
Age 15-24	41,5	41,7	41,7	41,1	40,6
Age 25-64	80,3	81,1	80,6	81,0	81,6
Male	82,7	82,9	82,0	82,0	81,7
Female	63,8	65,4	65,7	66,2	67,4
Cypriots	72,6	73,7	73,0	73,5	73,2
Non-Cypriots	76,0	75,5	76,9	76,2	79,1

Sources: Cystat, CBC.

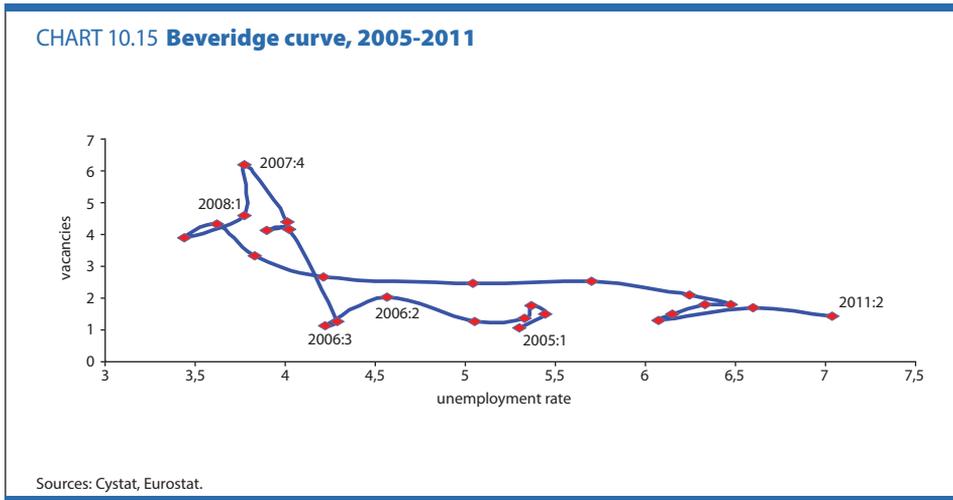
increased at a decelerating pace. On the other hand, the participation rate of women continued to rise, but that of men fell marginally.

Compared with immigrant workers, Cypriots seem to have been more strongly affected by the the crisis, with the Cypriot labour force falling by 1.2% on average in 2008-2010. On the other hand, the labour force for non-Cypriots, except for a significant deceleration in 2009, does not seem to have been significantly affected by the crisis.

with other economic aggregates. The subsections below briefly present empirical correlations of unemployment in Cyprus with other key variables, specifically job vacancies, GDP and inflation.

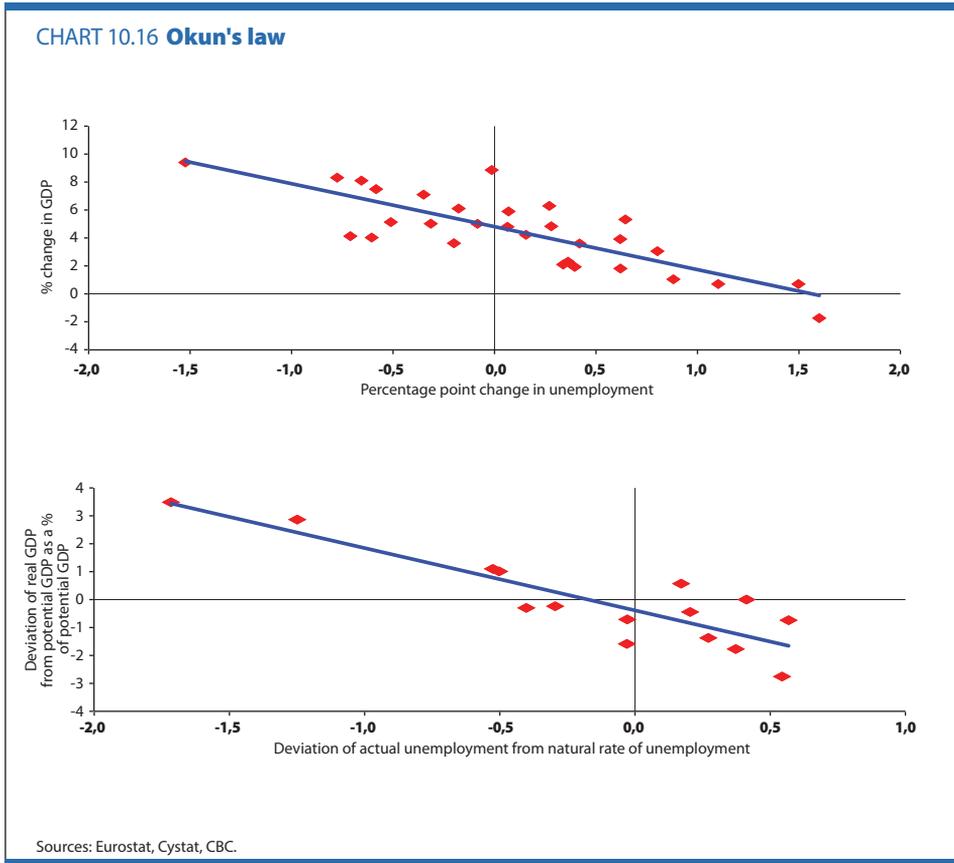
Beveridge curve

The Beveridge curve represents the relationship between unemployment and



the job vacancy rate, and is a measure of labour market efficiency. In theory, the slope of the curve is downward, since in good times job vacancies increase and unemployment decreases, and vice versa. The curve shifts towards or away from the axis, depending on the prevailing labour market conditions. For instance, an outward shift suggests that a given level of job vacancies is associated with higher unemployment levels and therefore lower labour market efficiency, as job vacancies are more difficult to fill.

The slope of the Beveridge curve for Cyprus, consistent with theory, is downward (**Chart 10.15**). In the chart someone can distinguish three different sub-periods; the first sub-period is from the first quarter of 2005 to the second quarter of 2006, during which the slope of the curve was slightly downward, as the economy was still growing below potential, and the unemployed could easily fill job vacancies. The second sub-period, third quarter 2006 to fourth quarter 2007, when the Cypriot economy grew above potential, the number of the unemployed was not enough to fill job vacancies, causing them to increase substantially. The sectors that experienced this phenomenon included, most notably, construction and, to a lesser extent, real estate, industry, and hotels and restaurants. Then, from 2008 to the second quarter of 2011, the economy not only slowed down but even entered a recession, job vacancies declined and unem-



ployment rose. Furthermore, the chart shows an outward shift of the curve in the third sub-period, compared with the first sub-period. This points to a mismatch between unemployment and job vacancies.

According to an econometric analysis on the basis of data from 2005 to the second quarter of 2011, an increase of one percentage point in the job vacancy rate is associated with a decline of 0.54 percentage point in unemployment.

Okun's Law

Okun's Law is an empirical relationship between unemployment and GDP. The relationship is typically negative, as an increase in GDP leads to a decline in unemployment and vice versa.

The negative correlation between unemployment and GDP also appears to hold in the case of Cyprus (**Chart 10.16**, p.434)¹⁷. The two panels show two versions of Okun's Law. The upper panel shows the correlation between changes in unemployment and GDP growth in 1980-2010. An econometric analysis of the data shows that a one percentage point increase in GDP is associated with a 0.21 percentage point decrease in unemployment. This coefficient recorded a small downward trend in the past three decades of the sample, ranging between -0.2 and -0.3. The lower panel shows the correlation between the output gap (actual GDP versus potential GDP) and the gap of unemployment versus the natural unemployment rate¹⁸ in 1996-2010. An econometric analysis of the data shows that a one percentage point increase in the output gap is associated with a 0.3 percentage point decrease in the unemployment gap versus the natural unemployment rate.

Phillips curve

Another widely investigated relationship is the correlation between unemployment and inflation (Phillips curve). In theory, there is a negative correlation between the two aggregates, i.e. an increase in inflation is associated with a decrease in unemployment. A negative correlation appears to apply, albeit to a small extent, for Cyprus in 1980-2010 (**Chart 10.17**, p.436)¹⁹, which however weakens considerably in the second half of the sample period. For a further discussion of the Phillips curve see **Chapter 9**, p.357.

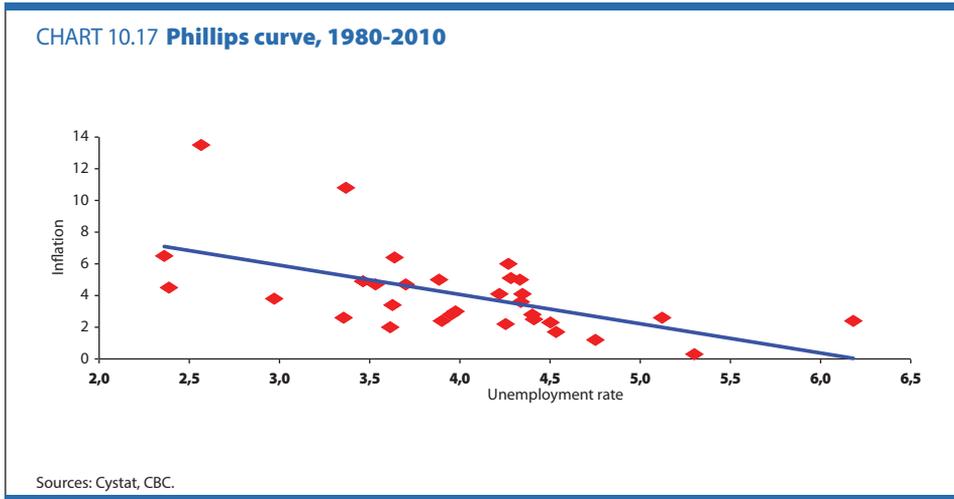
10.7 Productivity and wages in Cyprus

Factor productivity in an economy is a significant measure, as it reflects how effectively and efficiently inputs are used for production. In other

17. Given that prior to 2000, only the RU series is available which, as noted above, does not represent actual unemployment, the percentage has been adjusted on the basis of the average rate of ULFS and RU since 2000, when the ULFS became available.

18. The GDP gap from potential GDP is calculated by the CBC on the basis of a simple Cobb-Douglas production function, while the natural unemployment rate is calculated by applying a HP filter on the actual unemployment rate.

19. See footnote 17.

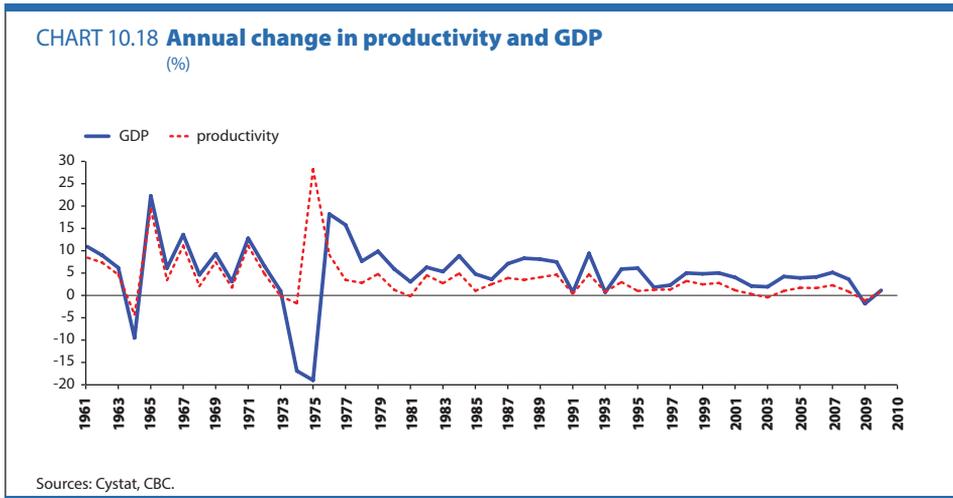


words, productivity reflects the change in GDP which cannot be explained by changes in input amounts (e.g. labour and capital). Often, for the sake of simplicity, the term “productivity” refers to labour productivity, which is defined as the amount of goods and services produced per hour worked by one worker. Productivity according to this definition is also influenced by the other factors of production. Closely related to productivity, at least in theory, are wages, i.e. the remuneration of labour inputs. This section deals with the concept of labour productivity in Cyprus, provides a historical review of wages and examines the relationship between productivity and wages in association with the notion of competitiveness.

10.7.1 Labour productivity

An international practice of measuring a country’s productivity defines productivity as GDP per employee, i.e. GDP growth that cannot be attributed to changes in employment²⁰. Productivity, as defined above, is a very significant indicator for any economy and is of particular relevance for the Cyprus economy, which is small, and open to international competition and mostly reliant on the tertiary sector, a sector that is highly labour-intensive.

20. Alternatively to the above definition, productivity may also be defined as GDP per hour worked. This section uses the first definition, as data on hours worked are only available for the period from 1995 onwards.



Between the independence of Cyprus and the Turkish invasion, productivity in Cyprus stood at high levels (**Chart 10.18**). It is worth noting that the change in GDP was driven by productivity rather than by employment during that period. This can be explained by the relatively recent independence of the Republic of Cyprus and the fact that, typically, in a young economy there is plenty of room for improvements in production. Subsequently, in 1977-1994, employment growth, at 3.6%, outpaced the increase in productivity, which was 2.9%. From 1995 to the end of 2008 (before the economic crisis), productivity declined further to 1.5%, and employment averaged about 2.4%. This was also partly due to the inflow of a large number of immigrants, mostly low-skill workforce which, although it helped to contain labour costs, had a negative effect on productivity. In 2009, productivity fell against the backdrop of the economic crisis, reflecting its procyclicality, but a small recovery was seen in the following year.

Productivity and per capita GDP

As mentioned above, productivity is an important indicator for an economy, and a strong growth in productivity can help increase per

TABLE 10.3 Breakdown of per capita GDP, annual average of changes, 1996-2010
(%)

Per capita GDP	Hourly productivity	Hours per employee	Employment rate	Participation rate in labour force	Population age structure
1,7	1,3	-0,1	-0,2	0,1	0,6

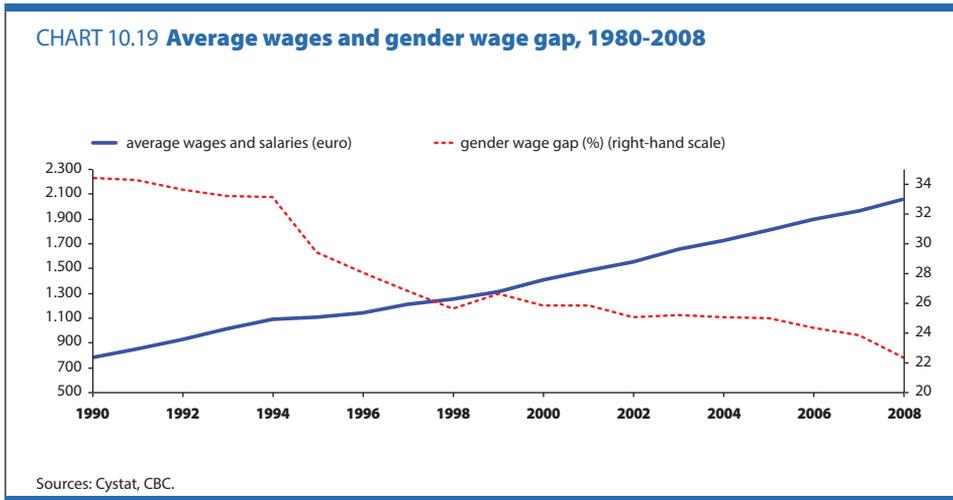
Sources: Cystat, CBC.

capita GDP and support the standard of living. The relation of productivity with per capita GDP is obvious from the identity below. In particular, GDP may be expressed as a function of the following factors: hourly productivity, hours worked per worker, the employment rate, the labour force participation rate and the age structure of population.

$$\begin{aligned}
 \text{GDP} = & \frac{\text{GDP}}{\text{Hours worked}} \times \frac{\text{Hours worked}}{\text{Employment}} \times \frac{\text{Employment}}{\text{Labour force}} \times \\
 & \frac{\text{Labour force}}{\text{Population of working age}} \times \frac{\text{Working age population}}{\text{Population}} \times \text{Population} \Rightarrow
 \end{aligned}$$

$$\text{Per capita GDP} = \text{Hourly productivity} \times \text{Hours worked per worker} \times \text{Employment rate} \times \text{Labour force participation rate} \times \text{Age structure of population}$$

The average increase in per capita GDP in Cyprus during the 1995-2009 period, which is calculated at about 1.7% (**Table 10.3**), was chiefly driven by hourly productivity, which had the largest contribution (1.4 percentage points). An additional important factor was the age structure



of population, as there were more people of working age. The remaining factors presented in the table had only marginal contributions.

10.7.2 Level of wages in Cyprus

The average wage in Cyprus rose by 7.5% during the 1980-2009 period, according to the nominal earnings index²¹. This index has followed a declining path over time, from 10.9% in 1980-1994 to 5.5% in 1995-2009. The largest wage increases during 1980-2009 were observed in financial organisations, insurance, real estate and professional businesses, as well as the government, with an average rise of 8.8% and 8.1%, respectively. On the other hand, lower increases of 6.6% and 6.9% were recorded in agriculture-livestock breeding and manufacturing, respectively. In line with the overall index, sectoral earnings indices have also been on a declining trend over time.

As regards the level of wages, the average wage almost tripled between 1990 and 2008. In particular, from €783 in 1990, it rose to €2,064 in 2008 (**Chart 10.19**). The average annual wage growth stood at 5.5%, with a stronger increase in the wages of women (6.2%, compared with 5.2% for men in the period under review). However, the wages of

21. Data on wages refer to October each year and cover weekly and monthly employees.

women still remain lower than those of men. More analytically, in 1990 women received 34% lower wages than men, while in 2008 the gap narrowed to 22%. Of course, the overall gender pay gap does not reflect potentially relevant different characteristics across genders, such as the level of education and the years of experience. In her study on Cyprus, Panayiotou (2006) showed that the total gender wage gap is more related to the level of occupational segregation, i.e. the fact that women tend to choose lower-paid jobs, perhaps for cultural reasons or in an effort to reconcile work and family. Furthermore, Christofides and Vrachimis (2007) found that the unexplained part of the wage gap has declined over time, which may suggest less discrimination against women.

In this regard, **Box 10.2**, p.441, drawing on Ghalanos (2012), provides an econometric analysis of the key determinants of the net income of workers in the Cypriot labour market.

A wage gap is also observed across private employees and civil servants. As mentioned above, wage increases in the public sector exceed the average increase in the economy as a whole. However, apart from larger wage increases, civil servants also enjoy higher wage levels, with the differential rising over time. In particular, the gap between compensation per employee (net wages plus any employer contribution) in the public and the private sector grew by 13 percentage points in 1995-2009 to stand at 57%. Admittedly, the comparison has not been adjusted for the factors that may affect the level of wages in the two employee categories. For instance, the private sector is expected to feature a higher incidence of part-time employment with lower earnings. Passiardes and Christofides (2002), using data from the Household Budget Survey 1990/91, conclude that, although there is a wage gap between the public and the private sector, part of it may be largely explained by the individual characteristics of employees, such as education. Depending on the method used, a percentage of 30-80% of the wage gap between the public and the private sector can be explained by individual characteristics.

Box 10.2 Key determinants of net income in Cyprus

In this box we perform a first estimation of an ordered probit model¹ with a set of key determinants affecting net income in Cyprus, using data from the Labour Force Survey (LFS) for the fourth quarter of 2010. The selection of this model derives from the ordered categorical structure of the dependent variable of workers' net monthly income, defined in the LFS as shown in **Table 1**, p.442.

The model seeks to evaluate the probability of a worker to be under one of those categories of net monthly income, depending on the level of education, work experience, gender and nationality. The ordered probit model takes the following form:

$$\begin{aligned}
 INCOME_i = & \beta_1 NO_EDUCATION_i + \beta_2 PRIMARY_i \\
 & + \beta_3 LOWER_SECONDARY_i + \\
 & \beta_4 TERTIARY_i + \beta_5 EXPERIENCE_i + \beta_6 EXPERIENCE_i^2 + \\
 & \beta_7 FEMALE_i + \beta_8 CYPRIOT_i + \varepsilon_i
 \end{aligned} \tag{1}$$

where, for worker i , the level of education is represented by the binary variables of $NO_EDUCATION_i$, $PRIMARY_i$, $LOWER_SECONDARY_i$, $HIGHER_SECONDARY_i$ and $TERTIARY_i$, with each pseudo-variable representing the highest level of educational attainment and the pseudo-variable $HIGHER_SECONDARY_i$ acting as the base group. Furthermore, work experience is defined as $EXPERIENCE_i = \max(AGE_i - YEARS_OF_EDUCATION_i - 6, 0)$, while the square of work experience $EXPERIENCE_i^2$ is incorporated so as to account for life-cycle effects. The binary variables of $FEMALE_i$ and $CYPRIOT_i$ define gender and nationality respectively. Finally, the error term ε_i is a sequence of independent and identically distributed random variables sampled from a standard normal distribution.

1. See Greene (2008) for technical details.

TABLE 1 **Categories of net monthly income**
(euro)

Category	Income range
1	550 or less
2	551-800
3	801-950
4	951-1.100
5	1.101-1.250
6	1.251-1.450
7	1.451-1.700
8	1.701-2.100
9	2.101-2.700
10	2.701+

Sources: Cystat, CBC.

The size of the filtered sample used for estimation corresponds to 3.338 observations, excluding the self-employed and unpaid assistants in family businesses, part-time workers and workers under temporary or fixed-term employment contracts. **Table 2**, p.443, reports the percentage distribution of observations per net monthly income category along with the respective percentages for the independent variables.

Accordingly, we turn to the maximum likelihood estimation of the above-specified ordered probit model, with the regression coefficients on all independent variables being statistically significant at the significance level of 0,01. In addition, the pseudo- R^2 value of the estimated model is 0,12, while the percentage of total observations of the dependent variable correctly predicted amounts to 25,8%.

Regarding the regression analysis of explanatory variables, **Table 3**, p.444, demonstrates the conditional response probabilities of observing a particular income category when a given pseudo-variable is equal to 1 (or to 0 for the pseudo-variables of $FEMALE_i$ and $CYPRIT_i$ in the context of examining the pseudo-variables $MALE_i$ and $FOREIGN_i$ respectively), while holding all other variables constant at their mean value.

TABLE 2 **Distribution of observations**
(%)

Income	Education					
	No education	Primary	Lower Secondary	Upper Secondary	Tertiary	
1	1,08	0,03	0,21	0,27	0,30	0,27
2	7,04	0,18	0,93	1,26	2,85	1,83
3	11,44	0,09	1,50	1,62	5,69	2,55
4	11,59	0,06	1,23	1,29	6,05	2,97
5	8,99	0,06	1,26	0,99	4,40	2,28
6	11,86	0,06	1,35	0,96	5,51	3,98
7	11,83	0,06	1,41	0,96	5,15	4,25
8	12,70	0,03	1,02	0,93	4,76	5,96
9	10,90	0,03	0,27	0,12	3,27	7,22
10	12,55	0,00	0,06	0,12	2,34	10,04
Total:	0,60	9,23	8,51	40,32	41,34	

Income	Experience (years)			Gender		Nationality		
	[0,19]	[20,39]	[40,62]	Female	Male	Cypriot	Foreign	
1	1,08	0,48	0,39	0,21	0,81	0,27	0,57	0,51
2	7,04	4,04	1,95	1,05	5,18	1,86	4,07	2,97
3	11,44	6,11	3,98	1,35	8,06	3,39	7,37	4,07
4	11,59	6,74	3,57	1,29	6,29	5,30	8,63	2,97
5	8,99	4,37	3,48	1,14	4,46	4,52	7,19	1,80
6	11,86	6,44	4,28	1,14	4,28	7,58	10,10	1,77
7	11,83	5,12	5,3	1,41	3,68	8,15	10,52	1,32
8	12,70	5,48	6,08	1,14	4,13	8,57	11,80	0,90
9	10,90	5,12	5,06	0,72	5,06	5,84	10,25	0,66
10	12,55	2,91	8,69	0,96	4,67	7,88	11,47	1,08
Total:	46,82	42,78	10,40	46,64	53,36	81,97	18,03	

Sources: Cystat, CBC.

Furthermore, **Table 4**, p.444, presents the marginal effects on probabilities from the change in one particular variable by one unit, while keeping all other variables fixed at their mean value. For the education pseudo-variables, changes correspond to the next level of educational attainment, while for the $EXPERIENCE_i$ and $EXPERIENCE_i^2$ variables, the change corresponds to the addition of one unit to the mean value.

Overall, the above results point to a positive empirical relationship between education and experience and the conditional probability of observing a high net income category. The same

TABLE 3 Conditional response probabilities
(%)

Income	Education				
	No education	Primary	Lower Secondary	Upper Secondary	Tertiary
1	2,33	0,84	0,71	0,18	0,02
2	15,56	8,49	7,62	3,07	0,63
3	22,77	16,86	15,87	9,01	2,92
4	19,26	17,85	17,39	12,74	5,84
5	12,00	13,07	13,06	11,49	6,78
6	12,00	15,12	15,45	16,10	12,03
7	8,06	11,95	12,53	15,75	15,26
8	5,13	9,08	9,78	15,07	19,42
9	2,20	4,76	5,29	10,31	18,44
10	0,70	1,99	2,31	6,28	18,66

Income	Gender		Nationality	
	Female	Male	Cypriot	Foreign
1	0,60	0,05	0,11	1,07
2	6,83	1,35	2,27	9,84
3	14,88	5,12	7,35	18,26
4	16,88	8,76	11,18	18,40
5	13,00	9,07	10,64	13,01
6	15,73	14,45	15,67	14,56
7	13,08	16,28	16,18	11,10
8	10,49	18,19	16,44	8,11
9	5,85	14,87	12,04	4,06
10	2,67	11,86	8,12	1,60

Sources: Cystat, CBC.

TABLE 4 Marginal effects on probabilities
(%)

Income	Education					
	No education	Primary	Lower Secondary	Upper Secondary	Experience	Experience ²
1	-1,49	-0,13	-0,53	-0,16	-0,05	0,00
2	-7,07	-0,87	-4,55	-2,44	-0,67	0,01
3	-5,91	-0,99	-6,86	-6,09	-1,37	0,02
4	-1,41	-0,46	-4,65	-6,90	-1,27	0,02
5	1,07	-0,01	-1,57	-4,71	-0,69	0,01
6	3,12	0,33	0,65	-4,07	-0,34	0,00
7	3,89	0,58	3,22	-0,49	0,37	-0,01
8	3,95	0,70	5,29	4,35	1,13	-0,02
9	2,56	0,53	5,02	8,13	1,41	-0,02
10	1,29	0,32	3,97	12,38	1,48	-0,02

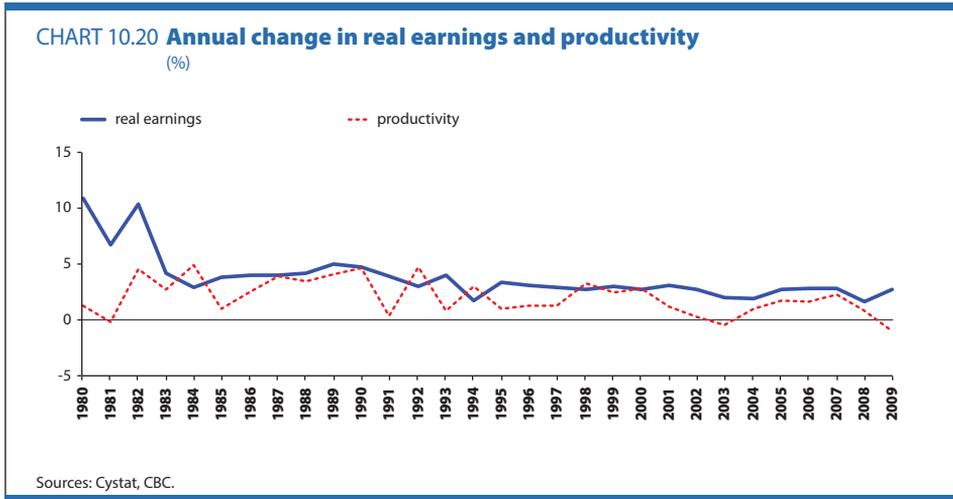
Sources: Cystat, CBC.

result also applies for male versus female workers, as well as with Cypriot versus non-Cypriot workers. Moreover, a concave relationship is observed as regards the marginal effects on the probabilities of observing a particular net income category that result from a unit change in quadratic experience, suggesting that the conditional probability of observing a higher net income category increases at a decreasing rate. These findings are consistent with the predictions of economic theory, while at the same time being broadly in line with results from empirical studies of the labour markets in other countries.

The higher wages of civil servants compared with private employees are also confirmed by Passiardes (2011). The article finds that wages in the public sector are 43% higher than the respective wages in the private sector, with the percentage falling to 27% when age and education differences are taken into account. The largest gaps are observed for teachers and unskilled blue-collar workers. The wage advantages of civil servants over private employees explain the focus of recent fiscal consolidation measures on the wages of civil servants.

Given the wage gap between the public and private sectors, increased competition is observed in order to secure a job in public service. For instance, in 2006, 6,568 applications were submitted for participation in the written examination, which is a prerequisite for entry into the public service, while in 2009 the number of applicants increased by 33%. Furthermore, in 2010 the number of applications per job was 23.2, compared with 13.9 in 2007.

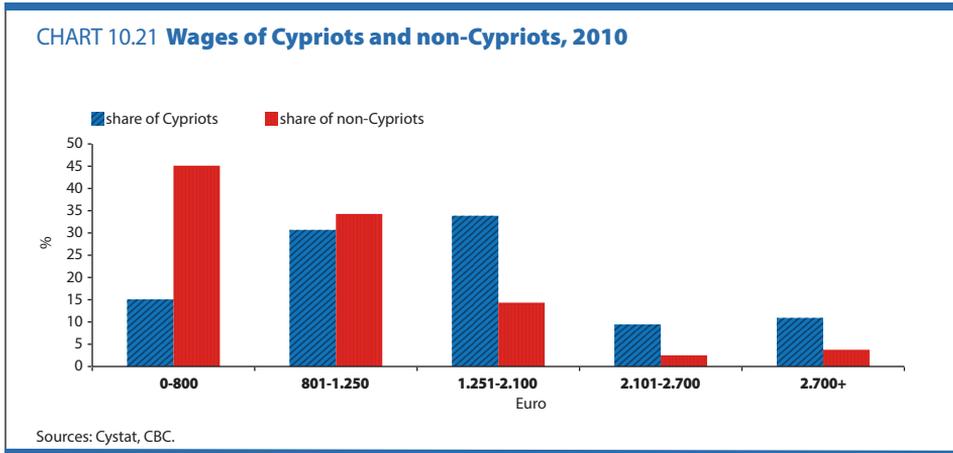
Wages in Cyprus, compared with wages in the EU and the euro area, are relatively high, as is evident from the ratio of compensation per employee to per capita GDP. In particular, the ratio was 88.7% in Cyprus in 2010, while in the EU and the euro area it was 66.8% and 77.1%, respectively. Compared with euro area countries, Cyprus ranks third, behind Luxembourg and Slovakia.



Turning to a comparison between changes in productivity and real earnings, as defined on the basis of the real earnings index, productivity growth has decelerated over time (**Chart 10.20**). During the 1980-2009 period, the average productivity growth was 2%, while the average increase in real earnings was 3.8%. This has had a negative impact on the country's competitiveness as it means that, in real terms, one additional unit of output is more costly to produce.

An interesting question of relevance to the Cyprus economy is whether the immigration has affected wages in Cyprus. In theory, it would be expected that the inflow of foreign workers should help contain labour costs in industries where there is demand for such workers. The study of Michael et al. (2006) concludes that the impact of foreign workers on the wages of Cypriot employees was slightly negative in 1991-2003. Furthermore, it was found that the impact of foreign workers on wages was inversely proportional to the education level of Cypriot workers, while there was a negative impact on the wages of unskilled Cypriot workers.

Regarding the wage levels of Cypriots and non-Cypriots, as would be expected, Cypriots enjoy higher wages than non-Cypriots (**Chart 10.21**, p.447). This is so because foreign workers are usually employed in unskilled and, thus, lower-paid jobs, such as domestic staff. Around 80% of non-



Cypriot employees received wages up to the amount of €1,250 in 2010, while the respective share for Cypriot employees was 46%. Furthermore, Cypriots with a wage of over €1,250 are 54%, against around 20% of non-Cypriots.

10.7.3 Unit labour cost²²

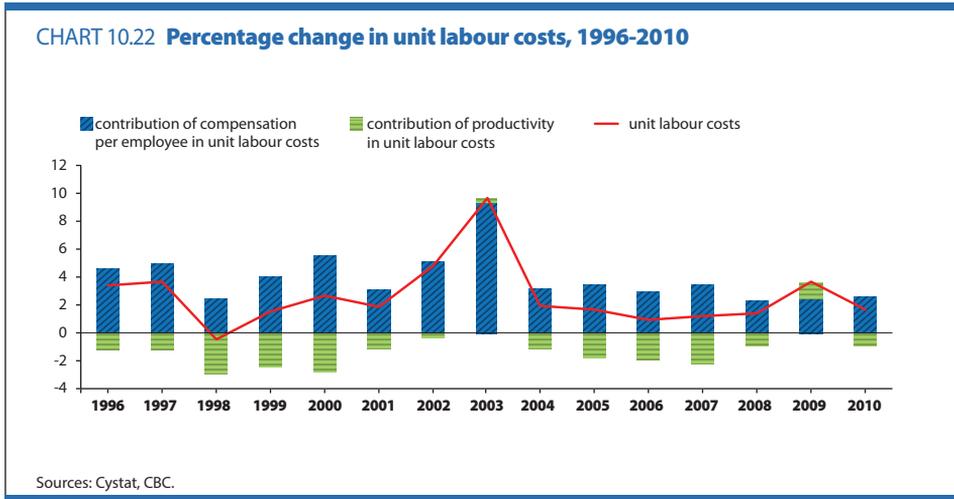
The wage level and productivity are key determinants of the competitiveness of a country. A measure combining the two is the ratio of compensation per employee to productivity, i.e. the unit labour cost.

The average increase of unit labour costs in Cyprus in the past 15 years reached 2.6%, compared with 1.5% in the euro area in the same period²³. As can be seen in **Chart 10.22** (p.448), unit labour cost growth peaked in 2003, as compensation per employee rose strongly that year, as civil servants received retroactive wage increases for the 2001-2003 period, while productivity growth was close to zero, reflecting the weak economic environment.

10.8 Competitiveness: challenges and prospects

The labour force in Cyprus, also due to the economy's structure focusing on services, is the most important factor for economic activity.

22. Unit labour costs are also discussed in **Chapter 2** (p.39).



Moreover, the focus of the Cyprus economy on specialised services (e.g. accounting and legal services) makes it highly demanding on the workforce, which in turn can respond thanks to the adequate availability of highly qualified staff in Cyprus, even above the EU average. On the other hand, the needs for unskilled workers in the few years preceding the economic crisis were met by immigrant labour.

With the accession of Cyprus to the EU and the euro area, the challenges for the labour market of Cyprus have intensified. Given that Cyprus is now part of a monetary union, and an adjustment is only possible through internal devaluation, the notion of competitiveness becomes even more important. Two ways that a country can use to improve its competitiveness are higher productivity and wage moderation. Using the former, a country can increase its output with the same amount of resources. Regarding wage moderation, this presupposes that wage increases are in line with the improvement in productivity, so as to ensure that the additional output of a country will not cost more.

Another challenge that many countries face, including Cyprus, is the reinclusion of the unemployed into employment. Due to the crisis, the number of the unemployed has increased substantially, and the number of the long-term unemployed is also expected to continue rising. On the one hand, it is important to ensure that the unemployed are not discouraged and

23. See also **Chapter 2** (p.39) for a comparison of unit labour costs in Cyprus and the euro area.

withdraw from the labour force. On the other hand, protracted unemployment may lead to a depreciation of human capital. In addition, the needs of the economy and demand in the labour market may change, so that the skills of the unemployed may no longer match market demand. A provision should be made for such cases and action should be taken, such as retraining the unemployed for jobs that are more in demand, in order to reinclude them into the labour market as smoothly as possible.

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ABBREVIATIONS IN CHAPTER 11

- ARIMA: Autoregressive Integrated Moving Average
AWM: Area-Wide Model
CBC: Central Bank of Cyprus
CPI: Consumer Price Index
CYMCM: Cyprus Multi-Country Model
CYSTAT: Statistical Service of Cyprus
DSGE: Dynamic Stochastic General Equilibrium Model
EAC: Electricity Authority of Cyprus
ECB: European Central Bank
ECM: Error Correction Mechanism
ESCB: European System of Central Banks
EU: European Union
HICP: Harmonised Index of Consumer Prices
IMF: International Monetary Fund
MCM: Multi-Country Model
NAIRU: Non-Accelerating Inflation Rate of Unemployment
NAWM: New Area-Wide Model
NCB: National Central Banks
OLS: Ordinary Least Squares
RMSE: Root Mean Squared Error
RW: Random Walk
SAR: Seasonal Autoregressive Model
SVAR: Structural Vector Autoregressive Model
VAR: Vector Autoregressive Model
VAT: Value Added Tax
VECM: Vector Error Correction Mechanism

11. Econometric models and macroeconomic forecasting tools

Lena Cleanthous-Petoussi, Niki Papadopoulou*

11.1 Introduction

The availability of forecasts is a key factor in assessing the future economic situation of a country. Establishing a baseline forecast scenario, accompanied by alternative scenarios, helps to determine the position of the economy in the business cycle and its medium-term economic prospects, as well as to identify any major risks that may arise.

The Eurosystem macroeconomic staff projections, which are prepared jointly by experts from both the European Central Bank (ECB) and the national central banks (NCBs) of the euro area, are very important in the context of the second pillar of the ECB's Governing Council monetary policy strategy, as defined in Article 2 of the Treaty on European Union. The primary objective of the ECB's monetary policy is to maintain price stability over the medium-term, which implies the need for a monetary policy oriented towards a medium-term horizon, given the considerable lags in the transmission of monetary policy to the real economy. On the basis of these projections for the medium-term outlook, economic and monetary analysis is conducted before any monetary policy decision, with a view to ensuring stable inflation and anchoring inflation

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expectations, thereby strengthening economic stability over the medium-term.

Furthermore, with the entry of Cyprus into the euro area, the Central Bank of Cyprus (CBC) participates in the Working Group on Forecasting and is involved in the Eurosystem macroeconomic staff projections exercises, which are conducted twice a year and published every June and December. The objective is to provide short- and medium-term economic estimates, both for the euro area as a whole and for individual member countries. Among other variables, these projections refer to the main components of Gross Domestic Product (GDP), including fiscal aggregates prepared in collaboration with the Working Group on Public Finance. They are based on a set of common assumptions for all the countries of the euro area, enabling an analysis of the euro area economy as a whole (Central Bank of Cyprus, 2008c).

The use of econometric models and forecasting tools in the projections' process was therefore deemed necessary in order to take advantage of the accuracy and discipline afforded by the combination of statistical analysis and economic theory in econometric models. More specifically, the statistical tools are used to extract information from various leading economic indicators so as to interpret the influence of the most recent economic variables on the economy. Econometric models, on the other hand, which are most often based on economic theory, try to associate macroeconomic variables to each other in order to predict them, based always on certain assumptions. The procedures followed for the macroeconomic projections exercises in the euro area are described in more detail in a document published by the ECB in 2001¹. It is worth noting that the final projections are based on the combination of the results of the conventional econometric models in conjunction with the technocratic view of experts economists.

This chapter reviews the econometric models and statistical tools used by the CBC for the projections exercises. First, these techniques and econometric models try to extract the maximum possible information from the historical behaviour of macroeconomic variables

1. European Central Bank (2001).

(such as the components of aggregate demand and their deflators, employment, wages and labour costs, labour force, unemployment, the Harmonised Index of Consumer Prices (HICP) and its main components) and, as a second step, to predict their future paths.

The first basic use of econometric models and tools is for preparing projections based on the mechanisms and characteristics of the economy derived, as mentioned above, from the historical behaviour of macroeconomic variables. When projections are performed as part of the Eurosystem's broader macroeconomic exercises, common assumptions are adopted, concerning e.g. expected output growth of the rest of the world excluding euro area, the euro exchange rate vis-à-vis major currencies, short- and long-term interest rates, the international oil price level and so on². These assumptions are developed and discussed in the context of various committees and working groups that all member countries of the euro area participate to. Particular emphasis is given to the adoption of common assumptions on trade consistency data, the economic environment and inflation. Moreover, the econometric models also enable to identify the key determinants of the main macroeconomic aggregates in order to explain the channels through which the various shocks are transmitted to the economy. For this purpose, the quarterly macroeconometric model CYMCM (Cyprus Multi-Country Model) is used, which was developed following our participation in the Working Group on Econometric Modelling and provides a general framework for the analysis of the entire Cyprus economy. Furthermore, there are other models of a more limited scope, known as partial equilibrium models, which analyse in greater depth specific aspects of the economy.

The second basic use of the models is for scenario analysis. Requests for model-based simulations usually come from the CBC's senior management or from various working groups and committees of the Eurosystem and the European System of Central Banks (ESCB) or even from other national and international institutions, such as the International Monetary Fund (IMF).

2. It is noted that common assumptions are not used for tax variables.

The third use of models is for counterfactual analysis, where actual economic developments and government policies are compared to alternative paths that could have occurred. This analysis attempts to shed light on the costs and benefits of the policies pursued.

Given the fact that models are simplifications of reality and are subject to a certain degree of uncertainty that changes over time, it is difficult to ensure that they cover all aspects relevant to the preparation of projections. For this reason, the information provided by the models has to be complemented by experts' technocratic judgement, based on experiences from earlier projections, historical trends in projection errors and other important events not captured by the assumptions underlying the estimation of the models (e.g. changes in taxation over the projection horizon). Although these views cannot be expressed by mathematical relations, they should be consistent with the analytical framework and with all the available information.

Furthermore, there is no single modelling philosophy, because the various available tools and models each have certain advantages regarding different aspects of analysis. As a result, a combination of tools and econometric models is followed so as to maximise benefits, in terms of their ability to forecast and explain macroeconomic variables. Consequently, the baseline projection can often be derived from a combination of different results from different models³.

Sections 11.2 (p.455) and **11.3** (p.464) below discuss the role of key economic indicators in short-term macroeconomic forecasting. More explicitly **Section 11.2** (p.455) presents simplified econometric models for GDP forecasting, while **Section 11.3** (p.464) presents a similar model used to forecast inflation. **Sections 11.4** (p.466), **11.5** (p.478) and **11.6** (p.489) examine general equilibrium macroeconometric models developed by either the CBC or the ECB for projection purposes. It first presents the Vector Autoregressive Model (VAR), then the macroeconometric CYMCM model and finally the Dynamic Stochastic General Equilibrium (DSGE) models. **Section 11.7** (p.491) analyses the macroeconomic projections and

3. See Timmermann (2006) for forecast combinations.

projection errors. Finally, **Section 11.8** (p.502) summarises the conclusions and policy implications.

11.2 Key leading economic indicators of GDP

In the preparation of short- and long-term macroeconomic projections for the Cyprus economy, key leading economic indicators are monitored and analysed, which are published regularly (usually at monthly frequency) and are strongly correlated with the macroeconomic aggregates to be projected, data on which are not published on a regular basis. Specifically, the key leading economic indicators are the ones where the turning points of their paths occur before those of the main variables in the business cycle and their paths are indicative of the direction or the trend that these variables will follow. This is due to the fact that the statistics of these indicators become available before those of the main macroeconomic aggregates of economic activity (with a lead of one to twelve months). Consequently, these indicators provide important signals about the main future path of the main variables of the economy and help to predict them as accurately as possible.

This section discusses simplified methods used for forecasting GDP in the short-run, based on such leading economic indicators⁴.

In general, key leading economic indicators are utilised by the CBC for forecasting economic activity based on two different methods. The first method involves the direct forecasting of real GDP, based on a wide range of economic indicators referring to different aspects of economic activity. The second method refers to real GDP forecasting via its components (see **Box 11.1**, p.456), which is based on one or more indicators in order to forecast each of the expenditure components of GDP separately. Subsequently, these forecasts are aggregated, giving a single forecast for total real GDP. The two methods are described in detail below, using as an example GDP and two of its components: private consumption and exports.

4. It is worth noting that apart from the use of simplified methods for the analysis of macroeconomic variables such as real GDP growth and its components (exports, private consumption, etc.), a thorough statistical test of variables is also implemented, while at the same time other common and applied econometric models based on economic theory are employed, which are robust to all of the misspecification tests for a better and more accurate forecast of the dependent variables.

Box 11.1 Explaining the GDP accounting identity¹

According to economic theory, GDP is the total value in current prices of final goods and services produced in a country during a given year. GDP is recorded either from the expenditure side or the income side. Based on the expenditure side, GDP is recorded based on the expenditure for the purchase of goods produced, while the income side is based on the factors of production market in the form of income to the owners of factors as compensation for their participation in the production process. The factors of production are raw materials, labour and real capital. As the value of the product is equal to the compensation of the factors of production plus the profit (or loss), the two definitions of the GDP represent the same economic aggregate, i.e. by definition, expenditure is equal to income.

Furthermore, GDP can also be measured from the production side, given that, according to economic theory, GDP is the result of the production process, whereby the factors of production are transformed into domestic product.

Under the expenditure approach, which is the one followed in the analysis of **Section 11.2.1** (p.457), GDP is equal to the sum of four expenditure components:

- (1) Private Consumption (C) - the total household expenditure for the purchase of consumer durable and non-durable goods;
- (2) Investment (I) - total business expenditure for the purchase of capital equipment;
- (3) Government consumption (G) - government expenditure (including expenditure for the purchase of consumer goods and services by the government);
- (4) Net Exports (NX) - exports that are part of the production of the country minus imports of goods and services, which are part of the production of other foreign countries.

1. Main source: Archontopoulos (2007).

Therefore, the GDP identity under the expenditure approach is:

$$Y = C + I + G + NX$$

where Y is gross domestic product, C is private consumption, I is total investment, G is government expenditure and NX are net exports.

11.2.1 GDP forecasting using a dynamic model

In order to predict the GDP path in the short-run, the main information used is based on indicators on tourism (tourist arrivals and tourism receipts) which are closely related to the growth prospects of the tourists' home countries, cement sales which is an important indicator of the performance of the construction sector, and the economic sentiment indicator which is published before the end of each month and is therefore a useful indicator of the course of the economy, given its high correlation with GDP (**Chart 11.1**, p.458). Similar indicators which are published along with the economic sentiment indicator, such as the consumer confidence index, are also a useful source of information for the overall path of the economy.

For estimating and forecasting the dependent variable of GDP, a dynamic model⁵ is used, which estimates a linear regression with the method of ordinary least squares (OLS) in first differences in logarithmic form⁶ for the period between the first quarter 2004 and the fourth quarter of 2010⁷. Cement sales and the economic sentiment indicator are used as independent variables, while the autoregressive

5. Due to the complexity of the multivariate dynamic models used by the CBC, the examples of models analysed below have been significantly simplified to facilitate understanding of the use of economic indicators in macroeconomic forecasting. Nevertheless, the models illustrated here pass all of the misspecification tests, although one should take into consideration the small sample size.

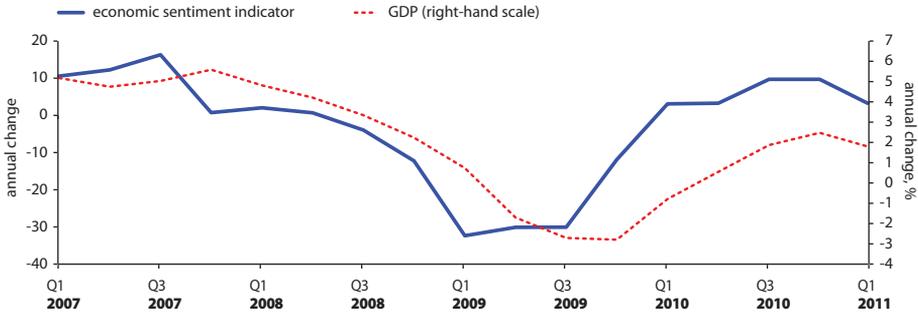
6. The first order difference of log real GDP is defined as the difference between the current value of log real GDP in period t and the current value of log real GDP in period $t-4$:

$$\Delta \log(AET)_t = \log(AET)_t - \log(AET)_{t-4}.$$

The annual instead of quarterly difference was chosen in order to avoid any seasonality effects across quarters.

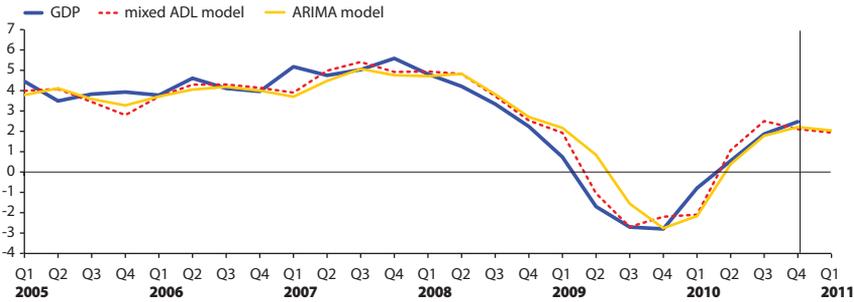
7. It is noted that these data may be revised by the Statistical Service of Cyprus (CYSTAT) and, therefore, the following results may be outdated at the time of this book's publication.

CHART 11.1 Economic sentiment indicator and GDP



Source: CBC.

CHART 11.2 Estimated model's fitted values and nowcasting of real GDP
(annual change, %)



Source: CBC.

integrated moving average model (ARIMA) (1,2) has been adopted for estimating the variance of the random error⁸ (Table 11.1, p.459). Furthermore, to correct for seasonality, given also the fact that GDP used is not seasonally adjusted, a seasonally autoregressive model (SAR) has been estimated with a lag of four quarters. The choice of the optimal model is based on diagnostic tests and on the Akaike and Schwarz information criteria.

8. The identification and choice of this specific model was based on the Box and Jenkins (1976) method. This method involves three steps: the identification, the estimation and the diagnostic checking of econometric models in order to select the most appropriate ARIMA statistical model which will then represent in a satisfactory way the stochastic process that generated the data, and will contribute to the minimisation of the error ϵ_t , which follows a white noise process as Table 11.1 (p.459) shows.

TABLE 11.1 Econometric model for the estimation of real GDP

Dependent variable: real GDP

Sample period: 2004(Q1)-2010(Q4)

Explanatory variables: economic sentiment indicator (ESI), sales of cement (cement)

$$\text{Model: } \Delta \log (GDP)_t = 0,03 + 0,04 \Delta \log (\text{cement})_{t-1} + 0,06 \Delta \log (ESI)_{t-2} + 0,89 AR(1) - 0,50 SAR(4) + 0,45 MA(2) + \varepsilon_t$$

(0,012) (0,018)
(0,019)
(0,133)
(0,240)
(0,233)

Source: CBC.

Note: Standard errors are shown in parentheses.

The goodness of fit of the aforementioned GDP model, as indicated by the fitted values for the period between the first quarter of 2004 and the fourth quarter of 2010 in **Chart 11.2** (p.458), suggests that the parameters of the independent variables are statistically significant and explain much of GDP variability over time. At this stage, the goodness of fit of the model is checked by statistically testing the significance of the parameters and the behaviour of residuals.

To test the forecasting ability of the model, a one-step ahead out-of-sample forecasting⁹ is conducted for the first quarter of 2011. The estimate for the annual percentage change of GDP comes to 1,9% for the first quarter of 2011, with the actual value turning out at 1,7%.

For further tests of the goodness of fit of the model, the above results are compared with the results of a simple linear statistical model such as an ARIMA (1,2) with autoregressed seasonal adjustment. It seems that the temporal fluctuations of GDP are better represented by the mixed model rather than by the simple linear statistical model, whose out-of-sample forecast for the annual real GDP growth in the first quarter of 2011 was 2%. Another criterion for assessing the performance and accuracy of the models is the Root Mean Squared Error (RMSE) criterion¹⁰ which measures the forecasting error and detects the quality of forecasts, comparing them with those estimated by a moving average.

9. The out-of-sample forecast refers to the division of the sample into two subsets so that one of them is used to estimate the model and the other one is used for the out-of-sample forecast of the dependent variable.

10. The root mean squared error is defined as follows: $RMSE(n) = \sqrt{\frac{1}{n} \sum_{i=1}^n [X_{i(pred)} - X_{i(act)}]^2}$.

It should be noted that as the RMSE decreases and gets closer to zero, the forecasting ability and accuracy of this particular model improves. Comparing the results of both models, the model which includes economic indicators as explanatory variables, with a RMSE equal to 0,006 appears to present the least divergences from the actual GDP values compared with the simpler model, which scores a higher RMSE of about 0,009.

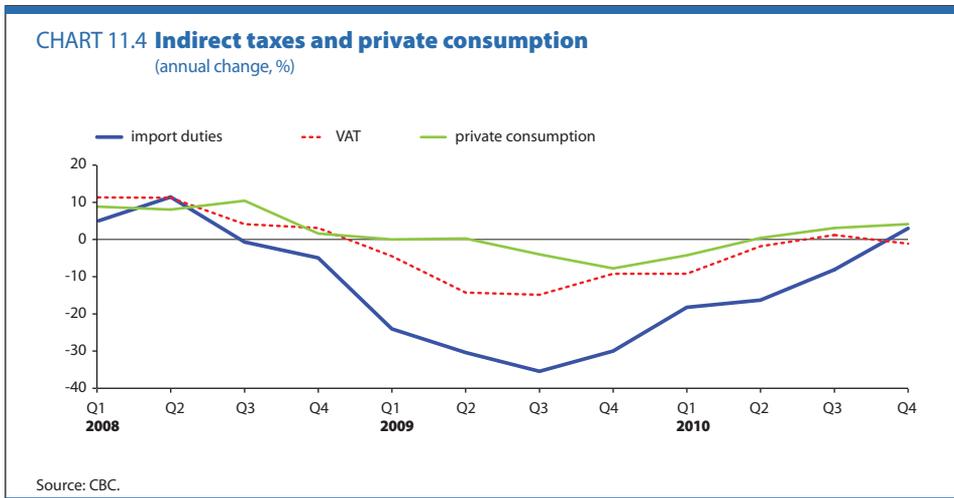
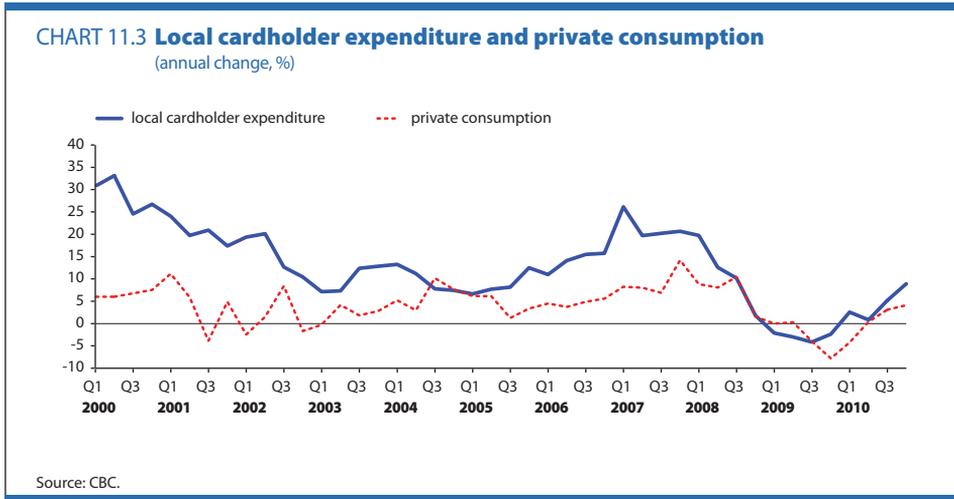
11.2.2 Real GDP forecasting via its components

Private consumption

With respect to the evolution of the first GDP component which is private consumption, a useful indicator can be consumer loans to households. In addition, credit cards expenditures, Value Added Tax (VAT) receipts and import duties provide direct insights into private consumption due to their high correlation with this variable and their high timeliness of this monthly data being released at the end of each month. These indicators can also be used in the estimation of nowcasting models, thus giving a fairly accurate prediction for the expected path of private consumption in the very near future. Other useful indicators of the path of private consumption are the consumer confidence indicator, registrations of motor vehicles, retail trade sales (volumes and values), as well as imports of consumer goods for domestic consumption.

Additionally, the accuracy of forecasting can be further enhanced by using statistical methods for deflating the data and by seasonal and working day adjustments (**Charts 11.3** (p.461), **11.4** (p.461) and **11.5** (p.462)).

As shown in **Table 11.2** (p.463), the estimated correlation between private consumption and credit cards for the period between the fourth quarter of 2002 and the fourth quarter of 2010 is quite high



and significant^{11,12}, while the consumer confidence indicator is also statistically significant. At the same time, the stochastic component of private consumption is very well described by an autoregressive integrated moving average (ARIMA) model. Based on this model, the out-of-sample forecast of the annual change of real private consumption in the first quarter of 2011 is 2,4% and is fully consistent with the respective actual annual change. In this case the forecasting error is zero.

11. During periods of economic recession, the relationship of private consumption and credit cards may be negative given that most consumers turn to credit cards in order to purchase goods, due to lack of cash.
12. See footnote 7, p.457.

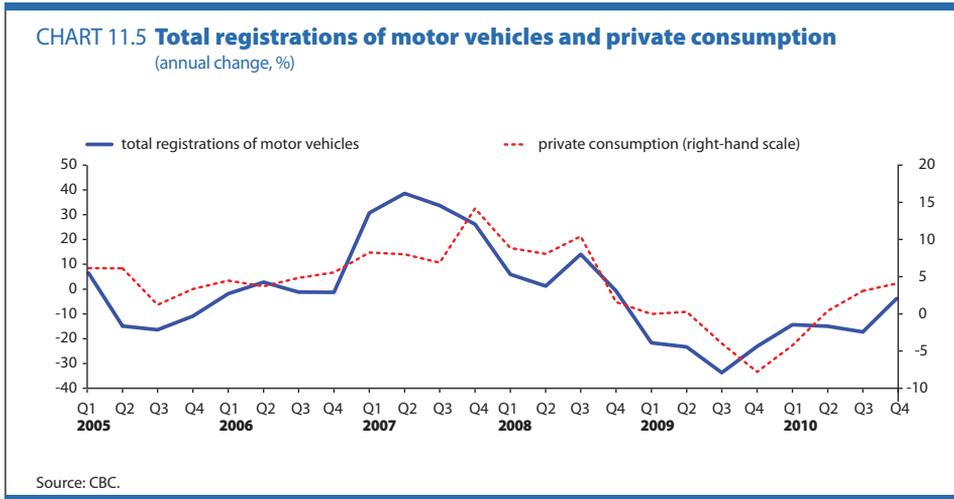


TABLE 11.2 Econometric model for the estimation of real private consumption

Dependent variable: real private consumption

Sample period: 2002(Q4)-2010(Q4)

Explanatory variables: local cardholder expenditure (credit_cards), economic sentiment indicator for consumption (ESIconsum)

Model: $\Delta \log (consumption)_t = -0,32 + 0,38 \Delta \log (credit_cards)_t + 0,14 \Delta \log (credit_cards)_{t-1} + 0,30 \Delta \log (ESIconsum)_t + 0,43 AR(1) - 0,90 MA(2) + \epsilon_t$

(0,109) (0,041) (0,029) (0,107) (0,016) (0,059)

Source: CBC.
Note: Standard errors are shown in parentheses.

Exports

With respect to forecasting exports, a useful indicator is the economic growth of the main trading partners of Cyprus, such as the euro area. Based on the results of the model in **Table 11.3** (p.463)¹³, it seems that real GDP volatility in the euro area can largely explain the volatility of real exports in Cyprus. Meanwhile, the service confidence indicator appears to significantly affect developments in real exports, as an increase of one unit of this indicator is expected to lead to an increase of 1% in domestic exports¹⁴. Using actual data for the estimation of the model up to the fourth quarter of 2010 and based on the out-of-sample

13. See footnote 7, p.457.

14. Due to the existence of negative signs in the time series of the confidence indicator for services, its logarithmic transformation is not possible. Therefore, the relationship of the dependent variable with the indicator is exponential, meaning $e^{0,002}$.

11.3 Forecasting inflation

The forecast for inflation, based on the Consumer Price Index (CPI), is carried out in the same manner as described above for the GDP. In other words, the CPI, which measures the average percentage change in the prices of a given basket of goods and services consumed by households in Cyprus, is examined, analysed and projected as a whole through forecasting models based on simplified methods, such as that of the main economic indicators, as well as more specialised ones based on economic theory in the literature (e.g. through vector autoregressive models-VAR), as analysed in the following section.

Moreover, inflation forecasting can also be carried out through forecasting models of the main components of CPI, i.e. domestic products, oil products, imports and services. This approach to inflation forecasting incorporates a wider range of information in comparison with the overall CPI forecasting, therefore can lead to more accurate forecasts regarding those CPI components. Thereafter, the forecast of CPI is evaluated based on the weight of each CPI component in the overall CPI consumption basket.

As in the case of GDP, inflation forecasts are consolidated into a single forecast, based on historical forecast errors, as well as the CBC's expert judgement, which refers to other factors that cannot be incorporated in the various models.

Fulfilling an obligation arising from euro area membership, every month the Statistical Service of Cyprus (CYSTAT) also compiles the HICP, which is calculated using a common approach and definition for all the member countries of the euro area, but with country-specific weights depending on the composition of the national consumer basket. The HICP is designed to provide a comparable measure of inflation across the member countries of the euro area, which is essential for the proper conduct of the single monetary policy by the ECB. The CBC examines and thoroughly analyses the path of both indices, although

since 2008 the focus has been on the HICP for comparability purposes and for the purposes of the Eurosystem's common projections, which are based on the harmonised index.

Following our participation in the Working Group of Forecasting of the Monetary Policy Committee of the ECB, the CBC Economic Research Department is involved in the preparation of Eurosystem projections regarding the main macroeconomic aggregates, including inflation. More specifically, inflation forecasts are carried out four times a year, twice within the regular Eurosystem staff macroeconomic projection exercise and twice in the quarters in between those projections. The projections of the CBC include monthly estimates for the HICP over a horizon of about one year ahead, broken down into the sub-indices for services, processed food, non-processed food, energy and non-energy industrial products.

More specifically, the HICP projection is made at a three-digit analysis, meaning there are monthly HICP projections for all subcategories of the five aforementioned HICP categories, using various econometric models such as Ordinary Least Squares (OLS) models, as well as the technocratic view of CBC experts. Then, based on the chain linking method, projections for the five HICP categories are calculated, from which the overall HICP is derived, once again using the chain linking method. At the same time, the effects of net indirect taxation and administered prices on the HICP are also calculated.

The CBC carries out inflation forecasts on a quarterly basis with a forecasting horizon of roughly one year, based on the latest available official actual data provided by the Statistical Service of Cyprus as well as by Eurostat. It should be mentioned that the various assumptions used for the inflation forecast are fully consistent with those employed for the parallel conduct of the area-wide Eurosystem macroeconomic projections.

As an example of the method followed by the CBC for the HICP forecast, **Box 11.2** (p.467) analyses the results of the three different

methodologies which the CBC employed for carrying out its basic projection in June 2010 for the energy subcomponent. This inflation component has always been the most volatile, mainly due to fluctuations in the international oil price, the exchange rate as well as the various domestic tax rates and other levies.

It should be noted that at the time when the forecasts were being produced in June 2010, economic data were available for the period up to April 2010. Therefore, the first month of projection for the subcategories of energy and thus for the whole category was May 2010 and the last month of projection was June 2011. The common information employed were the Eurosystem's assumptions (concerning the monthly international price of oil as well as the dollar/euro exchange rate), information about new taxes and other charges on energy levied by domestic entities, as well as the available actual data which provide evidence of the expected future path of energy subcomponents. More specifically, in terms of taxation, a 2% increase has been imposed by the Electricity Authority of Cyprus (EAC) on the basic tariffs, which were adopted in January 2010 for three consecutive years, while the EAC further increased the electricity price by 1,9% in May 2010, as greenhouse gas emissions exceeded those permitted by European Union regulations. Moreover, the government announced that a 9% excise tax would be imposed on liquid fuel prices, effective from June 2010 and for a period of one year.

11.4 Vector Autoregressive Model

This section provides an overview of standard vector autoregressive models (VAR). VAR models are dynamic systems of equations that examine the inter-relationships between economic variables using minimal assumptions about the underlying structure of the economy. Their aim is to derive a good statistical representation of past interactions between the variables.

Box 11.2 **Forecasting energy inflation in the context of CBC's June 2010 projection exercise**

Methodology 1: Three-digit analysis method - bottom-up approach

The three-digit analysis method with a bottom-up approach makes use of three parameters:

- (i) all existing domestic information (including all available old and new information, the trend of historical data, the base effects and the short-term and long-term averages of available historical data and data patterns);
- (ii) the Eurosystem's common assumptions (monthly forecast of the international oil prices and the exchange rate);
- (iii) the technocratic view of the CBC's experts.

Table 1 (p.468) reports the results (real annual growth rates and forecasts), of this methodology for the energy subcategories and the aggregate component. The forecast period in this case runs from May 2010 to June 2011.

The two major subcategories that drive energy price developments due to their importance and their volatility are fuels and lubricants, and electricity. In the table we can observe that energy prices exhibit high growth rates in the initial months of the forecast and more moderate rates thereafter, due to the weakening of the shock to the economy (from international oil prices, exchange rates, taxes and other charges in the domestic economy) and/or due to base effects.

Methodology 2: Ordinary Least Squares model

Based on the Eurosystem's common assumptions (monthly forecasts of

TABLE 1 Three digit analysis methodology
(annual change, %)

Period	Electricity (weight: 29,88)	Gas (weight: 5,53)	Liquid fuels (weight: 5,91)	Solid fuels (weight: 1,94)	Fuels & lubricants (weight: 62,50)	Energy (weight: 105,75)
Dec. 2009	-8,20	14,21	-3,04	2,45	12,11	5,30
Jan. 2010	6,98	27,22	16,60	1,89	19,20	16,03
Feb. 2010	16,21	32,68	15,77	0,20	16,49	17,08
Mar. 2010	24,42	29,92	23,67	2,23	21,29	22,35
Apr. 2010	27,74	31,07	25,59	4,26	20,77	22,72
May 2010	26,00	30,00	26,00	4,50	19,50	21,26
Jun. 2010	20,00	30,50	26,00	4,50	26,20	23,68
Jul. 2010	21,00	18,50	26,00	4,00	25,70	23,07
Aug. 2010	18,00	19,50	26,00	5,00	21,20	19,93
Sep. 2010	20,00	17,00	15,50	2,00	21,20	19,72
Oct. 2010	18,50	16,00	14,00	2,00	21,20	19,32
Nov. 2010	17,00	16,00	18,00	2,00	19,20	18,07
Dec. 2010	17,00	13,00	12,00	2,00	19,70	17,84
Jan. 2011	18,00	12,50	5,00	1,50	17,70	16,53
Feb. 2011	17,00	6,00	5,00	2,50	18,20	16,17
Mar. 2011	14,50	9,00	5,00	2,00	17,20	15,03
Apr. 2011	12,00	8,00	3,50	2,00	15,20	12,97
May 2011	10,50	7,00	3,50	2,00	15,70	12,85
Jun. 2011	11,00	6,50	3,50	2,00	13,70	11,76

Sources: Eurostat, CBC.

the international oil prices and the exchange rates), a simple forecasting model (OLS) is estimated, using the price of energy as the dependent variable and as independent variables the time lags of the dependent variable of energy, dummies, and the international price of oil¹ in euro. It is noted that all variables in this model are expressed in logarithmic form and in first differences to obtain stationary time series, and changes in the variables are analysed in terms of annual rates of change. This model is estimated quarterly and the parameter effects change in the light of new data.

1. This price is calculated based on the above-mentioned assumptions.

The energy inflation forecasting model in June 2010 was as follows:

$$\begin{aligned} \Delta \log(\text{energy})_t = & 0,01 + 0,03\Delta \log(\text{oileu})_t + 0,06\Delta \log(\text{oileu})_{t-1} \\ & \quad (0,003) \quad (0,018) \quad (0,022) \\ & - 0,02\Delta \log(\text{oileu})_{t-3} + 0,91\Delta \log(\text{energy})_{t-1} \\ & \quad (0,015) \quad (0,074) \\ & - 0,21\Delta \log(\text{energy})_{t-2} + 0,12d2002_{JUL} \\ & \quad (0,066) \quad (0,029) \\ & + 0,07d2003_{MAR} - 0,04d2009 + \varepsilon_t \\ & \quad (0,018) \quad (0,011) \end{aligned}$$

Note: The standard error for each variable is shown in the respective parentheses.

Methodology 3: A combination of methodologies

The final estimation of the forecast of annual growth rates of the energy component on a monthly basis is made by comparing and combining the following: (1) the results of the two previous methodologies; (2) the forecasting errors of past forecasts of the above-mentioned methodologies; (3) other factors that are not included in the forecasts of the methodologies, such as expected changes in the VAT rate; and (4) the technocratic view of the CBC's experts. For purposes of methodology selection, **Table 2** (p.470) compares the results of the various methodologies with the available actual data.

At a first glance it seems that the forecasts of the three-digit analysis method and the methodologies' combination are closer to the actual data for the available period (May 2010-October 2010) than the OLS methodology including taxes.

It is also worth mentioning that an important factor regarding the forecasting error observed in the CBC forecast of energy inflation is the deviation of expected values of the

TABLE 2 Comparison of the various methodologies' projections with real available data as at June 2010
(annual change, %)

Projection period	Real available data	Simple OLS model	Simple OLS model incl. taxes	Three digit analysis	Combination of methodologies
May 2010	22,41	18,48	19,05	21,26	21,38
Jun. 2010	20,21	16,28	21,11	23,68	21,56
Jul. 2010	22,81	13,85	18,68	23,07	19,92
Aug. 2010	17,44	12,49	17,32	19,93	16,88
Sep. 2010	16,45	11,77	16,60	19,72	15,07
Oct. 2010	19,20	11,68	16,51	19,32	17,31
Nov. 2010	N/A	11,50	16,33	18,07	14,91
Dec. 2010	N/A	10,93	15,76	17,84	15,61
Jan. 2011	N/A	10,55	15,95	16,53	13,34
Feb. 2011	N/A	10,11	15,51	16,17	13,74
Mar. 2011	N/A	9,50	14,90	15,03	14,20
Apr. 2011	N/A	8,42	13,82	12,97	12,28
May 2011	N/A	7,06	11,89	12,85	12,12
Jun. 2011	N/A	6,21	11,04	11,76	7,26

Sources: Eurostat, CBC.

TABLE 3 Energy: comparison of forecast errors of the three methodologies (actual values – projected values)
(annual change, %)

Projection period	Simple OLS model	Simple OLS model incl. taxes	Three digit analysis	Combination of methodologies
May 2010	3,90	3,36	1,15	1,03
Jun. 2010	3,93	-0,90	-3,47	-1,34
Jul. 2010	8,96	4,13	-0,25	2,90
Aug. 2010	4,94	0,11	-2,49	0,55
Sep. 2010	4,68	-0,15	-3,27	1,38
Oct. 2010	7,51	2,68	-0,13	1,89
RMSE	5,97	2,46	2,25	1,68

Source: CBC.

common assumptions used in these forecasts from their actual outcomes.

Table 3 (p.470), shows the forecasting error of each methodology (actual annual growth rates vs. forecasts for annual growth rates of energy prices) as well as the root mean squared error (RMSE) measuring the deviation of the forecasts of each methodology from the outcome values. It is noted that the methodology with the lowest RMSE can be considered as the best method for forecasting energy inflation compared with the rest of the methodologies. Based on this criterion, the combination of methodologies scores the lowest RMSE, i.e. 1.68, compared with 2.25 for the three-digit analysis method, 5.97 for the ordinary least squares model and 2.46 for the ordinary least squares model including taxes.

The same approach is followed for the forecasts of the remaining components of the HICP, while the forecast for overall inflation is based on the statistical chain-linking method, based on Fisher (1922) with weights adjusted annually for the five HICP components.

The CBC uses VAR models in order to produce projections and analyse the Cyprus economy (especially inflation) and to examine the effect of various economic shocks on the macroeconomy. **Box 11.3** (p.474) refers to the VAR model developed at the CBC for the period 1995-2007 using quarterly data on the price level, money supply, GDP and the deposit rate.

11.4.1 Origin and basic structure

The development of VAR models as a modelling tool dates back to the early 1980s, following concerns about the validity of some of the assumptions used in traditional macroeconomic models, which are analysed in the next section. Specifically, Sims (1980) argued that the identification restrictions imposed on traditional models (often resulting in the exclusion of some variables or their lags from an equation or the assumption that a

particular variable was exogenous) were quite constraining. He argued that the theory was seldom satisfactory enough to define and justify such exclusions or exogeneity assumptions. Consequently, some of the economic interpretations that derived from such models were unlikely to be robust.

These concerns led to the development of VAR models as an alternative modelling approach. VAR models are dynamic systems of equations in which the current level of each variable of the system (e.g. GDP, unemployment, key interest rates) depends on the past changes of that variable and other variables of the system. Unlike traditional models, such as the CBC macroeconometric model analysed above, the basic assumption of VAR models on the economy's structure is minimal. Instead, they focus entirely on producing a good statistical representation of the past interactions between economic variables, letting the data determine the model. However, VAR models are not entirely atheoretical, given that the selection of the variables to be included in the system and the length of lags allowed represent a type of restriction, which may have a significant impact on the results.

A VAR model can be expressed by the following formula:

$$Z_t = A_1 Z_{t-1} + A_2 Z_{t-2} + \dots + A_p Z_{t-p} + \varepsilon_t$$

where Z_t is the vector of endogenous variables in the period t , A_i ($i = 1, \dots, p$) is the vector of parameters, p is the number of lags included in the system and ε_t the residual vector. This system of equations can be considered to include various structural models in a non-restrictive manner because the restrictions implied by structural models are not imposed. The residuals ε_t represent unexplained changes in the variables, reflecting the impact of shocks arising from the assumed model. The residuals capture the composition of various exogenous shocks that

affect the endogenous variables in this particular model. Therefore, an economic interpretation cannot be derived from the residuals without a transformation of the equations.

The estimation of the VAR model involves the selection of variables that will be included in the system and the decision on the number of their lags. The results obtained are likely to be sensitive to both choices. The number of lags is usually determined by statistical criteria, while the selection of variables is usually determined by economic theory. These choices identify some of the potential problems in the estimation of the model. Firstly, the estimation problems increase with the number of variables and lags. Specifically, degrees of freedom problems will arise if there are numerous parameters to be estimated and the degree of correlation between the numerous lagged variables is likely to reduce the accuracy of the estimated parameters. The application of economic theory as a supporting tool for determining which variables will be included in the VAR model is a type of restriction. This implies that VAR models are not completely atheoretical. However, such concerns can be minimised by using sufficiently general theories for identifying the parameters. Finally, it should be noted that if the restrictions imposed by the more traditional macroeconometric models are valid, the estimates of the parameters derived from such models are likely to be more accurate than those derived from VAR models.

11.4.2 Forecasting

The extraction of forecasts from a VAR model is quite simple. The one-step-ahead forecast of the vector of endogenous variables (\hat{Z}_{t+1}) is obtained by replacing the past and current prices in periods t up to $t + 1 - p$ in the equation below:

$$\hat{Z}_{t+1} = A_1 Z_t + A_2 Z_{t-1} + \dots + A_p Z_{t+1-p}$$

Box 11.3 Use of VAR models by the CBC for testing the effects of economic shocks

The VAR methodology has been used by Spanos, Andreou and Syrichas (1997) in order to study the inter-relationships between money, inflation, output and interest rates in Cyprus over time.

As mentioned in **Box 9.2 in Chapter 9** (p.370), this study has recently been expanded with data for the period 1995 to 2007. The data used in this study refer to the level of prices as reflected in the CPI, money supply as measured by the monetary aggregates M1 and M2, nominal and real GDP and the average deposit rate (ADR) as it is recorded by the balance sheets of commercial banks. The original study was done for the period 1960-1994 using annual data in the absence, at the time, of quarterly GDP data. Then, correlations were re-estimated using quarterly data for the period 1995-2007. As in the original study, the small number of observations confines econometric analysis to a simple four-variable VAR model. It is recalled that since 2008, when Cyprus joined the euro area, monetary policy is decided jointly with the other members of the Eurosystem.

For the proper choice of the model, data are first tested for unit roots using the Augmented Dickey-Fuller Test (ADF) by three different methods: (1) without intercept and without trend; (2) with intercept but without trend; and (3) with intercept and trend. The degree of lag is selected using the Akaike and the Schwarz Bayesian information criteria.

Based on the results of unit root testing, the VAR model is calculated using logarithmic values. The goodness of fit of the model is checked by the Akaike and Schwarz Information Criterion (AIC) and the Bayesian Information Criterion (BIC). This VAR model is also tested for cointegration by the Johansen

TABLE 1 Testing cointegration in the model (LM2, LNGDP, LCPI, LADR)

Data trend	None	None	Linear	Linear	Quadratic
Type of test	no intercept no trend	intercept no trend	intercept no trend	intercept trend	intercept trend
Trace	2	2	1	1	1
Maximum-Eigenvalue	2	2	1	1	1

Source: CBC.
 Note: Critical values based on MacKinnon-Haug-Michelis (1999).

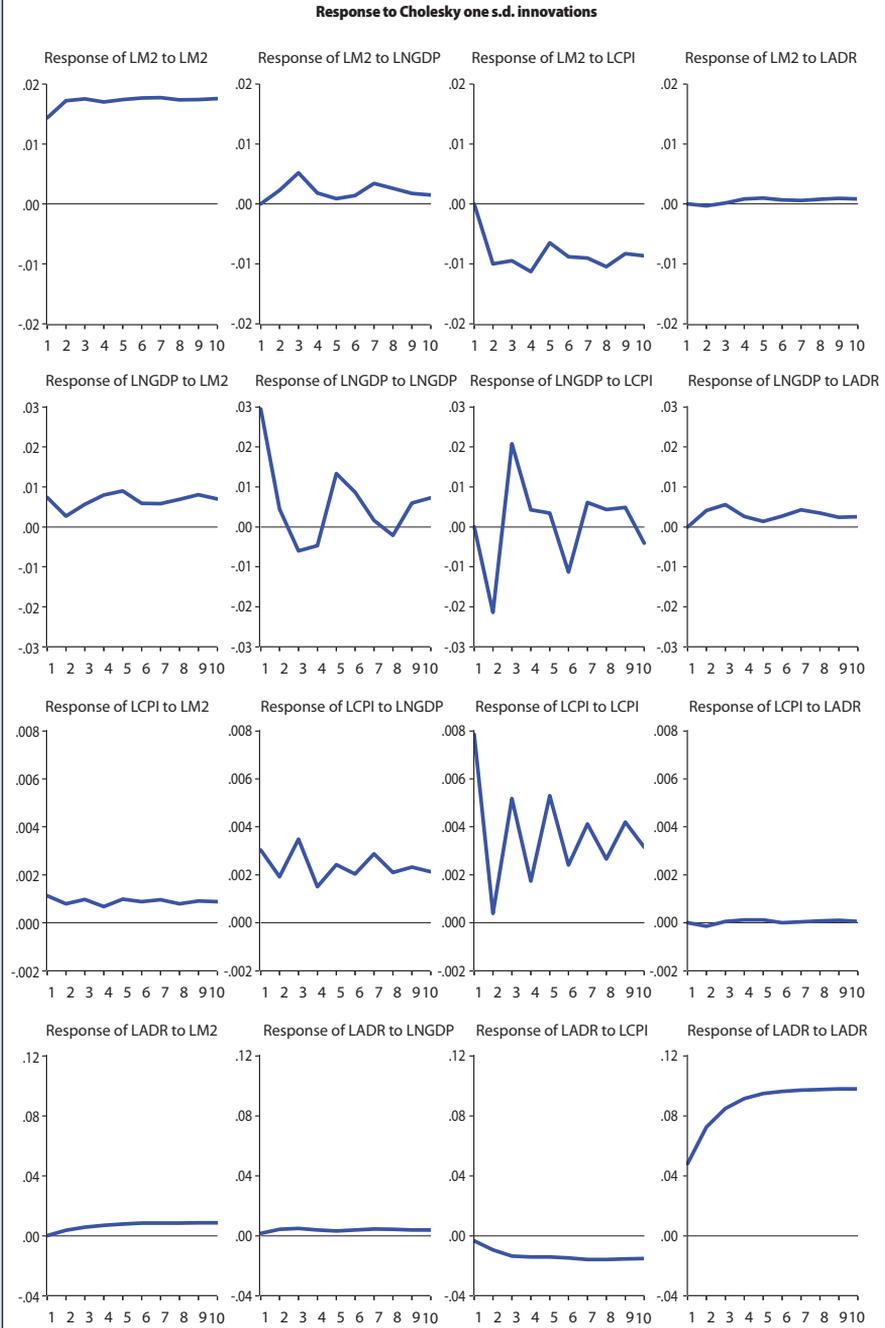
maximum likelihood approach (**Table 1**): both the trace test and the maximum eigenvalue test demonstrate the existence of one or two cointegration vectors depending on the type of test used.

Although the two models estimate the existence of a long-term equilibrium relationship between the variables, in the short-term it is very likely that this equilibrium will not exist. Therefore, the long-run error could be considered as an “equilibrium error” which represents short-term deviations from the long-term relationship. The method used to address this is called the vector error correction mechanism (VECM).

Selected results of the analysis are presented by the impulse response functions in **Chart 1** (p.476). The impulse response functions show the reaction of nominal GDP, the CPI and interest rates to a money shock. More specifically, a shock of one standard deviation to M2 seems to have a positive effect on nominal GDP (NGDP). Thus, an expansionary monetary policy leads to long-term nominal GDP growth. Regarding the price level, it seems to be positively influenced early in the period remaining at the same level throughout the whole period under review.

At this point it should be noted that compared to the results reported in Spanos, Andreou and Syrighas (1997) the same

CHART 1 Impulse response functions in nominal terms (Cholesky decomposition)



Source: CBC.

behaviours are observed, the only exception being that for the period 1960-1994 interest rates do not record a statistically significant change in response to M2 growth. This fact is due to the existence of the statutory interest rate ceiling of 9%, which prevented the interest rates from responding to changes in money supply. The ceiling on interest rates was abolished in 2001 and since then interest rates have been determined by money demand and supply in the market.

Similarly, the two-steps-ahead forecast of the vector of endogenous variables (\hat{Z}_{t+2}) is obtained by replacing the (\hat{Z}_{t+1}) and the previous current prices in periods t up to $t + 2 - p$ in the equation below:

$$\hat{Z}_{t+2} = A_1\hat{Z}_{t+1} + A_2Z_t + \dots + A_pZ_{t+2-p}$$

Thus, the VAR model provides forecasts of past statistical interdependences between variables in the system. The only assumption included is that these interdependences will remain valid during the forecast period. In contrast, forecasts derived from the traditional macroeconomic models are often based on assumptions on the future evolution of exogenous variables (such as economic policy). VAR forecasts avoid the need for such assumptions, since all variables are endogenous and the system generates their future evolution. Therefore, the baseline forecasts of VAR models are not restrictive. However, if there are strong initial assumptions about the future path of one or more endogenous variables, it is possible that VAR models can also produce conditional forecasts.

VAR forecasts are also useful for cross-checking with forecasts derived from traditional macroeconomic models as presented in the next section. However, as with other techniques, VAR forecasts

have several shortcomings. In theory, they are vulnerable to the Lucas critique and generally it is likely that their forecasting ability declines in periods when the economy undergoes structural changes. Secondly, the inclusion of too many lags or too many variables can lead to wrong forecasting results, even if the model reproduces the data accurately during the estimation period. This occurs if the lags reflect non-systematic relationships between the variables. VAR forecasts can thus be inaccurate, unless all the number of variables and the number of lags are kept small in order to reflect theory. This is one reason why VAR models are typically used only for short-term forecasting. Over longer horizons, the forecasting performance of VAR models often worsens.

11.4.3 Structural Vector Autoregressive Models

Unlike VAR models, structural vector autoregressive models (SVAR) are considered as an intermediate solution between the basic VAR models and structural traditional macroeconomic models. SVARs combine the statistical methodology of basic VAR models with a set of widely accepted restrictions resulting from economic theory, so that the analysis benefits from the advantages of both approaches.

11.5 The CYMCM macroeconomic model

In the context of our participation in the Working Group on Econometric Modelling, a country-specific econometric model (CYMCM), along with its required infrastructure, has been constructed, which belongs to the family of traditional macroeconomic models. The model described in this section helps to estimate the technical projections of the key economic aggregates of the Cyprus economy, analyse various scenarios and estimate the projection update elasticities (Central Bank of Cyprus, 2008c). It

consists the Cyprus block of the Multi-Country Model (MCM) of the European System of Central Banks. It is similar to the ECB's Area-Wide Model (AWM) developed by Fagan et al. (2001) and to MCM models of other national central banks.

The theoretical background of the model is similar to that of other traditional macroeconometric models where long-term equilibrium is determined by supply, while short-term fluctuations are determined by demand. The model contains no expectations; therefore, expectations are determined in a backward-looking manner.

11.5.1 Use of the model

The model is primarily used for medium-term forecasts of the Cyprus economy (over a horizon of two to three years). It represents the contribution of the CBC to the ECB staff macroeconomic projections exercise of the ESCB. It combines economic theory and usually estimated relations for each sector of the economy; it also provides consistency by ensuring that projections for individual sectors of the economy contribute to a coherent and consistent projection of the economy as a whole. In the specific context of euro area projections, the multi-country models play an important role in consistency checking, particularly with respect to intra-euro area trade flows. Finally, the models also enable the adjustment of projections to changes in exogenous variables or assumptions regarding the external environment.

The model is also used for integrating the results provided by other forecasting tools into a wider framework. The model can incorporate projections derived from other models and, more importantly analysts' decisions by the use of additional factors. These projections are carried out on a quarterly basis.

Furthermore, the model is used for the conduct of monetary policy and in scenario analysis and counterfactual analysis. However, given the

nature of the model, these simulations have significant limitations. Scenario analysis usually addresses issues such as the transmission mechanism of monetary policy, the impact of tax and budgetary policies, the impact of labour market policies etc.

11.5.2 Theoretical framework

The theoretical framework of the CYMCM is very similar to those of other European Union countries as well as to the Area-Wide Model (AWM).

The supply side of the model is based on the optimisation of the producer's problem, whose behaviour is neoclassical. Firms maximise their profits based on technology and the household's demand curve. The firm's optimization problem gives the equilibrium factor demands, i.e. labour demand L_i and capital demand K_i , the price of the final product P_i and the output Y_i , which depends on the total production in the economy Y , on the general price level P , on real wages w/P and on the nominal user cost of capital c . Assuming no capital adjustment costs, the representative firm maximises its static profits

$$\Pi(Y_i) = P_i Y_i - w L_i - c K_i$$

with respect to L_i and K_i , based on the restrictions of the supply function with constant returns to scale

$$Y_i = A K_i^\beta (e^{\gamma t} L_i)^{1-\beta}$$

where β is the share of capital in production and γ the exogenous growth rate of technology in production, and demand for the product

$$P_i = P \left(\frac{Y}{Y_i} \right)^{1/\varepsilon}$$

where $\varepsilon > 1$ is the price elasticity of demand for commodity i based on its relative price. The solution of the above problem arises from the first order conditions. The symmetric equilibrium gives the equilibrium factor demands as well as the price of the final product. Therefore, equilibrium capital is determined by the balance between the marginal product of capital and the marginal cost of capital

$$K = \frac{Y}{Ae^{\gamma t(1-\beta)}} \left(\frac{\beta}{(1-\beta)} \frac{w}{P(r+\delta)} \right)^{1-\beta}$$

where K is the equilibrium capital, r the real interest rate, δ the depreciation rate of capital and $r + \delta$ the real cost of capital. Moreover, labour demand is obtained by reversing the production function

$$L = e^{-\gamma t} \left(\frac{Y}{AK^\beta} \right)^{\frac{1}{1-\beta}}$$

where L is the equilibrium labour. Finally, the equilibrium price of the product is defined as the percentage of profit above the marginal cost

$$P = \frac{\varepsilon}{(\varepsilon-1)(1-\beta)} \frac{wL}{Y}$$

The theoretical model contains five parameters (β , ε , γ , A and η) and five variables (Y , L , K , c/P and w/P). Therefore, solving the above supply problem, in combination with the production function, we arrive at the following solutions for the parameters of the problem:

$$\hat{\beta} = \frac{1}{T} \sum_{t=1}^T \left(\frac{(r+\delta)K_t}{\frac{W_t}{P_t} L_t + (r+\delta)K_t} \right),$$

$$\hat{\varepsilon} = \frac{1}{T} \sum_{t=1}^T \left(\frac{P_t Y_t}{P_t Y_t - W_t L_t - P_t (r+\delta)K_t} \right),$$

$$\hat{Y} = \frac{1}{T} \sum_{i=1}^T \Delta \log \left(\frac{Y_t}{L_t} \right),$$

$$\hat{\alpha} = \frac{1}{T} \sum_{i=1}^T \left(\frac{Y_t}{K_t^\beta (e^{\hat{\eta}t} L_t)^{1-\beta}} \right).$$

By definition, the exogenous increase in labour force η is determined as follows

$$\hat{\eta} = \frac{1}{T} \sum_{i=1}^T (\bar{L})$$

where \bar{L} is the workforce.

The demand in the economy is given by separate equations for private consumption, gross fixed capital formation, changes in inventories and exports and imports of goods and services. Government consumption is exogenous to demand.

In the long run, private consumption is determined by real disposable income and real wealth. Real disposable income is defined as the sum of real wage compensation, government transfers to households net of direct taxes, and other income. The definition of real wealth assumes that the assets in the economy belong to households. This includes the stock of private capital, net foreign reserves and public debt. This definition of the consumption function combines characteristics from both Keynesian and life cycle theories.

Investment demand is determined by the difference between actual and optimal capital. In the long run, actual capital converges to its equilibrium level and actual investment will be consistent with the depreciation of capital adjusted for exogenous labour productivity and for labour force growth, so that the ratio of investment to capital converges to a constant.

Real exports are determined by the level of foreign demand and relative price competitiveness, which is determined by the ratio of the

domestic exports deflator to the export prices of foreign trading partners. Thus, the exports equation may be interpreted as the market share equation, where profits and losses of market shares are determined by competitiveness.

The equilibrium of real imports depends on the level of the import demand indicator and relative prices. The import demand indicator is a weighted average of private consumption, investment, inventories, exports and government consumption. The import price competitiveness is defined as the ratio of the import deflator to the deflator of GDP at factor cost.

Firms' pricing strategies are described by the modelling equations of the private sector deflators at factor cost. Prices are determined as a mark-up on the marginal cost. The deflators of demand components are modelled as a function of the import deflator and the value added tax.

The Phillips curve¹⁶ relationship completes the system that links prices to wages. In equilibrium, the Phillips curve determines the Non-Accelerating Inflation Rate of Unemployment (NAIRU).

Concerning the public sector, it consists of accounting identities where direct and indirect taxes are determined by exogenous tax rates. Moreover, employment is exogenous, as well as government consumption and investments, while their deflators are endogenous. The other components of the government sector are defined differently, depending on whether the model is used for projection purposes or for long-term simulations. In some simulations, the fiscal policy rules are activated where the direct tax rate changes based on the deviation of the public debt from its target.

In the long term, exports of goods and services are determined by global demand and relative prices, while imports of goods and services are determined by aggregate expenditure and relative prices. In the short run, the real growth rate of exports of goods and services is determined by the increase in relative prices and by foreign demand, while the growth rate of imports of goods and services is determined by domestic

16. For a further discussion of the Phillips curve, see **Box 9.2**, p.370.

GDP growth and relative prices. Both these short-term relationships present dynamic adjustments to equilibrium (error correction mechanism - ECM).

Import prices, as measured by the price deflator of imports of goods and services, are mainly determined by export prices and the exchange rate. The export deflator is determined by GDP deflator and competitive prices. As above, short-term dynamic adjustment equations to equilibrium have the form of traditional ECM processes.

Monetary policy is exogenous and long-term interest rates are correlated to short-term interest rates through the term structure. In some long-term simulations, monetary policy becomes endogenous and interest rates are determined by Taylor rules. The monetary policy rule is not used in the preparation of economic forecasts, but can be used in scenario analysis and longer-term simulations.

11.5.3 Model estimation and calibration

Regarding the long run supply in the model, calibration techniques have been used to identify the main parameters. Most behavioural equations have been estimated, assuming long run co-integration, a technique proposed by Engle and Granger (1987), while the short run equations are estimated based on an ECM representation.

The model is estimated by seasonally adjusted quarterly ESA 95 data from 1995 to 2007. In several cases the data of the estimation period tend not to be the same as the equilibrium prices suggested by economic theory. In these cases, intertemporal trends in the equations are used, so that variables converge to their average values.

11.5.4 Baseline projection

Projection exercises¹⁷ begin with the common assumptions regarding the exogenous variables over the forecast horizon, so that the projections

17. Main source: European Central Bank (2001).

build on these a priori trends. However, these exogenous variables which are derived from specific models or from information from other sources or institutions are subject to uncertainty. Therefore, while the path adopted for the baseline projection may be the most likely, other paths are also possible. The results obtained from these alternative paths are estimated through simulation exercises in the quarterly model, enabling to calculate and outline the uncertainty that surrounds the baseline projection.

The essential difference between projection and simulation exercises is that projection exercises produce the paths of relevant variables out of all the most likely paths of the exogenous variables, while simulation exercises do so by changing one of their subsets without changing the remaining assumptions of the baseline projection. This makes it possible to estimate the risk to the baseline projection from an unexpected path of one or more exogenous variables.

Reflecting on the diversity of the objectives pursued, the models can be operated in different ways. For example, in multi-country models, country blocks can operate in isolation, with the rest of the world being exogenous. While monetary and fiscal policies are available in these models, their use is usually optional, depending on the objective of the exercise. Monetary and fiscal policy rules are not used in the preparation of economic projections, but can be used in scenario analysis or longer-term simulations.

Projection exercises begin with the incorporation of the path of exogenous variables over the forecast horizon, which is usually set at two to three years. The exercises are conducted on a quarterly basis in line with national accounts. Both the macroeconometric model and other models treat the exogenous variables as given. Some of them refer to the external environment and others to fiscal and monetary policies. Any significant deviations from the assumptions of the baseline scenario are assessed using risk analysis.

Regarding the establishment of external assumptions, the most important assumptions focus on the rest of the world excluding the euro

area, as Cyprus is now part of the euro area, and relate to the future path of global economic growth and expected trends in imports from the various geographical areas, which partially determine the growth of Cyprus' external demand. These assumptions are generally established on the basis of the latest forecasts of major international institutions. Further variables regarding the external environment are the prices of oil and other commodities, exchange rates and the transactions prices in the rest of the world, which help to determine the evolution of prices with which the Cyprus exports compete on the world markets. In the case of the euro area, expected GDP growth, internal and external demand components and inflation are included in the assumptions. These assumptions complete the information on the export market of Cyprus and the prices with which the Cypriot products compete.

The assumptions on monetary and financial variables mainly concern the interest rates. Specifically, both the three-month short-term interest rate and the ten-year long-term interest rate are calculated at the end of the text i.e. calculated to evolve in line with current market expectations and are communicated to the CBC by the ECB.

Fiscal policy assumptions are based on the individual euro area countries' national budget plans as available at the cut-off time of the projections. They include all policy measures that have already been approved by national parliaments or have been specified in sufficient detail by governments and are likely to pass the legislative process. The various components of government expenditure are considered to be exogenous. For the preparation of fiscal projections, the CBC uses an accounting framework based on common assumptions of the Eurosystem staff. More specifically, there are four main approaches employed for the preparation of fiscal projections, which are applied depending on the specific revenue and expenditure category being examined.

In the first approach, historical geometric growth rates are applied, in order to forecast various categories of expenditure (as well as some

categories of revenue), as well as information available to the CBC regarding various fiscal measures included in the updated Stability and Growth Programme of the Republic of Cyprus and the national budget.

In the second approach, regarding the current year of each projection round, expenditure and revenue data available up to a specific quarter or month of the current year are used for a linear extrapolation of the respective items over the remainder of the year.

In the third approach, announcements by the Ministry of Finance on various fiscal measures are taken into consideration. It should be noted that the fiscal projections of the CBC are prepared independently of the Ministry of Finance. It is also noted that the CBC usually adopts a more conservative stance regarding the fiscal impact of the announced measures. More specifically, and sometimes in contrast with the Ministry of Finance, the CBC adopts a lower estimate of the fiscal impact of revenue-enhancing (or expenditure-reducing) measures and a higher (or at least equal to the announced) estimate of the fiscal impact of revenue-reducing (or expenditure-increasing) measures.

Finally, for certain revenue categories (namely revenue from corporate tax, household income tax, indirect taxes and social security contributions), the CBC prepares relevant projections using the historical elasticity estimates of the respective revenue categories to various macroeconomic bases (e.g. GDP and private consumption in nominal terms). Such elasticity estimates reflect the elasticities of various revenue categories to the level of output or private consumption.

Using this framework, the CBC prepares projections for the detailed national accounts, as well as for labour market, balance-of-payments and fiscal aggregates.

11.5.5 Scenario analysis

The models are also used for the analysis of various scenarios. Requests for model-based simulations usually come from the CBC's

TABLE 11.4 Impact on main macroeconomic variables of an increase in the user cost of capital by 1 percentage point

	Year 1	Year 2	Year 3
HICP	-0,01	-0,02	-0,03
HICP excl. energy	-0,01	-0,02	-0,03
HICP energy	0,00	-0,01	-0,01
Real GDP	-0,04	-0,10	-0,13
Private consumption	0,00	-0,01	-0,04
Government consumption	0,00	0,00	0,00
Gross fixed capital formation	-0,59	-1,50	-1,90
Exports (goods and services)	0,00	0,00	0,01
Imports (goods and services)	-0,12	-0,34	-0,43
Unemployment rate (% of labour force)*	0,00	0,02	0,03
Total compensation of employees	-0,04	-0,10	-0,15

Source: CBC.

Notes: Percentage changes from baseline levels.

* Differences from baseline levels.

senior management or the various working groups and committees of the Eurosystem and the European System of Central Banks (ESCB). Moreover, central banks are occasionally invited to conduct simulation analyses for other national and international financial institutions such as the IMF in the context of the IMF’s Article IV missions. Additional simulations can be conducted to accompany the economic projections, presenting alternative paths of the economy and evaluating the risks surrounding the baseline projection. They can also be conducted in order to analyse changes in economic policies, such as in monetary, fiscal, labour market policies, or changes in other economic variables e.g. the exchange rate, external trade, oil and other commodity prices.

Table 11.4 and **Table 11.5** (p.489) present two examples of simulation exercises conducted using the CYMCM model. The former simulates a 1 percentage point increase in the user cost of capital, while the latter simulates a 1% increase in wealth in the economy with all other exogenous variables and assumptions remaining the same as those of the baseline projection.

TABLE 11.5 Impact on main macroeconomic variables by an increase in non-modelled wealth by 1 percentage point

	Year 1	Year 2	Year 3
HICP	0,00	0,04	0,05
HICP excl. energy	0,00	0,04	0,06
HICP energy	0,00	0,01	0,03
Real GDP	0,03	0,19	0,27
Private consumption	0,06	0,44	0,66
Government consumption	0,00	0,00	0,00
Gross fixed capital formation	0,02	0,15	0,26
Exports (goods and services)	0,00	0,00	-0,01
Imports (goods and services)	0,03	0,29	0,46
Unemployment rate (% of labour force)*	0,00	-0,04	-0,10
Total compensation of employees	0,02	0,18	0,31

Source: CBC.

Notes: Percentage changes from baseline levels.

* Differences from baseline levels.

11.6 Dynamic Stochastic General Equilibrium Models

This section illustrates the use of a group of models that fall within the category of “Optimisation Models” and are called dynamic stochastic general equilibrium models (DSGE). The distinctive feature of these models is their clear reliance on microeconomic foundations. Most macroeconomic models, including almost all of those mentioned above, are partly micro-founded. As a result, these economic models are sometimes unsuitable for analysing the potential economic impact of structural changes. This happens because their parameters are complex functions of an economy’s technology, institutions, government policy and economic agents’ preferences. Thus, changes in any of these structural characteristics would mean that these parameters, hence the relationships between key economic variables, are expected to change. The problem is that it is rarely clear exactly how the parameters will change without recourse to the microeconomic foundations of the model.

Against this background, DSGE models try to analyse the underlying structural relationships in the economy, enabling to clearly determine the response of individual variables to a given shock. These models are useful for analysing the potential impact of a change in economic policy or of a general structural change in the economic. They can also be used in order to assess whether the observed variables are consistent with different types of disturbances or changes in structural parameters. These experiments can be used to inform, among other things, economic projections.

DSGE models describe the inter-temporal optimisation that economic agents face. They often try to capture the interactions between different agents in the economy (consumers, firms, government, external sector), which are thought to try to solve their own dynamic problems, subject to certain economic constraints. These models can be used to analyse how economic agents respond in an optimal way to various demand and supply shocks (actual or potential) or to changes in the economic structure.

The ECB has developed various DSGE models and uses them for scenario analysis and projection exercises. Some of them are the New Area-Wide Model (NAWM) which covers the euro area as a whole. The EAGLE model has also been developed, which can be calibrated to individual EU economies and can thus replace/complement the traditional MCM model.

As noted above, these models enable the analysis of the impacts of structural changes in preferences, technology, institutional and government policies with respect to the equilibrium prices and cyclical fluctuations of key endogenous variables, such as real interest rates, unemployment or the saving rate. Vetlov et al. (2010) explain in detail how DSGE models can be used for scenario analysis.

These models also help to identify the fundamental economic shocks or changes in the structure of the economy, which are responsible for the fluctuations in various macroeconomic data.

Nevertheless, these models often rely on the simplistic and unrealistic assumption that all economic agents have the same dynamic optimisation problem, for example that all consumers are identical. Furthermore, they are usually calibrated or estimated in a way that reproduces some key stylized facts of the variables in the analyst's focus. This often means that the results of the models may not be in tune with the behaviour of other key endogenous variables, thus significantly reducing the forecasting utility of these models.

11.7 Analysis of macroeconomic projections

11.7.1 Risk assessment

The CBC's baseline scenario of projections is established by various statistical tools and CBC's available models, always based on the common assumptions of the Eurosystem. These projections concerning the Cyprus economy are considered to be the most likely outcomes given the assumptions as at the time of projection. However, it is necessary to note that the baseline scenario of projections is subject to a degree of uncertainty and, as a result, the final outcome of baseline forecasts is doubtful. This mainly reflects the tentative nature of the assumed path of variables in the basic assumptions.

In order to provide better information both to the public and to the markets about potential risks, the CBC publishes confidence intervals for its forecasts about the HICP, the HICP excluding energy and GDP growth, i.e. the bands within which these variables are expected to move with a probability of 50%, 75% and 90%. The quantification of risks for estimating the confidence intervals of possible deviations from the baseline scenario is not a simple task, especially when this scenario is the result of various empirical estimates.

One way of analysing these potential risks of deviation from the baseline scenario involves specialised statistical graphs known as fan

charts¹⁸. These charts, published by the CBC twice a year in its *Economic Bulletin*¹⁹, map out the risks that surround the macroeconomic projections, reflecting the probabilities of deviation of the projections around their baseline levels. Their starting point is the baseline projection for the particular variable, which is considered to be the most likely outcome for the period examined. The magnitude of risks to the projections is captured by the width of the confidence intervals, with their gradual widening indicating the increasing uncertainty of the outcome of the baseline scenario (projection error) as the time horizon is extended. The three bands below and above the baseline projection, with their probabilities set at 50%, 70% and 90%, show the highest and lowest possible values for the specific confidence interval. The probability distribution, which is based both on a statistical methodology and on expert judgement, is asymmetric around the baseline projection. Specifically, this skewed distribution is divided into two unequal parts, above and below the modal forecast²⁰. The shaded area of the charts is defined by three parameters:

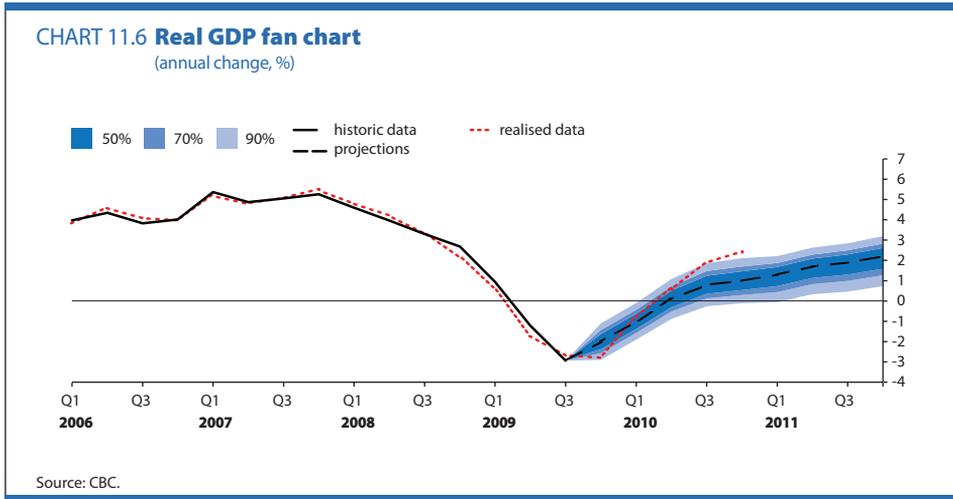
- (1) the baseline projection, which represents the most likely estimate of the path of the variables, e.g. HICP, HICP excluding energy and GDP growth;
- (2) the standard deviation, which represents the fluctuation from the baseline projection and determines the width of intervals for this specific time period; and
- (3) the distribution of risks, which determines the degree of fluctuation of the confidence intervals above and below the baseline projection, while keeping their size unchanged.

Determining the uncertainty that underlies the macroeconomic projections for inflation and GDP growth is a complex task. A good start (also used by the ECB in its publications) is an analysis of historical projection errors of relevant variables, in combination with the CBC's expert judgement on the various risks to the realisation of individual

18. For a detailed analysis, see Britton et al. (1998) and Oparty and Miroslav (2005).

19. See Central Bank of Cyprus (2008a, 2008b, 2009a, 2009b, 2010a and 2010b).

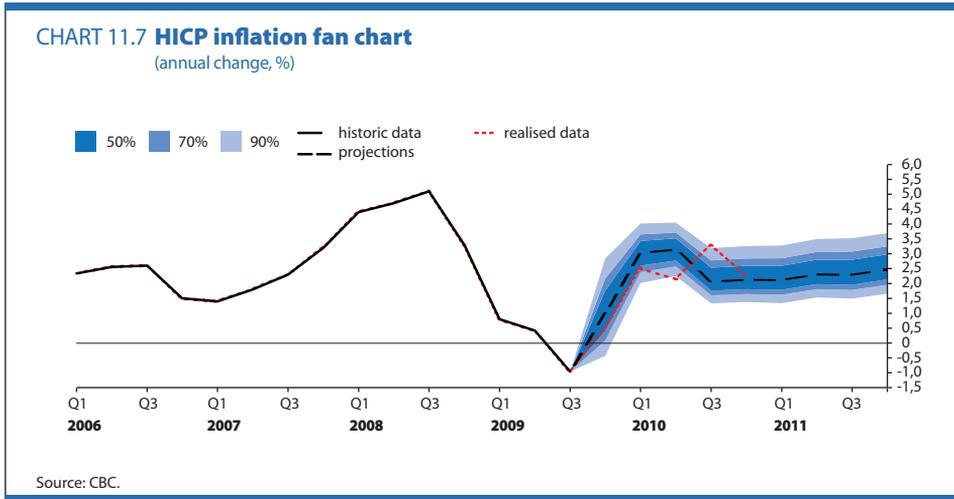
20. The estimation of the confidence intervals of the skewed distribution is based on the methodology developed by the Bank of England and the Sveriges Riksbank.



assumptions and other factors that may affect the baseline projection scenario.

Specifically, we examine upside and downside risks to the baseline scenario, as well as the statistical probability of these risks materialising. Factors that may affect the baseline projections for inflation and GDP growth include developments in the international economic environment (e.g. exports, international oil and wheat prices, and generally the cost of imports), domestic demand (e.g. private consumption, investment, public sector, wage developments and productivity) and the financial sector (e.g. the exchange rate of the euro against foreign currencies and stock prices).

Chart 11.6 and **Chart 11.7** (p.494) provide two examples of fan charts, depicting the probability distribution of real GDP growth and HICP projections, respectively, carried out in December 2009. It is clarified that the latest data available at the time were those for the third quarter of 2009. The December 2009 projections were chosen over more recent ones, e.g. those of December 2010, to enable a longer-term comparison of projections with actual outcomes and an analysis of projection errors for the period between the fourth quarter of 2009 and the fourth quarter of 2010.



As shown in **Chart 11.6** (p.493), the projection error tends to increase over time, mainly because the assumptions used at the time of preparation of the projections became outdated and also because of other exogenous factors, which could not possibly have been known and included in the projections. Additionally, a part of the projection errors stems from the frequent revisions of GDP historical data, leading to changes in the base values of the projections. More specifically, for the fourth quarter of 2010 the CBC had forecasted GDP growth at 1%. Furthermore, because of the uncertainty surrounding this projection, it was considered that the GDP growth rate could fluctuate by 50% between 0,5% and 1,5%, by 70% between 0,3% and 1,7% and by 90% between -0,1% and 2,1%. It is also noted that the variation of the GDP growth projection increases over time, from 1,8% in the fourth quarter of 2009 to 2,5% in the fourth quarter of 2011, reflecting the increasing uncertainty surrounding longer-term projections. As it turned out, the estimate of the CBC for the fourth quarter of 2010 was pessimistic, because the GDP growth rate was eventually higher than expected and reached 2,4% for that quarter. As a result, the actual value of GDP was outside the confidence intervals that had been determined by the CBC on the basis of its then assessment of risks to GDP growth.

Unlike GDP historical data, HICP historical data are not subject to revisions. Nevertheless, as is also the case with the GDP growth projection, as the projection horizon expands, the outcomes of the assumptions and of other factors underlying the projections become increasingly uncertain, leading to larger projection errors for the longer-term horizon. The December 2009 HICP projection for the fourth quarter of 2010 was 2,1% with a 50% probability of variation between 1,8% and 2,6%, with a 70% probability of variation between 1,6% and 2,8% and with a 90% probability of variation between 1,4% and 3,3% (**Chart 11.7**, p.494). Furthermore, the risks to the inflation forecast tilted to the upside. The actual rate of increase in the HICP was 2,4% in the fourth quarter of 2010 with its variation from the projected rate being within the 50% confidence interval.

11.7.2 Comparison of the performance of real-time projections across different methodologies

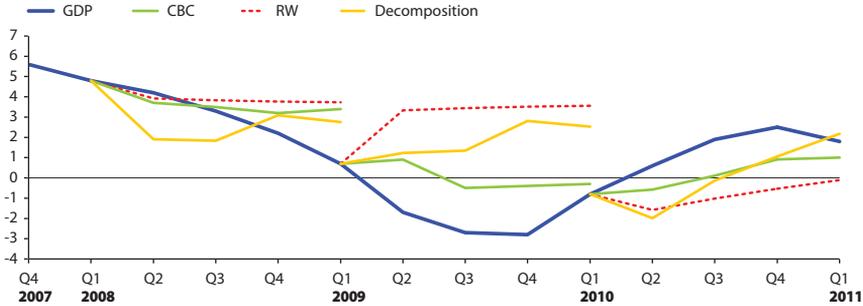
Examining the performance of the projections conducted by different methodologies²¹ (horse-race analysis) for the GDP growth rate and the HICP²² at a selected point in time during the period 2008-2010, it appears that none of them was able to predict in an accurate way the abrupt movements in the GDP growth rate and in HICP inflation during the above-mentioned period (**Chart 11.8**, p.496, and **11.9**, p.496).

In contrast, forecast errors, which are calculated as the difference between the actual value of GDP and its projected value for the corresponding quarter (**Chart 11.10**, p.497), show that, between late 2008 and early 2010, a period when the Cyprus economy entered an economic recession, all three models predicted a higher growth rate, while for the remainder of 2010, when economic recovery began, they predicted a

21. The models described here refer to the Random Walk model, to the forecasting methodology followed by the CBC and to the Decomposition method based on the paper by Theodosiou (2010). The Decomposition method splits a time series into its components by a STL procedure (Cleveland et al., 1990), the extension of the linear combinations and the resulting sub-series and groups that are derived based on the extrapolation and the grouping of the extensions for forecasting the time series.

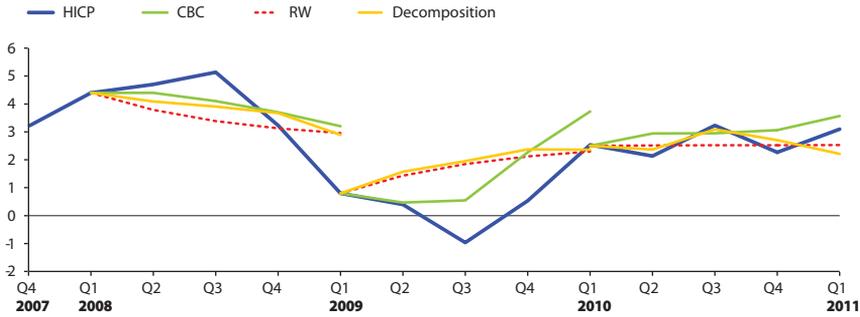
22. A milestone in the literature on inflation forecasting is the paper by Atkeson and Ohanian (2001), who showed that standard Phillips curve forecasting models are not superior to a simple four-quarter-ahead random walk model over the period 1984-1999.

CHART 11.8 Real GDP projected by different types of models and reported for selected time periods
(annual change, %)



Source: CBC.

CHART 11.9 HICP inflation projected by different types of models and reported for selected time periods
(annual change, %)



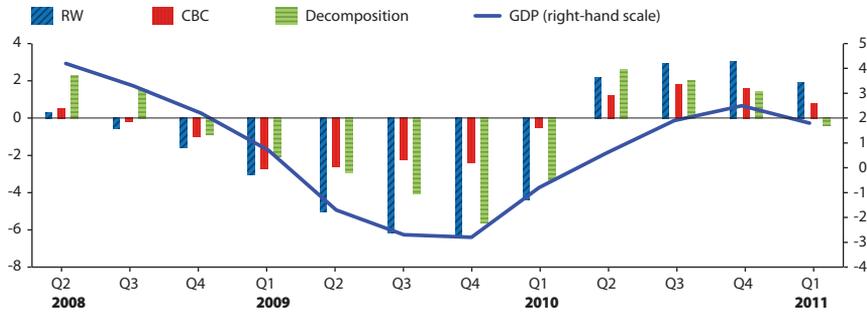
Source: CBC.

lower growth rate. The same pattern seems to exist in HICP projections (Chart 11.11, p.497).

Tables 11.6 (p.498) and 11.7 (p.498) report summary statistics' results of forecast errors for each projection quarter, so that the performance of these three models can be better evaluated. The main conclusions are analysed below.

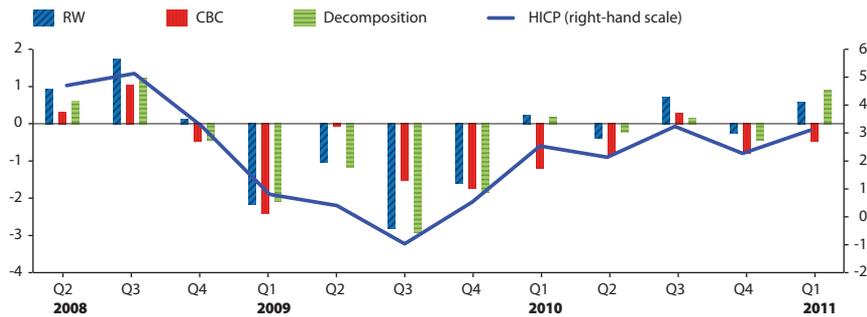
Firstly, the mean of forecast errors shows that all three methodologies, namely the Random Walk model, the broader forecasting system of the

CHART 11.10 Real GDP forecast errors of different types of models (%)



Source: CBC.
 Note: Forecast errors with positive (negative) sign indicate lower (higher) realised values of real GDP than forecasted for each respective quarter.

CHART 11.11 HICP inflation forecast errors of different types of models (%)



Source: CBC.
 Note: Forecast errors with positive (negative) sign indicate lower (higher) realised values of HICP inflation than forecasted for each respective quarter.

CBC and the Decomposition method, systematically predicted a higher GDP growth rate, at an average of 1,9%, 0,7% and 1,5%, respectively, four quarters ahead. At the same time, comparing the first two projected quarters to the last two we see that the errors increase as the projection period widens.

Secondly, the minimum and maximum values of errors in the real

TABLE 11.6 Results of main forecast error summary statistics for real GDP

Method	Quarterly projections	Mean	Maximum value	Minimum value	Standard deviation	Root mean square error (RMSE)
RW	1	-1,1	2,2	-5,0	2,9	8,0
	2	-1,5	2,9	-6,1	3,1	10,3
	3	-2,3	3,0	-6,3	3,7	16,6
	4	-2,5	1,9	-6,4	3,3	14,6
CBC	1	-0,3	1,2	-2,6	1,4	1,7
	2	-0,4	1,8	-2,2	1,5	2,0
	3	-1,0	1,6	-3,7	2,1	4,6
	4	-1,1	1,1	-4,4	2,4	5,8
Decomposition	1	-0,2	2,6	-2,9	2,4	4,9
	2	-1,6	2,0	-4,9	3,1	10,8
	3	-1,8	1,4	-5,6	3,1	11,0
	4	-2,2	0,3	-5,4	2,3	9,0

Source: CBC.

TABLE 11.7 Results of main forecast error summary statistics for HICP inflation

Method	Quarterly projections	Mean	Maximum value	Minimum value	Standard deviation	Root mean square error (RMSE)
RW	1	-0,3	0,9	-1,2	0,9	0,7
	2	-0,2	2,0	-3,2	2,2	4,3
	3	-0,8	1,1	-3,2	1,7	2,9
	4	-0,8	1,8	-4,4	2,5	5,5
CBC	1	-0,4	0,3	-0,9	0,5	0,4
	2	-0,6	1,0	-2,2	1,2	1,4
	3	-1,1	-0,5	-1,7	0,6	1,6
	4	-1,1	1,2	-2,7	1,6	3,2
Decomposition	1	-0,4	0,8	-1,6	1,0	0,9
	2	-0,3	2,2	-3,2	2,2	4,3
	3	-1,0	1,2	-3,4	1,7	3,3
	4	-0,9	1,3	-4,6	2,5	5,6

Source: CBC.

GDP growth projections indicate a significant error variance, as it ranges between an overforecasting of 6,4%, 4,4% and 5,6% for the Random Walk model, the CBC’s model and the Decomposition model respectively, and an underforecasting of about 3%, 1,8% and 2,6% respectively, always

relative to the actual outcome. Furthermore, based on the standard deviation, the Random Walk model demonstrates the highest error dispersion, while the CBC's forecasting system presents the lowest.

Finally, the RMSE indicates that for all of the projected quarters, the CBC's forecasting system, the accounting framework, records the best performance and provides more accurate projections than the other methodologies. This is mainly due to the fact that the CBC's system combines the results of different statistical methodologies and models with the expert judgement of the CBC staff, which can incorporate, *inter alia*, various shocks that cannot be recognised by other forecasting models.

Similar conclusions can be drawn from the results of the forecast errors of HICP projections.

11.7.3 Comparison of forecasts by the CBC with forecasts by other institutions

A number of forecasts for the Cyprus economy are published by both international organisations and private sector institutions. However, these forecasts are not strictly comparable with each another or with the CBC staff macroeconomic projections, because, for the most part, they are finalised at different points in time. Additionally, they use different (partly unspecified) methods to derive assumptions for fiscal, financial and external variables, including oil and other commodity prices. Finally, there are differences on seasonal adjustments methods with respect to working day considerations across different forecasts.

Table 11.8 (p.500) compares the forecasts made by international institutions for the Cyprus economy in terms of GDP and the HICP for the years 2008 to 2012. Large revisions that are recorded in the forecasts for the above-mentioned years by all the institutions are mainly due to different data available at the time of their preparation as well as to revisions of the assumptions. The real GDP growth forecasts of the CBC

TABLE 11.8 Comparison of projections for the Cyprus economy by international organisations
(annual change, %)

	GDP					HICP				
	2012f	2011f	2010f	2009f	2008f	2012f	2011f	2010f	2009f	2008f
European Commission										
Autumn 2010	2,2	1,5	0,5	-	-	2,5	3,3	2,8	-	-
Spring 2010	-	1,3	-0,4	-	-	-	2,5	2,7	-	-
Autumn 2009	-	1,3	0,1	-0,7	-	-	2,5	3,1	0,8	-
Spring 2009	-	-	0,7	0,3	-	-	-	2,0	1,1	-
Autumn 2008	-	-	3,2	2,9	3,7	-	-	3,2	2,9	4,5
Spring 2008	-	-	-	3,7	3,7	-	-	-	2,5	3,8
Autumn 2007	-	-	-	3,9	3,9	-	-	-	2,1	2,3
IMF										
Autumn 2010	2,5	1,8	0,4	-	-	2,5	2,3	2,2	-	-
Spring 2010	-	1,9	-0,7	-	-	-	2,3	2,7	-	-
Autumn 2009	-	2,7	0,8	-0,5	-	-	2,2	1,2	0,4	-
Spring 2009	-	-	2,1	0,3	-	-	-	2,4	0,9	-
Autumn 2008	-	-	3,5	2,8	3,4	-	-	2,6	3,5	4,6
Spring 2008	-	-	-	3,5	3,4	-	-	-	2,9	4,0
Autumn 2007	-	-	-	-	3,7	-	-	-	-	2,4
CBC										
Autumn 2010	2,4	1,8	0,7	-	-	2,4	3,4	2,7	-	-
Spring 2010	-	1,3	-0,5	-	-	-	3,2	2,9	-	-
Autumn 2009	-	1,8	0,3	-1,3	-	-	2,3	2,6	0,2	-
Spring 2009	-	-	0,7	0,4	-	-	-	3,0	1,0	-
Autumn 2008	-	-	2,5	2,0	3,6	-	-	2,9	2,4	4,6
Spring 2008	-	-	-	3,7	3,6	-	-	-	2,4	4,2
Autumn 2007	-	-	-	3,8	3,9	-	-	-	2,3	2,9

Sources: European Commission, IMF, CBC.

TABLE 11.9 Comparison of international organisations' average projections for the Cyprus economy during the period 2008-2012
(annual change, %)

	GDP					HICP				
	2012f	2011f	2010f	2009f	2008f	2012f	2011f	2010f	2009f	2008f
European Commission	2,2	1,4	1,1	2,7	3,8	2,5	2,8	2,8	1,9	3,5
IMF	2,5	2,1	1,7	2,2	3,5	2,5	2,3	2,2	1,9	3,7
CBC	2,4	1,6	1,1	2,5	3,7	2,4	3,0	2,8	1,7	3,9

Sources: European Commission, IMF, CBC.

range, on average, between the European Commission and the IMF forecasts, with the IMF forecasts being on average the most optimistic

TABLE 11.10 Comparison of forecast errors for the Cyprus economy by international organisations
(annual change, %)

	GDP			HICP		
	2010f	2009f	2008f	2010f	2009f	2008f
European Commission						
Autumn 2010	0,4	-	-	-0,2	-	-
Spring 2010	1,3	-	-	-0,1	-	-
Autumn 2009	0,8	-1,0	-	-0,5	-0,6	-
Spring 2009	0,2	-2,0	-	0,6	-0,9	-
Autumn 2008	-2,3	-4,6	-0,1	-0,6	-2,7	-0,1
Spring 2008	-	-5,4	-0,1	-	-2,3	0,6
Autumn 2007	-	-5,6	-0,3	-	-1,9	2,1
IMF						
Autumn 2010	0,5	-	-	0,4	-	-
Spring 2010	1,6	-	-	-0,1	-	-
Autumn 2009	0,1	-1,2	-	1,4	-0,2	-
Spring 2009	-1,2	-2,0	-	0,2	-0,7	-
Autumn 2008	-2,6	-4,5	0,2	0,0	-3,3	-0,2
Spring 2008	-	-5,2	0,2	-	-2,7	0,4
Autumn 2007	-	-	-0,1	-	-	2,0
CBC						
Autumn 2010	0,2	-	-	-0,1	-	-
Spring 2010	1,4	-	-	-0,3	-	-
Autumn 2009	0,6	-0,4	-	0,0	0,0	-
Spring 2009	0,2	-2,1	-	-0,4	-0,8	-
Autumn 2008	-1,6	-3,7	0,0	-0,3	-2,2	-0,2
Spring 2008	-	-5,4	0,0	-	-2,2	0,2
Autumn 2007	-	-5,5	-0,3	-	-2,1	1,5

Sources: European Commission, IMF, CBC.

ones (**Table 11.9**, p.500). Regarding the HICP, forecasts vary more widely across international institutions. This may partly be due to the different assumptions used for international oil and wheat prices, two variables that tend to be volatile, and/or to the different information (e.g. about VAT changes) available to the institutions at the time when the forecasts were carried out.

Forecasting errors by international institutions and the CBC are listed in **Table 11.10** for the years 2008 to 2010. In general, and as can be seen from the table, the forecasting error increases with the projection horizon for all institutions without exception, with the IMF recording, on average,

TABLE 11.11 Comparison of international organisations' average forecast errors for the Cyprus economy
(annual change, %)

	GDP			HICP		
	2010f	2009f	2008f	2010f	2009f	2008f
European Commission	0,1	-3,7	-0,2	-0,2	-1,7	0,9
IMF	-0,3	-3,2	0,1	0,4	-1,7	0,7
CBC	0,2	-3,4	-0,1	-0,2	-1,5	0,5

Sources: European Commission, IMF, CBC.

the smallest forecasting error for real GDP growth, while the CBC's HICP forecasts are, on average, the closest to the actual outcomes (**Table 11.11**). Furthermore, it is worth noting that the real GDP growth and HICP projections for 2009 deviated remarkably from the actual figures, reflecting the uncertainty surrounding the projections, as the various assumptions and the data available at the time of preparing the projections could not possibly have foreseen the consequences on the domestic economy from the global economic crisis that intensified in 2008.

11.8 Summary

In conclusion, most central banks use not only simplified theoretical models but also empirical models in order to improve the understanding of the monetary policy transmission mechanism and inform monetary policy decision-making. More specifically, these models contribute to a better understanding of the historical trends of the economy and the possible change in the current and future behaviour of macroeconomic aggregates. During the last decade, we have seen a rapid trend towards the development of more advanced econometric models, which are used for different purposes by central banks. One of these purposes refers to projecting the key macroeconomic variables such as real GDP growth and inflation. These forecasts are a useful tool for reviewing the existing information related to current and future economic developments.

In this context, recognising the existence of time lags in the transmission of monetary policy to the economy and the fact that the transparency of policy decisions can increase their force and effectiveness, many central banks are now publishing the forecasts for their key macroeconomic variables. It is noted that these forecasts, that are based both on specific assumptions and on the technocratic view of central bank experts, are subject to a level of uncertainty regarding their realisation. These risks to the baseline forecasts are estimated by calculating various scenarios of economic developments using different assumptions from those underlying the baseline scenario.

In the euro area, forecasts are essential to perfecting the assessment of economic prospects and the short-run to medium-run fluctuations of inflation around its trend. Nevertheless, they are not the only factor taken into account in the ECB's monetary policy decisions.

The CBC, as a member of the Eurosystem, will continue to enrich its economic research in the field of econometric modelling and thus carry out important work towards developing and improving its macroeconomic forecasting techniques and tools in order to support the CBC's Governor in its tasks relating to the conduct of monetary policy in the euro area.

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ABBREVIATIONS IN CHAPTER 12

ATM: Automated Teller Machine

CBC: Central Bank of Cyprus

CySCF: Cyprus Survey of Consumer Finances

CYSTAT: Statistical Service of Cyprus

EAC: Electricity Authority of Cyprus

ECB: European Central Bank

HFCN: Household Finance and Consumption Network

HFCs: Household Finance and Consumption Survey

OECD: Organisation for Economic Co-operation and Development

SCF: Survey of Consumer Finances

SHIW: Survey on Household Income and Wealth

US: United States of America

12. Finances of Cypriot households

Ioanna Evangelou, Stephan Haroutunian*

12.1 Introduction

The past few decades saw an increasingly widespread use of sample surveys for the purpose of collecting information about the financial condition and consumption patterns of households. The main objective of such surveys is to record, measure and analyse the decisions taken by households regarding saving, investment, debt, consumption, transaction methods, retirement, etc. The United States is conducting the Survey of Consumer Finances (SCF), sponsored by the Federal Reserve Board of Governors, since 1962. The Survey on Household Income and Wealth (SHIW) of the Banca d'Italia also dates back to the 1960s. In Cyprus, an effort to establish a similar survey was initiated in 1999 by a research team of the University of Cyprus, with the collaboration and sponsorship of the Central Bank of Cyprus (CBC). In the context of this collaboration, three surveys were conducted: in 1999, 2002 and 2005. However, after Cyprus joined the European Union in 2004 and the euro area in 2008, the CBC has undertaken to conduct the Household Finance and Consumption Survey (HFCS), as part of a broader euro area-wide data collecting project and in line with the recommendations of the European Central Bank (ECB) regarding,

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among others, the sampling method, statistical methodology and definitions. The CBC has participated in the Household Finance and Consumption Network (HFCN) of the European System of Central Banks (ESCB) since 2007. This network consists of experts in the field of surveys, economists and statisticians of the ECB, the Eurosystem national central banks and a number of national statistical institutes and research institutes and its main objective is to establish a common, harmonised survey. To this end, and in full compliance with the ECB guidelines, the various surveys on households' finance and consumption patterns that are conducted in individual euro area countries follow a common methodology, sampling plan and questionnaire. This ensures the cross-country comparability of data and enables the compilation of economic indicators and statistics for the euro area as a whole. Being part of the network, the CBC conducted the fieldwork for the first wave of the survey (data collection) in 2010 with 2009 as the reference year.

This chapter discusses the usefulness of such surveys, as well as some of their key results and general characteristics (methodology, scope, analysis, etc.). Specifically, **Section 12.2** focuses on the usefulness of such surveys, and **Section 12.3** (p.515) discusses the broad characteristics of the surveys conducted in Cyprus in 1999 and 2002. **Section 12.4** (p.515) recalls the establishment of the ESCB's HFCN and explains the importance and objective of the survey. **Section 12.5** (p.523) reports and analyses the results of the 1999 and 2002 surveys on the portfolios of Cypriot households, whereas **Section 12.6** (p.531) provides some preliminary results of the HFCS 2010 survey. **Section 12.7** (p.534) refers to the Household Budget Survey conducted by the Statistical Service of Cyprus and **Section 12.8** (p.537) concludes the chapter by summarising its main points.

12.2 The usefulness of household finance surveys

This Section provides a brief overview of the scope of research that

makes use of household finance data. Indeed, survey data collected directly from households through personal interviews, with respect to their financial condition and consumption patterns, have been extensively used in a number of academic papers. Their results have allowed economists and policy makers to gain insight into the behaviour of households and how it is influenced by changes in income, credit constraints and interest rates. Changes in economic aggregates are driven not only by macroeconomic variables but also by household-specific factors. This is particularly the case with household consumption, saving and balance sheets, which are largely influenced by expectations and uncertainty regarding the future incomes of individual members of a household as well as by their demographic and social characteristics. Since these household-specific factors remain hidden in general (aggregate) statistics, their relevance can only be determined at the micro level (i.e. at the household level).

Moreover, household-specific data contribute to a better understanding of the impact on economic performance from the various economic shocks, economic policies and structural changes in households. The recent financial crisis has highlighted the importance of understanding how households respond to wealth shocks, in terms of both financial wealth (equity, bonds) and real wealth (mainly real property prices), and how their behaviour depends on demographic and economic characteristics, such as income level and indebtedness. For many households, the bulk of their assets consist of real estate and most of their debt is in the form of mortgage loans, making households vulnerable to fluctuations in property prices and interest rates. The availability of micro-level survey data on wealth, income and debt enables researchers and policy makers to gain a better understanding of how households across different income categories will be affected by and respond to various shocks; to a large extent, this micro-behaviour will determine the overall performance of the economy at the macro level.

Examples of fields of economic research that have drawn on micro data from such surveys are: (i) wealth effects on consumption; (ii) the link of household indebtedness and debt service payments with income and wealth; (iii) retirement income, consumption and pension reforms; (iv) access to credit and borrowing/liquidity constraints; (v) financial innovation, consumption smoothing and portfolio selection; and (vi) wealth inequality within and across countries. The results of such surveys in these fields feed into policy-making and also in the private sector, as shown by the examples given below¹.

Wealth effects on consumption

It is a common perception that households will tend to spend more as their wealth increases, because they have more resources available and also because their liquidity constraints are less severe. Paiella (2004), Guiso, Paiella and Visco (2005) and Grant and Peltonen (2005) for Italy and Bover (2005) for Spain, drawing on micro data from household finance surveys, find that the marginal propensity to consume out of real estate wealth is relatively small, about 1.5-3.0 cents for a one euro increase in the value of real estate wealth. Bover (2005) on Spain, Sierminska and Takhtamanova (2007) for Finland, Canada and Italy, Grant and Peltonen (2005) for Italy, Bostic, Gabriel and Painter (2005) for the US, among others, show that the marginal propensity to consume out of financial wealth is even smaller and often statistically insignificant. An important policy implication of these findings is that since real estate wealth impacts more on consumption than changes in financial wealth do, experience from stock market shocks cannot be seen as representative of the possible impact from a fall in real estate prices.

Engelhardt (1996) for the US and Berben et al. (2006) for the Netherlands reach a very useful conclusion regarding the wealth effects on consumption: they show that such effects are asymmetric, i.e. households tend to respond more strongly to decreases than to increases

1. The overview of the results of research employing data from surveys on households' assets and liabilities is based on the "Survey Data on Household Finance and Consumption: Research Summary and Policy Use" (2009) by the Eurosystem Household Finance and Consumption Network. Both authors are members of the Network.

in wealth. This implies that technocrats should take into account the possibility that a recession in the real estate market may impact on the economy more dramatically; this finding is of particular relevance for Cyprus, given the high proportion of homeownership.

Several empirical investigations, including the paper by Bover (2005), show that the age distribution of households also plays a significant role in wealth effects on consumption. According to such research, there is no wealth effect for young households; there is a strong wealth effect for households aged 35-44, but for 44+ households the wealth effect is weakened. This can be explained by the fact that an increase in the value of a household's real estate wealth reduces its need to save, especially for those in the 35-44 age group that is typically associated with higher life-cycle consumption needs.

Real estate prices and household indebtedness

Closely related to the above investigations is the issue of the relationship between real estate prices and total household indebtedness. Data from household finance surveys provide significant input in the analysis of the structure of, and links between, household assets and liabilities, as they enable researchers to determine the incidence and degree of over-indebtedness and the profiles of households concerned and detect any entailed risks to the economy. Dynan and Kohn (2007), in the case of the US, find that the increase in house prices has played a central role in the rise in household debt. Dynan and Kohn (2007) and Dynan, Elmendorf and Sichel (2006) argue that household consumption in the US has become less sensitive to income shocks, as financial innovation has enabled households to increase their debt levels, thereby supporting consumption. They also find that over-indebted households run a higher risk of defaulting. Disney, Bridges and Gathergood (2006) examined the relationship between real estate prices, household indebtedness and borrowing constraints in the United Kingdom with particular focus on

the substitutability between secured/collateralised (e.g. mortgages) and unsecured/uncollateralised debt (e.g. credit cards). They found that increased use of unsecured/uncollateralised debt (in the context of financial innovation and high competition between banks) has reduced the real estate wealth effect, as real estate collateral has lost its importance.

Retirement income, consumption and pension reforms

Population ageing in western countries and the euro area in particular may have a significant impact on consumption and the maintenance of a satisfactory standard of living after retirement. This is an additional reason why household finance survey data are very important and useful, as they include micro-level data on elderly households. According to life cycle theories, households smooth out their consumption over their lives, taking on loans when young and consuming out of wealth when older. However, the results of household finance surveys suggest that aged households have positive saving rates that increase with age (Börsch-Supan, 2001), a finding that runs counter to life cycle theories. A possible explanation is that elderly households may start to increasingly consider leaving an inheritance and, at the same time, they face higher uncertainty about their future need to pay for healthcare and age-related contingencies. This latter point is also confirmed by Kennickell and Lusardi (2004), who have shown that although a precautionary saving motive exists and affects households of every age, it is particularly important for elderly households. Population ageing increases not only pressures on pay-as-you-go pension systems but also the need for more post-retirement income from funded pension schemes returns that depend on the evolution of interest rates and stock market values. Household finance survey data provide useful statistics enabling the identification of those groups of the population that will be most strongly affected

by any stock and bond price shocks. At the same time, the need to expand the role of funded pension schemes increases the importance of financial literacy among households.

Access to credit and borrowing/liquidity constraints

A crucial question for economic policy is how household consumption will respond to any changes in incomes and/or interest rates. The answer to this question would, among other factors, depend on households' access to credit or the borrowing constraints they might be facing. For example, if many households are faced with credit constraints, an expansionary fiscal policy that increases the income of these households could prompt them to increase their private consumption. That is, in this case, the so-called Ricardian effects will not impair the effectiveness of fiscal policy. In other words, it is important that economists are able to detect the percentage of households facing liquidity constraints. Some early studies, e.g. by Zeldes (1989) and Runkle (1991) use the value of liquid assets and home ownership as indications of whether a household faces credit constraints. The findings of these studies are consistent with the existence and significance of credit constraints. Jappelli, Pischke and Souleles (1998) and Guiso, Jappelli and Terlizzese (1996), among others, use other variables as indications of credit constraints on households: for example, households' responses to questions about whether they have ever been refused a loan or discouraged from applying for one. According to their research, the percentage of households faced with credit constraints is low. Generally, however, the conclusion is that credit constraints, despite their existence, are difficult to identify. What is for certain, nonetheless, is that survey data at the micro level enable us to better analyse the financial condition of households and to obtain a better understanding of the constraints they face in their access to loans.

Financial innovation, smoothing of consumption and portfolio selection

Financial innovation offers households the opportunity to change their consumption over time, smoothing it out and making it less vulnerable to income shocks. Thus, in economies with developed financial markets, consumption is expected to be less vulnerable to such shocks. Dynan, Elmendorf and Sichel (2006), using data from the US, concluded that the reaction of spending to income shocks has fallen by about a half since 1985. Guiso, Haliassos and Jappelli (2002) report survey results on portfolio selection patterns in countries such as the US, the United Kingdom, Italy, Germany and the Netherlands and show how portfolio composition depends on age, wealth and household characteristics. From a central bank's perspective, a significant aspect of micro data is their use for the calculation of demand for money. Attanasio et al. (2002) look, among other things, at how transactionary demand is influenced by financial innovation (e.g. the introduction of ATMs). They find that the interest rate elasticity of demand is -0.3 for non-users of ATM and -0.6 for ATM users.

Wealth inequality

Wealth inequality in industrial economies is large, with a small percentage of households holding a disproportionately large part of the wealth, in particular financial wealth. For this reason, the economic behaviour of a small share of the population is important in explaining the dynamics of total wealth and capital in an economy. Bernanke (2007), for instance, shows that significant economic growth in the US in the past decades went hand in hand with an increase in inequality. A number of other studies (Brandolini et al., 2004, Kennickell, 2006, Herrala, 2007) describe wealth inequality in various countries and look into how it has changed over time. Davies and Shorrocks (1999) provide a survey of the relevant literature on OECD countries and conclude that wealth is more unequally distributed than income.

The above overview shows clearly the importance and usefulness of sample surveys that aim to collect data on the financial condition, portfolio composition, income, savings and consumption of households at the micro level.

12.3 Cypriot household finance surveys of 1999, 2002 and 2005

Household finance surveys were launched in Cyprus in 1999 and were the product of collaboration between the CBC and the University of Cyprus. Three waves of the survey were conducted, in 1999, 2002 and 2005. The next wave, originally scheduled for 2008, was cancelled, amid discussions on the creation of a single pan-European survey.

Research projects on “Cyprus Household Portfolios” were fashioned according to the methodology applied in the Survey of Consumer Finances (SCF) in the US, which, as already mentioned, dates back to 1962 and is sponsored by the Federal Reserve Board of Governors. The objective of the projects was to collect from a sample, representative for Cyprus as a whole, information/data on the wealth, consumption and saving patterns of households, their attitudes to risk, the liquidity of their assets as well as their insurance coverage and pension schemes.

The sampling design of the Cyprus Survey of Consumer Finances (CySCF) was based on a standard area-probability multi-stage sampling technique. In addition to the standard sample, oversampling of the wealthy was applied. The final weighted samples were: for CySCF 1999 1,361 households, for CySCF 2002 1,197 and for CySCF 2005 1,290 households.

12.4 Establishment of the HFCN network– Significance and objective of the HFCS survey

Cyprus continued to conduct its abovementioned research projects after the three waves of CySCF were completed. Meanwhile, entry into

the euro area implied a need for adjusting the survey to the specifications laid down by the ECB. Since 2007, the CBC has participated in the Household Finance and Consumption Network (HFCN), assigned with the task of setting up and operating an international database of cross-country comparable household finance and consumption surveys (HFCS). The survey is conducted at the national level in all euro area countries and has filled a significant gap by ensuring the availability of comparable micro-level data. Apart from the benefits indicated in Section 12.2, household finance surveys provide policy makers, the research community and a broad spectrum of other interested parties with a clear and complete picture of various macroeconomic aggregates, such as inflation, unemployment, interest rates, saving, debt and the composition of household assets in individual countries and the euro area as a whole. The objective of the survey is to collect information in order to analyse the economic decisions taken by households regarding, among other things, saving, investment, assets and their financing, borrowing, consumption and transaction methods, at the level of individual members and households. Information on demographics, employment and intergenerational transfers is also collected. The survey is a valuable source of information about the composition of euro area households' financial and real assets, debt, deposits and insurance coverage/pension entitlements. Moreover, the survey seeks to create a comprehensive dataset enabling high-quality research, the compilation of statistics and further analyses that can serve as input to the effective conduct of monetary policy and will ensure financial stability to the benefit of all euro area countries, including Cyprus.

12.4.1 Sampling design and sampling frame of the HFCS

The survey is conducted under the auspices of the ECB and all euro area countries participate in it, using a common questionnaire. The

methodology used is stratified sampling at the first stage and systematic (within the strata) sampling at the second stage. For Cyprus, 1,200 households have been selected, including oversampling of the wealthy. The size of the sample ensures representativeness both at the Cyprus and the euro area level. The sampling frame used is the customer list of the Electricity Authority of Cyprus (EAC), which encompasses all buildings with electricity supply in the government controlled areas of the island. This makes it possible to select households for the purpose of the survey and make a distinction between main residences and holiday homes. Households are categorised according to their electricity consumption and for the oversampling of the wealthy households' electricity consumption is used as a proxy for wealth. Before the sampling, the list was purged from all buildings with zero annual consumption and holiday homes (i.e. households with annual consumption below a specified number of kWh, which were considered holiday homes or secondary residences), thus saving time and cost in the fieldwork.

A key characteristic of the planning of such surveys is the highly skewed distribution of income and wealth (Avery, Ellienhausen and Kennickell, 1988 and Kennickell and Woodburn, 1992), because a very small proportion of the population possesses a very large share of the wealth (deposits, equity etc.). A simple random sample would yield too few observations from wealthy households to draw robust and representative conclusions on financial variables/characteristics. To address this problem and ensure the best possible representation of wealthy households in the sample, most household finance surveys use, apart from the representative sample, an additional sample consisting solely of high-income households, and then adjusting the weights accordingly. This is the procedure referred to as "oversampling of the wealthy", which was used for the reasons described above and in line with the ECB's recommendation. This will provide future statistical analysis with more consistent and efficient estimators. The general guidelines, the legal

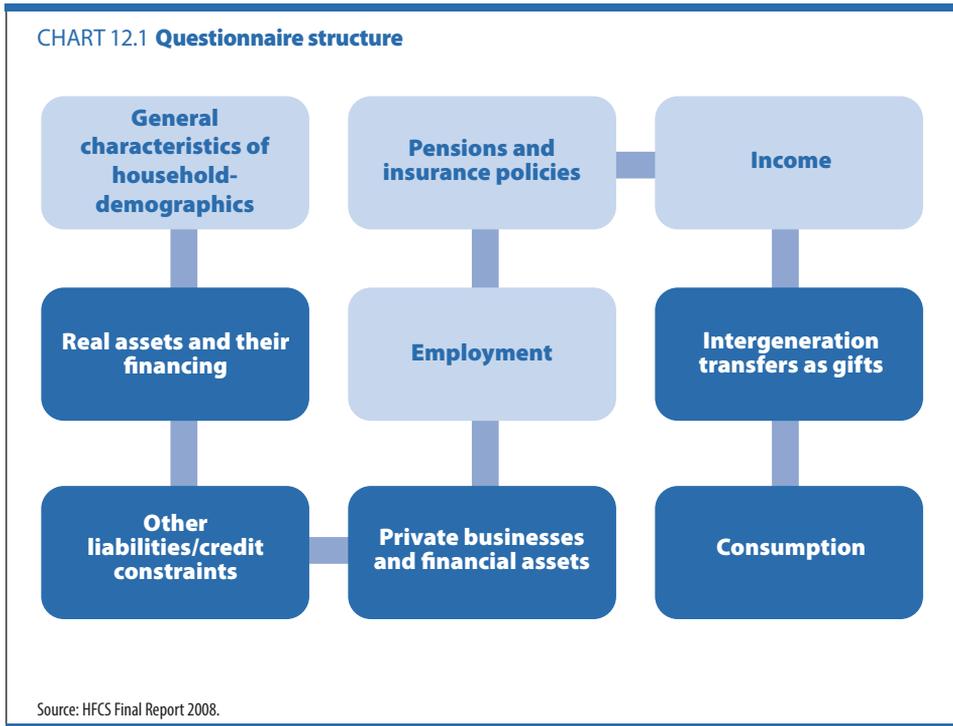
aspects that relate to the survey, as well as the transmission and further dissemination of the data were detailed by the ECB in 2009, with the concurring opinion and intervention of the HFCN².

12.4.2 The HFCS questionnaire

All participating countries use a common template questionnaire. Each country, however, may add to core output variables another set of variables from the non-core list, as well as a set of its own. This is the approach that Cyprus has followed to arrive at its final questionnaire (translated into Greek), which consists of 213 questions³.

The first part of the questionnaire is called a screener and is geared towards identifying “the financially knowledgeable person”. This is very important because most of the questions are about the financial condition of the household and should be answered by the member who is at the centre of the household’s finances. This person (“the reference person”) responds on behalf of all household members in the blocks of the questionnaire that relate to demographics, real assets and their financing, other liabilities and credit constraints, private businesses and financial assets, income, intergenerational transfers/gifts, and consumption. It should be stressed that, for the purposes of the survey, a household is defined as the totality of the persons that usually live together (adults and children) sharing the expenses. The definition of a household also includes any person who, although not usually living at the household’s address, is entirely or for the largest part financially dependent on the household, e.g. students studying abroad but relying on their parents for financial support. The definition excludes house assistants, who are considered members of another household at their country of origin.

2. As regards the organisation of the HFCS, for any legal aspects and the questionnaire, the HFCN, in conjunction with the Legal Services of the NCBs participating in the survey, developed the HFCS Manual of Procedures. This manual describes the procedures to be followed from the collection of raw data to the final reporting to the ECB, fully respecting the confidentiality and anonymity of data.
3. The preparation of the survey for Cyprus, the translation of the questionnaire and the training of interviewers began in 2009. The fieldwork was carried out between the autumn and the end of 2010. Data were collected through personal interviews for confidentiality purposes and given the length of the questionnaire. Each interview lasted an average of 80 minutes.



The second part of the questionnaire is targeted at individual household members. All household members are categorised according to their relationship with the reference person, e.g. spouse/partner/child. It is important that individual household members are identified and recorded, since certain blocks of the questionnaire require information from every member aged 16 and over. For example, Section 7 seeks information about the income of the household and it is important that data on the income of each household member aged 16 and over are gathered, although for some income sources it is the reference person who provides the information. The other two blocks of the questionnaire that require information from every household member aged 16 and over are: Section 5 (employment) and Section 6 (pension and insurance policies).

The structure of the questionnaire is shown in **Chart 12.1** and a detailed description is provided below:

Section 1: Demographics

This section aims at gathering information about the demographic characteristics of the household, such as age, marital status, education, etc. Such information is of relevance, given that, if associated with cross-sectional data, it can provide economists with important insights into the financial behaviour of households across various age groups and educational levels. Thus, analysts can identify the age groups of households which are more likely to be affected by a change in interest rates or answer various questions, such as about the link of a household's investment and economic choices with its level of education.

Section 2: Real assets and their financing

As is well known, real assets represent a major type of investment. For several households, the main residence is the most important asset. This section collects information about the household's main residence, i.e. ownership, value of property, etc. In cases where the owner-occupied main residence is used as collateral for outstanding loans, a set of questions follow concerning these loans. Among other things, information is gathered on any properties owned by the household other than the main residence, as well as on the amount borrowed and the monthly payments on any loans backed by such other assets. Furthermore, information is collected concerning the value of other assets such as vehicles, works of art and jewellery. The Cyprus questionnaire includes some additional questions about any property owned by the household in the occupied areas of the island. Data derived from this section enable researchers and policymakers to identify a household's level of wealth and combine them with cross-sectional data to understand how its wealth influences its economic decisions. Another interesting question is how households

are affected by changes in interest rates, as such changes have an effect on their monthly loan payments and on their decisions to acquire financial assets.

Section 3: Other liabilities/credit constraints

For a complete picture of households' indebtedness, it is important to gather information on any other liabilities and credit constraints. This section includes questions about bank accounts or credit lines with overdraft facilities, e.g. current accounts or credit cards, as well as about consumer loans and the household's loan repayment behaviour (regular monthly payments, etc.).

Section 4: Private businesses and financial assets

In addition to households' liabilities and real assets, information on other assets such as private businesses and financial assets is of particular relevance. Thus, technocrats can have a full picture of a household's financial condition. In this respect, the questionnaire asks whether the household owns any business employing some of its members, the value of such businesses, whether the household is an investor or silent partner in a business that is not publicly traded, the value of the household's financial investments such as mutual fund shares, bonds, stocks, etc.

Section 5: Employment

This is the first section of the questionnaire addressed to all household members aged 16 and over. There are questions about the current employment status of household members, i.e. whether they are employed, self-employed, retirees, unemployed, students, etc. Other questions refer to the type of employment, whether it is a permanent

position or a temporary contract, while those unemployed are asked whether they are seeking for a job. Employment-related information is important, given that households' economic decisions are strongly influenced by employment and its main features.

Section 6: Pension and insurance policies

An essential aspect of a household's economic behaviour refers to the precautionary action it takes to maintain a satisfactory post-retirement standard of living or to cope with unforeseen contingencies, e.g. a serious illness. Households' attitudes towards retirement plans can shed light on their economic choices. This section includes questions regarding households' future entitlements to public/social security pension plans, occupational pension plans or voluntary non-occupational pension schemes. It also includes questions covering issues such as health plans and life insurance policies. As in the previous section, this set of questions is to be asked only for household members aged 16 and over.

Section 7: Income

Any survey on household finances cannot be complete unless it covers the crucial issue of income. Section 7 includes questions on the amounts of income received by household members aged 16 and over through salaried employment, self-employment, public pensions, private or occupational pension plans and unemployment benefits. Next, the reference person replies on behalf of the household about any income from sources such as public assistance or welfare payments (other than unemployment benefits or public pensions), income from regular transfers by private persons and/or other households, rental income from real estate assets, income from financial investments, private business or partnership, and other income sources.

Section 8: Intergenerational transfers / gifts

Households can also be seen as economic agents from the perspective of the intergenerational links in the form of asset transfers as inheritance or gift. This is a common practice in Cyprus, where many transfers of assets take place as a result of inheritance, with a significant impact on households' wealth and economic decisions. For example, gifts in cash from parents to new households may influence young people [couples] in their decision to buy a property. This section gathers information about substantial gifts or inheritances received by the household, e.g. type and value of the asset, and the household's future intention to make gifts or leave an inheritance.

Section 9: Consumption

This section seeks information on the household's consumption habits, including their expenditure on food and beverages at home and outside the home.

Overall, the data collected by the questionnaire can be used by academics, economists and technocrats in the analysis and design of economic policy.

12.5 Results from past surveys

Following the completion of the 1999 and 2002 surveys, several papers have been published using the collected data. Haliassos et al. (2001) provide a comprehensive overview of the assets of Cyprus households, and compare Cyprus with the United States, as well as with four major European countries: UK, Netherlands Germany and Italy.

The results of the 1999 CySCF showed that nine tenths of households held a financial asset of some sort in the reference year of the survey. The most popular financial asset held by Cyprus households – except

for the very young and older participants in the survey – was checking accounts, followed by government bonds. Half of households had direct or indirect holdings of stock in 1999, i.e. a proportion comparable only to the US which is a country with a long tradition and extensive experience in stock market participation. The overall participation rate in direct stockholding in Cyprus was 25.3% in 1999, i.e. higher than in any other of the abovementioned countries considered in the paper. This is explained by the fact that many households with heads aged over 50 owned stocks and to the fact that several young people who receive financial support from by their parents had extra income to invest in stocks and/or other financial assets. Nevertheless, portfolio diversification in Cyprus appears to be limited, with more than 40% of households holding stocks in only one company. In terms of educational level, some 20% of heads of households investing in stocks reported that the highest educational level achieved is below lyceum.

In comparison to the United States, the participation of Cyprus households in retirement accounts is low. The results from the first wave of the survey imply that Cypriots seem to be relying mainly on the social security system, on defined-benefit pension plans sponsored by employers, and on accumulation of real assets in order to finance their retirement. Despite the absence of investment in mutual funds, almost one third of Cyprus households have been investing in managed portfolios through life insurance policies that accumulate cash value dependent on asset returns.

As regards car ownership, nine tenths of households owned a car, exceeding by far the respective rates in the US.

The results of the 1999 survey suggest that Cyprus is a country of considerable entrepreneurial activity. It is estimated that about one quarter of households own business equity. Apart from an entrepreneurial spirit, Cyprus households show a high risk appetite, and participation in risky assets, either real or financial, significantly exceeds that in other countries, as reflected in similar surveys. More specifically,

relative to investors from Italy, the US and the Netherlands, 70% of Cyprus households undertake [assume] at least one financial or real asset risk, against 57% of US households, 55% of Italian households and less than one third of Dutch households. Still, a large part of Cyprus households seems to prefer holding risky real assets to risky financial assets, even in a year of unprecedented stock market frenzy such as 1999. In 1999, about 19% of Cyprus households held only real assets but no financial assets at all.

Haliassos et al. (2003) describe the participation of Cyprus households in various debts/liabilities using data from the 1999 survey. In Cyprus there is a long tradition of home ownership. Indeed, the survey results show that most households own homes rather than apartments. This points to a staggering rate of home ownership in Cyprus, i.e. it stood at 86.1% in 1999, with 78.1% owning a house rather than an apartment. Nevertheless, despite widespread home ownership in Cyprus, according to the 1999 survey results, only 41% have in 1999 or had in the past a mortgage on their main residence. The rest (excluding those in refugee housing) either bought their home or received it, or at least in part, as a gift or bequest from their parents. The bulk of loans using the main residence as collateral were usually taken on by middle-aged persons, with the 40-49 age group having the highest share (52.2%). Besides, Cyprus households mortgage their property in order to obtain loans for other purposes. More specifically, in the reference year of the survey, 27% of households in Cyprus financed other necessary expenditures, such as those associated with the education of their children or medical emergencies, by using their property as collateral. This is mainly observed in the 40-60 groups, partly because people in this age group are likely to own an asset, such as real estate, and to be parents of children planning to pursue university or other post-secondary studies, including studies for professional qualification. Over the same period, a low percentage of the very young in Cyprus had a mortgage, although most of them already owned a home and a car.

Another interesting conclusion is that around one third of Cyprus households owned some kind of property other than the main residence (secondary property), such as a vacation home. 16% of these households had loans using the secondary properties as collateral. This shows that most Cyprus households seem to acquire such properties only when they can afford to do so without assuming debt.

The 1999 CySCF results document considerable popularity of credit cards as borrowing instruments. A tendency of Cyprus business owners to take out large loans from their business for personal use should also be noted. Most households did not report facing any borrowing constraints and/or did not complain about inability to borrow from financial institutions.

It should also be noted that the majority of young people rely on family transfers and gifts for the financing of education, home acquisition or car purchase. Furthermore, students depend upon their parents' financial support to take on a student loan to finance their post-secondary education. It remains an open question whether Cyprus can continue to rely on such informal mechanisms for the financing of its young generation. Among many potential concerns, an important one is that such excessive reliance on the financial resources of the parents may interfere with provision of equal opportunities to the nation's young in the highly competitive, knowledge-based European society of the future.

Antoniou et al. (2004) describe the participation of Cyprus households in various assets and debts using data from the first (1999) and the second (2002) Cyprus Surveys of Consumer Finances and explore the changes that occurred over this three-year period. More specifically, the analysis shows how various demographic groups changed their attitudes towards investment, risk taking and borrowing between 1999, when the unparalleled stock market boom took place, and 2002, following the burst of the stock market bubble.

The key results concerning the attitude of Cyprus households towards financial risk and investment are set out below.

As far as financial assets are concerned, stocks recorded the most important increases in households' participation rates, whereas government bonds posted important decreases. Participation rates in stocks more than doubled, practically across all age groups in 2002. More substantial is the increase reported in the age groups 60-69 and above 70 which, however, can be explained by the massive purchases by elderly people of the stock "Demetra" issued by the co-operative sector (see **Tables 12.1**, p.528 and **12.2**, p.529).

In 2002 an increasing trend of portfolio diversification was noticeable amongst Cyprus households. About a fifth of households were reported to hold four different types of assets, and over 60% of Cyprus households invested in safe and fairly risky assets only, compared with 41% in 1999 (Antoniou et al., 2004). Across all types of financial assets, **Table 12.4** (p.530) shows that the age group 30-39 had the largest participation in 2002, while in 1999 the corresponding participation was higher for people aged 40-49.

Participation in non-financial assets, such as investment in real estate, main residence, cars and business equity, did not register significant changes between the two surveys.

The conclusions about all types of outstanding loans and credit constraints are presented below, as discussed by Antoniou et al. (2004). The analysis of survey data shows that accounts with overdraft facilities have increased. A possible explanatory factor is a sustained decline in interest rates, which started in 2001 and continued through 2002. In the category of loans for car purchase, an increasing tendency towards larger amounts was evident, possibly indicating a preference to more expensive cars. In the category of student loans, a decline was registered both in the amount of new borrowing and in the outstanding balance of earlier loans. These data still corroborate the fact that the youth depend on financial support from their parents for their studies. Overdraft debt from credit cards fell slightly in 2002, compared with 1999. This form of credit facility is commonly used by

TABLE 12.1 Household participation in various assets
(%)

	1999	2002
Assets		
<i>Financial</i>	89,8	92,9
Liquid accounts	82,2	85,2
Government bonds	50,7	43,6
<i>of which:</i>		
Development stock	1,6	0,8
Saving certificates	0,4	1,4
Savings bonds	48,1	41,1
Other bonds	5,1	10,6
Stocks	25,3	51,4
Mutual funds	0,4	1,0
Retirement accounts	12,5	51,3
Life insurance investment policies	31,1	32,8
Term insurance	18,0	13,5
Whole life insurance	8,5	10,5
Endowment insurance	9,5	12,5
<i>Non-financial</i>	98,2	100,0
Primary residence	86,0	83,1
Investment in real estate	31,8	33,2
Business equity	25,1	22,5
Other non-financial (mostly vehicles)	91,6	90,7

Sources: CySCF Survey 1999 and 2002, Antoniou et. al. (2004).

the younger generation (see **Table 12.3**, p.529). Business owners continued taking on loans from their businesses for personal use. This was mostly observed in the middle-aged groups.

As far as housing is concerned, and in contrast with the 1999 CySCF results, more young people acquired mortgages for house purchases. The distribution by income classification shows that almost all income categories own mortgages on their main residence. Higher income households also have loans to purchase a secondary residence.

The results of the 1999 and 2002 surveys on the finances of Cyprus households suggest that housing loans for the purchase or construction of a household's main residence account for the highest percentage of households' total credit liabilities in Cyprus, which is also observed in other countries, e.g. in the US where however the percentage is higher.

TABLE 12.2 Proportion of households investing in risky assets, by age
(%)

	<30	30-39	40-49	50-59	60-69	>=70	Total
Direct Stockholding (%)							
1999	26,9	26,7	30,0	22,8	22,6	10,4	25,3
2002	46,5	62,6	56,0	59,7	41,6	20,3	51,4
Direct and indirect Stockholding (%)							
1999	47,1	56,7	63,9	45,0	36,0	12,5	50,3
2002	79,8	88,2	83,2	87,0	51,9	22,0	74,0

Sources: CySCF Survey 1999 and 2002, Antoniou et al. (2004).

TABLE 12.3 Household participation in various debts
(%)

	1999	2002
Debts	70,9	74,2
Mortgage and home equity	39,1	45,9
Loans for investment in real estate	5,5	8,1
Credit card balances	20,1	19,4
Other debt	46,3	54,4

Sources: CySCF Survey 1999 and 2002, Antoniou et al. (2004).

Between the two waves of the survey, i.e. from 1999 to 2002, housing loans for the purchase of the household's main residence dropped slightly as a percentage of its total liabilities, from 56.4% to 54.8%. The percentage of Cyprus households that have any type of loans declined somewhat, from 63.1% in 1999 to 62.3% in 2002.

Haliassos et al. (2008) use some variables from those surveys (1999 and 2002 CySCF), as well as data from the respective surveys conducted in the US in 1998 and 2001, in order to investigate the role of social customs (in the form of parental housing gifts) and financial liberalisation in the incidence of homeownership rates, mortgage debt and borrowing constraints.

TABLE 12.4 Ownership of financial assets, by age of household head
(%)

Age		<30	30-39	40-49	50-59	60-69	>=70	Total
1999	Checking account	57,7	72,4	77,1	57,0	50,8	27,4	64,1
	Savings account	40,4	25,2	30,5	36,5	28,0	24,2	30,6
	Deposit account							
	(notice and time deposits)	39,4	33,2	42,2	39,4	33,6	16,7	36,5
	Government savings bonds	38,5	49,3	59,0	54,7	40,5	34,4	50,7
	Other bonds	7,7	5,0	5,6	2,3	7,2	6,3	5,1
	Stocks	26,9	26,7	30,0	22,8	22,6	10,4	25,3
	Retirement accounts	8,7	15,1	13,5	14,0	11,2	0,0	12,5
	Life insurance investment policies	26,9	42,1	45,0	21,8	6,4	1,1	31,1
	Term insurance	18,3	16,9	22,9	19,2	12,8	5,3	18,0
	Whole life insurance	5,8	6,5	10,9	10,1	6,5	5,3	8,5
	Endowment insurance	6,8	8,3	10,9	14,7	4,8	0,0	9,5
	2002	Checking account	61,4	79,7	71,5	69,3	45,6	20,3
Savings account		50,9	34,6	31,6	33,2	43,8	44,4	37,4
Deposit account								
(notice and time deposits)		27,4	30,1	35,9	37,9	41,0	36,7	35,0
Government savings bonds		39,5	55,3	46,4	47,3	36,0	20,5	43,6
Other bonds		13,4	15,4	13,6	8,8	3,7	3,9	10,6
Stocks		46,5	62,6	56,0	59,7	41,6	20,3	51,4
Retirement accounts excluding social security		12,3	10,2	14,6	15,1	1,3	0,0	10,2
Retirement accounts including social security		54,4	71,5	62,1	64,3	16,3	3,9	51,3
Life insurance investment policies		37,7	48,4	38,5	38,9	8,7	3,9	32,8
Term insurance		26,3	14,3	14,8	14,2	9,9	0,0	13,5
Whole life insurance		1,8	17,1	16,2	9,2	4,4	0,8	10,4
Endowment insurance		9,6	16,3	19,4	10,9	6,3	0,8	12,4

Sources: CySCF Survey 1999 and 2002, Antoniou et al. (2004).

Unlike existing studies from other advanced economies, data from Cyprus suggest that only a very small proportion of Cyprus households face binding credit constraints and that a number of important economic characteristics of the household are irrelevant for homeownership and for the use of mortgages. The results of this paper show that the presence of such informal social institutions in Cyprus (parental gift, inheritance in the form of a house) may interfere with the monetary policy transmission mechanism, by

limiting the sensitivity of the propensity to invest in housing to changes in credit market conditions. Young households, which are particularly sensitive to changes in interest rates and to collateral availability because of their limited income, are less likely to be affected if they receive a parental gift in the form of a house. The incidence of mortgage and borrowing constraints was found to be lower, compared with the US results.

Although the aforementioned results from the 1999 and 2002 CySCF Surveys are of particular interest and relevance, it is also important to observe how the behaviour of Cyprus households and, therefore, these results can change over time and in response to the changing economic environment.

12.6 Preliminary results from the HFCS – 2010 field survey with 2009 as the reference year

This section presents some of the preliminary results from the first wave of the Household Finance and Consumption Survey (HFCS), conducted in 2010 with 2009 as the reference year. Analysis was performed on a sample weighted to reflect the general characteristics of the population, given that wealthy households are over-represented in the sample. It should be noted that imputation⁴ has not been used to address missing data at the time of writing.

Specifically, **Tables 12.5-12.8** (pp.532-533) illustrate, among other things, the household's main residence ownership status, whether the main residence or other property is used as collateral on borrowing and the use of the borrowed amounts. In addition, the table reports data on households' participation in loans and credit cards.

Table 12.5 (p.532) shows a high residence ownership rate of 76.9% in Cyprus. This rate has declined over time, from 86.0% and 83.1%,

4. Imputation is a statistical methodology for substituting missing fields in a dataset, using the existing responses of the household to the questionnaire, as well as the patterns of responses by other households. The main advantage of this methodology is that the characteristics of the joint distribution of collected and uncollected data are preserved (Little and Rubin, 1987), by applying unbiased estimators in various statistics, such as average value, median, percentiles, dispersion and correlation. According to the ECB's instructions, the process to be followed by the countries participating in the survey is multiple stochastic imputation.

TABLE 12.5 **Main residence - tenure status**

	Percentage (%)
Own all	76,9
Own part	0,9
Rented / sublet	8,2
Free use (relatives, friends, charity, state grant etc.)	14,0

Source: 2010 Household Survey of Consumer Finances (HFCS) reference year: 2009.

TABLE 12.6 **Households using the main residence and other property as collateral**

Households with:	Percentage (%)	Weighted average value (€)
At least one mortgage for a housing or other loan with the main residence as collateral	38,6	105.483
Property other than the main residence used as collateral for obtaining a loan (% on total households)	15,6	171.835

Source: 2010 Household Survey of Consumer Finances (HFCS) reference year: 2009.

TABLE 12.7 **Households using the main residence or other property as collateral, by age**
(%)

Households with	<=29	30-39	40-49	50-59	60-69	>=70
At least one loan with the main residence used as collateral	6,4	35,0	31,6	20,8	5,3	1,0
Property other than the main residence used as collateral to obtain a loan	4,7	19,7	31,0	32,4	9,7	2,5

Source: 2010 Household Survey of Consumer Finances (HFCS) reference year: 2009.

respectively, according to the results of the 1999 and 2002 surveys. This is attributable to the fact that young couples or recent graduates choose to rent a home, along with an increase in immigrants, who probably prefer renting to owning.

Table 12.6 shows that a fairly high percentage of Cyprus households, namely 38.6%, use the main residence as collateral on housing loans. This figure is similar to the ones from the previous survey waves, with the

TABLE 12.8 Purpose of household loan (with the main residence as collateral)

	Percentage (%)
To purchase the household main residence	74,7
To purchase another real estate asset	5,7
To refurbish or renovate the residence	12,2
To buy a vehicle or other means of transport	1,8
To finance a business or professional activity	4,7
To consolidate other consumption loans	1,4
For educational purposes	3,6
To cover living expenses or other purchases	1,6
Other	1,3

Source: 2010 Household Survey of Consumer Finances (HFCS) reference year: 2009.

1999 percentage coming to 41% and the 2002 percentage standing at the slightly lower level of 37.5%.

Based on **Table 12.7** (p.532), households using their main residence as collateral fall [predominantly] in the 30-39 age group for the financially knowledgeable person, an age at which new families typically acquire their main residence. The same age group is also found to have the largest participation in total housing loans, i.e. irrespective of the use of the main residence as collateral. Among households using property other than the main residence as collateral, the 50-59 age group for the financially knowledgeable person has the highest participation, reflecting the expected fact that adult families give priority to acquiring the main residence and then, if they can afford it, they purchase a secondary property or vacation home (**Table 12.7**).

In the light of the above results, the vast majority of households (74.7%) using their main residence as loan collateral spend the borrowed amounts to purchase and/or build this residence. The second most common purpose of such loans is to refurbish or renovate the main residence (**Table 12.8**).

Almost half of Cyprus households have a credit line or an account with overdraft facilities with a credit institution (**Table 12.9**, p.534). Relative to 1999 and 2002, this rate has increased markedly, probably

TABLE 12.9 Households with loans other than housing loans
(%)

Type of Loan	1999	2002	2009
Consumer Loans ...			
A) Households with a credit line or an account with an overdraft facility <i>with outstanding balance</i>	10,7	15	46,6
	-	-	57,7
B) Car Loan	22,3	22,6	15,2
C) Leasing contract	-	-	6,8
D) Credit card owners	41,7	50,8	52,2
<i>Credit card balances</i>	48	37,9	41,2
E) Educational Loans	8,5	7,8	9,9
F) Company or business finance	11	9,7	8,6

Source: 2010 Household Survey of Consumer Finances (HFCS) reference year: 2009.

due to a continued decline in interest rates from 2001 onwards, although banks' efforts to promote such products to customers may also have played a role. It should also be noted that nearly 60% of households holding such accounts have debit balances. According to the survey results, a considerable increase in credit card ownership is observed. This type of credit is particularly popular amongst young people, as it is a type of non-collateralised loan. The percentage of households with credit card debt has risen relative to 2001 but remains at lower levels than in 1999. A decline is recorded in loans for car purchase, reflecting the sharp drop in the sales of cars and other transport equipment observed in 2009.

Table 12.10 (p.535) indicates that most holders of savings accounts, time deposits, certificates of deposit or similar types of deposits fall within the 30-39 age group. Moreover, as regards the level of education, the majority of depositors have completed at least upper secondary education, while their annual income exceeds EUR 60,000.

12.7 Results from the Family Budget Survey

This survey is conducted by the Cyprus Statistical Service (CyStat). In 2009, the sample comprised 2,707 households. The survey is conducted

TABLE 12.10 Characteristics of households with savings accounts, notice accounts, certificates of deposits or other such deposits

	Percentage (%)
Age of financially knowledgeable person (FKP)	
<30	5,6
30-39	24,7
40-49	24,1
50-59	18,5
60-69	14,7
>=70	12,3
Household income category	
<10.000	10,1
10.000-19.999	17,3
20.000-29.999	13,9
30.000-39.999	14,7
40.000-49.999	9,8
50.000-59.999	7,5
>60.000	23,3
FKP level of education	
No education	2,4
Primary education	12,9
Lower secondary or second stage of basic education	7,2
Upper secondary education	32,1
Post-secondary education	31,2
Masters degree	11,9
PHD	2,0

Source: 2010 Household Survey of Consumer Finances (HFCS) reference year 2009.

every five years and its initial objective was to capture the consumption patterns of households as input into the revision of the weights in the Consumer Price Index. However, following the accession of Cyprus to the European Union, this survey, as well as all previous ones (1996/7 and 2003), complied with Eurostat recommendations, expanding its scope and thus, its importance and relevance.

Table 12.11 (p.536) shows that average annual consumption expenditure in 2009 came to EUR 38,547 per household, i.e. 31.8% up in nominal terms from EUR 29,250 in 2003.

Non-recurring income may come from sales of real estate, business or means of transport, life insurance policies, inheritance, lottery and

TABLE 12.11 Main results

	2003	2009	Percentage change, %
Total income			
Income	31.737	41.083	29,4
Non-recurring income	9.836	11.305	14,9
Total expenditure			
Average consumption expenditure	29.250	38.547	31,8
Non-consumption expenditure	10.706	14.289	33,5
Total loan repayments	3.761	4.891	30,0
Housing loan repayment	1.497	2.648	76,9
Increase in deposits and life insurance	3.614	5.676	57,1

Source: Cystat (Family Expenditure Survey 2009).

betting winnings, loans, withdrawals from deposits and other receipts. The bulk (58%) of non-recurring income in 2009 refers to loans, followed by withdrawals from deposits and sales of real estate with shares of 21.0% and 8.8%, respectively, in total non-recurring income (CyStat, 2009).

With an increase in average annual net income, households seem to spend more on luxury goods (e.g. transport, hotels and restaurants) and less on necessity goods (see **Table 12.12**, p.537). A considerable rise is also visible in the percentage of household income spent on housing purposes, largely reflecting the surge in property prices over the reference period. “Housing, water, electricity and other fuels” remains the most significant expenditure category of Cyprus households.

Turning to the percentage distribution of consumer spending, major differences can be observed in terms of how poorer households allocate their income, compared with wealthier households. Specifically, higher income is associated with a lower share of expenditure on food. The poorest 10% of households (i.e. households in the lowest income decile with an annual income below EUR 13,566) spend roughly a quarter of their budget (24.4%) on food, whereas the wealthiest 10% of households (i.e. households in the highest income decile with an annual income over EUR 73,450) spend a mere 8.9% of their budget on food. Conversely,

TABLE 12.12 Average annual household consumption expenditure by main category of goods and services, 2003-2009

	%		euro		Percentage
	2003	2009	2003	2009	%
TOTAL	100	100	29.250	38.547	31,8
01 Food and non-alcoholic beverages	15,1	12,3	4.410	4.735	7,4
02 Alcoholic beverages and tobacco	1,9	1,3	552	507	-8,2
03 Clothing and footwear	7,7	6,8	2.266	2.639	16,5
04 Housing, water, electricity and gas	21,6	26,6	6.312	10.236	62,2
05 Furnishings, household equipment and supplies	5,9	5,7	1.717	2.207	28,5
06 Health	4,7	5,4	1.389	2.061	48,4
07 Transport	14,6	13,9	4.258	5.351	25,7
08 Communication	3,4	3,5	996	1.364	36,9
09 Recreation and culture	6,0	5,4	1.748	2.082	19,1
10 Education	4,0	3,4	1.157	1.314	13,6
11 Restaurants and hotels	8,3	8,5	2.419	3.290	36,0
12 Miscellaneous goods and services	6,9	7,2	2.026	2.762	36,3

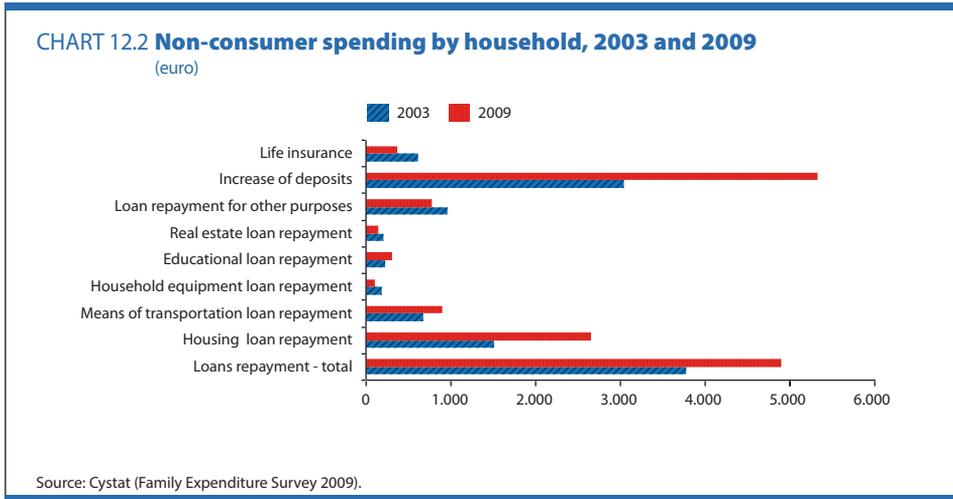
Source: Cystat (Family Expenditure Survey 2009).

households from the lowest income decile allocate only 6.1% of their consumer expenditure to transport, compared with 15.8% for households from the highest income decile.

Non-consumer spending in 2009 stood at EUR 14,289 per household, compared with EUR 10,706 in 2003, i.e. a 33.5% increase in nominal terms. **Chart 12.2**, p.538, plots non-consumer spending and various categories of expenditure, and it can be seen that the bulk of spending serves to increase deposits or repay debt. These amounts appear to have increased considerably, relative to 2003.

12.8 Summary

Surveys on households' assets and liabilities gather a wide range of information about household finances and consumption patterns. The findings of such surveys inform the decisions of economists and policymakers by providing data which are accurate and representative of the population. Such surveys are conducted in several countries



around the world, including most euro area countries. As already mentioned, the CBC in collaboration with the University of Cyprus launched a research programme concerning the assets and liabilities of Cyprus households in 1999, and in this context three waves of the survey have been conducted so far. When Cyprus joined the euro area, the CBC became member of the HFCN. The objective of this network is to develop a harmonised survey on household finance and consumption in the euro area. To this end, in line with the ECB's instructions, the national-level surveys follow a common methodology, sampling plan and questionnaire. This ensures data comparability and enables the construction and compilation of euro area-wide economic indicators and statistics. As part of the network, the CBC conducted the first wave of the survey in 2010. Data are expected to be a rich source of information for academic and policy research and analysis. Given their comparability to other euro area data, the Cyprus survey results lend themselves to use in an international context. Some preliminary results from the first wave of the harmonised survey were presented in **Section 12.6** (p.531). The output of the survey is expected to attract increasing academic attention over time. The next wave of the survey in Cyprus is expected to be completed in 2013, with 2012 as the reference year.

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ABBREVIATIONS FOR CHAPTER 13

BCS: Business and Consumer Surveys

CBC: Central Bank of Cyprus

CYSTAT: Statistical Service of Cyprus

CPI: Consumer Price Index

ECB: European Central Bank

ERD: Economic Research Department

EU: European Union

Eurostat: Statistical Office of the European Union

GDP: Gross Domestic Product

HICP: Harmonised Index of Consumer Prices

NAFTA: North American Free Trade Agreement

REU: Real Estate Unit

RICS: Royal Institute of Chartered Surveyors

SDW: Statistical Data Warehouse

13. Real Estate Market

Marina Theodosiou, George Thucydides*

13.1 Introduction

The real estate market has been established as one of the most important sectors of the Cyprus economy, particularly after the division of the island in 1974 and the subsequent surge in demand for housing and building infrastructure. For a number of years, investment in the construction sector accounted for a significant proportion of the Cyprus Gross Domestic Product (GDP), while in recent decades, flourishing construction activity and the increasing transaction volume ensuing from the real estate market have drastically contributed to the island's economic growth.

One of the main factors that contributed significantly to the expansion of the real estate sector in Cyprus over the recent years has been the considerable growth in foreign demand for properties. The very favourable conditions that prevailed in the market prior and after the island's accession to the European Union (EU) in 2004 were a determining factor for the momentous increase in foreign interest for Cyprus properties. In particular, the low, relative to other countries with similar characteristics, property prices in Cyprus played a decisive role in foreign nationals' decision, most notably retirees, to purchase a holiday home or even a primary residence

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in Cyprus. At the same time, the steadily growing Cyprus economy with a strong currency, a legislative framework based on the English law and the confidence that the prospect of an EU membership inspired were also important factors that led to the increased property demand from abroad. Other factors included the relatively low cost of living, low criminality rates and the Mediterranean climate characteristics of the island.

Growth in the real estate sector has also been significantly underpinned by domestic demand. Easy access to credit for property purchase and the relatively low mortgage rates that prevailed in the market during the years before and following the accession of Cyprus to the EU encouraged many Cypriots to increase their investment in real estate.

As a result of the growing demand for Cyprus properties, unfurled over the last two decades, and the concomitant overheating of the real estate market, prices soared, recording double-digit annual growth rates in the years preceding the global economic crisis which was instigated by the collapse of Lehman Brothers in September 2008. Moreover, intense activity in the property sector led to the accumulation of a substantial housing stock, built in anticipation of a sustained growth in demand and as a result of property developers' desire to exploit the positive climate in the market, and thus reap bigger profits.

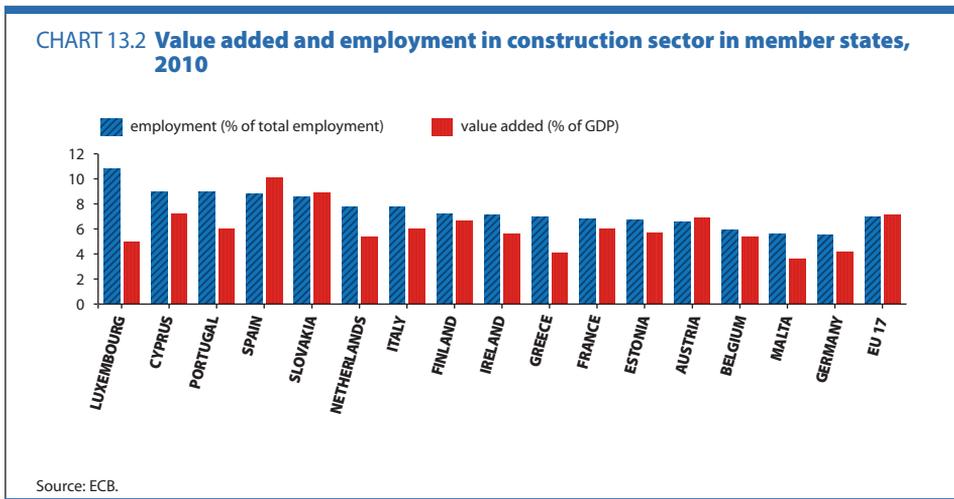
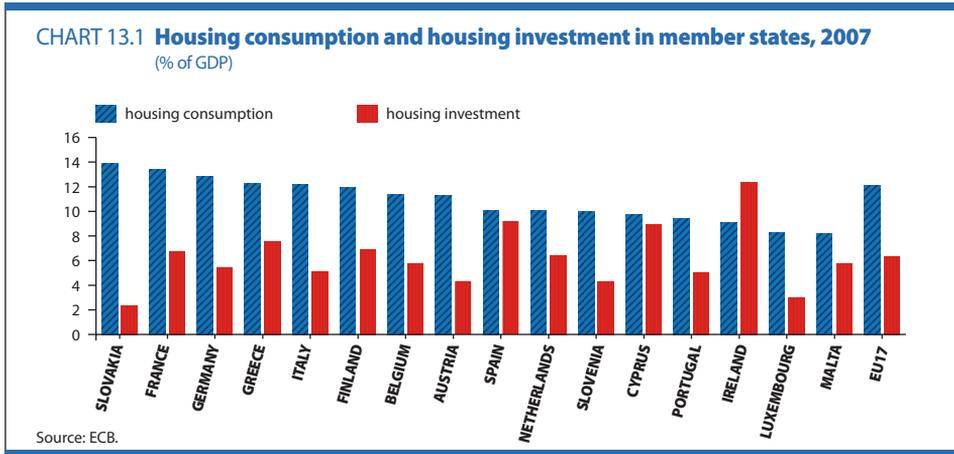
However, the outbreak of the global economic crisis resulted in the alienation of foreign investors from the Cyprus real estate market, particularly of British nationals, which accounted for the largest proportion of foreign property investment, was also partly due to the protracted weakness of the sterling against the euro. Construction activity, and the real estate sector in general, began to demonstrate clear signs of a downturn. For the first time prices were receding, while the high percentage of unsold housing inventory meant the deeper deterioration of conditions in the construction sector with knock-on effects in other sectors of the economy. These developments have highlighted the importance of a sound real estate sector for the Cyprus economy, as well as the need for close monitoring of market developments.

This chapter provides an overview of the real estate sector in Cyprus. Emphasis is placed on the importance of the sector for the Cyprus economy, the determining factors behind its great significance, as well as the factors that could considerably affect future developments in the sector, mainly through changes in market prices. In addition, this chapter discusses the various econometric and statistical techniques employed, both at an academic and at a policy level, for the construction of property price indices. Reference is made to the existing residential property price indices constructed for the Cyprus real estate market.

13.2 Magnitude, funding and structure of the real estate market in Cyprus and the EU

The real estate market constitutes a vital sector of all developed economies, contributing significantly to GDP, both directly through investment and indirectly through consumption. For instance, in the euro area, during the period 1999-2009, housing investment averaged at 5,9% of GDP and housing consumption at 12,2% of GDP, resulting to an overall contribution to GDP of around 18,1%. In Cyprus, where the real estate market makes up one of the most important sectors of the economy, its contribution to GDP was also high during the same period, with housing investment accounting for an average of 7,2% of GDP and housing consumption for an average of 10% of GDP (European Central Bank, 2011). Figures for Cyprus and other EU Member States for 2007 are reported in **Chart 13.1** (p.546).

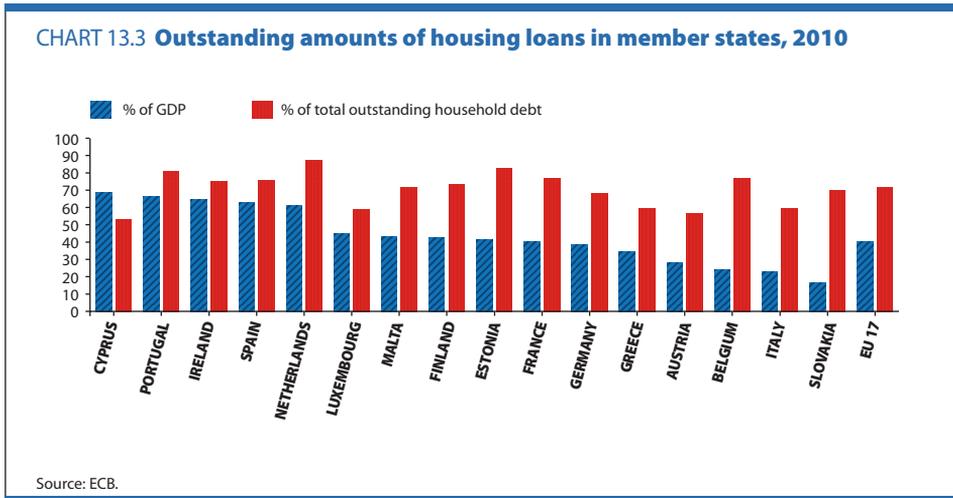
In addition to the above, the real estate market exerts significant direct effects on other sectors of the economy such as the construction sector and the labour market. In the EU, on average, during the period 1999-2010, the construction industry contributed to the employment of 7,4% of the total workforce and accounted for 6% of the total value of the EU economy (Eurostat, Statistics in Focus, 2010a). In Cyprus, for the same period, the construction sector employed on average 9,2% of the total workforce with



a contribution to the country's economy of around 7,9%¹. The data for 2010 is shown in **Chart 13.2** for Cyprus and other European countries.

Furthermore, the construction and real estate sectors carry important indirect effects on wholesale and retail trade industries which are involved in the completion of residential properties, and therefore directly depend on construction activity. Such industries include those involved in the manufacturing and wholesale/retail trade of furniture, electrical and household appliances, heating and air conditioning units, alarm and fire protection systems, home equipment and homeware, among others.

1. The percentage refers to the sector's direct contribution to the country's GDP and does not include multiplier effects on other sectors of economic activity.



Moreover, housing loans hold the largest share in a household's debt, a trend that has strengthened significantly across Europe over the last ten years. For 2010, the outstanding amount of mortgage loans in the EU amounted to 40,3% of GDP, up from only 27,3% in 1999. This accounted in 2010 to 71,7% of the total outstanding household debt. In Cyprus, housing loans corresponded to 37,1% of GDP in 2006 and 68,9% of GDP in 2010, marking a significant increase of 85,7% over a period of just four years. The figure for 2010 represented 52,7% of the total outstanding household debt (European Central Bank, 2011). **Chart 13.3** shows the outstanding amount of mortgage loans in Cyprus and other EU countries in 2010, as a percentage of GDP and as a percentage of the total outstanding household debt.

In addition, housing constitutes the largest component of a household's wealth. For the euro area, the share of net housing wealth (value of immovable property assets net of mortgages) to GDP increased from 193,1% in 2000 to 278,7% in 2010, with a compound annual growth rate of 5,8% for the period 2000-2007 and -0,9% for the period 2008-2010. These developments were accompanied by an average annual increase in house prices between 2000 and 2010 of 4,6% (European Central Bank, 2009 and European Central Bank, 2011).

13.3 Real estate market, the macroeconomy and monetary policy

It is evident from the above that strong fluctuations in property prices can directly affect household wealth, with strong repercussions on household consumption and household debt repayment capacity. This has been documented in the literature by Disney et al. (2010) and Case et al. (2005), who empirically demonstrated that in developed countries, changes in house prices are highly correlated with changes in consumption, either through their impact on total household wealth or through their impact on the total value of a household's mortgage collateral.

Campbell and Cocco (2007), using micro data from the United Kingdom, argued that increases in house prices have a stronger positive effect on the consumption pattern of elderly people (above 40 years of age) than of young people (below 40 years of age), and also of homeowners than of renters. In contrast, a similar study by Attanasio et al. (2009) found that the correlation between house prices and consumption holds stronger in the case of young consumers than in the case of elderly consumers. The authors also argued that there is no statistically significant difference in the evolution of the consumer behaviour between homeowners and renters from changes in house prices, and that what matters is the identification of the primary factors from which these changes originated.

Accordingly, changes in house prices are likely to have significant macroeconomic effects reflected directly in the Consumer Price Index (CPI) and interest rates, and indirectly, but no less importantly, in the level of consumption. They also carry important multiplier effects in the economy through, inter alia, changes in employment levels in the construction sector and through their impact on the balance sheet of banks and other financial institutions that provide mortgage loans to households using real estate as collateral.



However, this relationship between the macro-economy and house prices works in the opposite direction as well. For instance, Jarocinski and Smets (2008) demonstrated that a loose monetary policy stance determined through long-term and short-term interest rates may cause house prices to increase. **Chart 13.4** illustrates this positive correlation between loose monetary policy (i.e. lower interest rates) and rising house prices in the euro area.

The tied relationship between the macro-economy and the property sector has recently been documented in the literature through a series of empirical and research studies. Muellbauer and Murphy (2008) for example, examined the existence of multiple interactions between the housing market and the macro-economy using data from the United Kingdom and the US. Goodhart and Hofmann (2008), using data from 17 industrialised countries, supported the existence of multi directional relationships between house prices, monetary variables and macroeconomic fundamentals.

Thus, given that real estate accounts often for the largest share of a nation's wealth, developments in this area are of major importance for central banks and the supervisory authorities of the financial sector, as confirmed by the recent subprime mortgage crisis in the US in 2008. The economic crisis that

followed the sub-prime mortgage crisis has also exposed how vital the soundness of this sector is for maintaining economic stability.

It is therefore important that analysts, economic policy makers and financial institutions monitor closely developments in property prices in order to be able to timely identify and predict potential impacts of these on the credit market, economic activity and the general economic soundness and stability of the country (Case and Wachter, 2005). By monitoring real estate prices, central banks can assess the credit-worthiness of households, the potential implications of major changes in the sector on household indebtedness (Finocchiaro and Queijo von Heideken, 2007), as well as the possible implications of these changes for aggregate consumption (Case et al., 2005, Phang, 2004, and Belsky and Prakken, 2004). On the other hand, commercial banks, and lenders in general, can more accurately measure the default risk of their customers and, in particular, of households.

The proper monitoring of the real estate market hinges upon the construction and availability of reliable property price indices. These can in turn be used by central banks, financial institutions and government authorities, in conjunction with other real estate market statistics, for the systematic monitoring of market developments and for making informed decisions about mortgage loans, bank interest rates, taxes, etc.

Some important applications that real estate price indices can have in the analysis of the economy are the following:

As macroeconomic indicators of inflation: Real estate price indices are often used as an indirect component of the CPI. Higher or lower property prices may be reflected in a CPI through the inclusion of the cost of owner-occupied housing in the index, and in particular of mortgage interest payments. Thus, as suggested in the literature, house price indices can contribute significantly to the more accurate measurement of inflation (Jarocinski and Smets, 2008, Goodhart and Hofmann, 2008).

As a measure of wealth: Real estate prices are also employed for the measurement of a country's total wealth. In the System of National Accounts, new dwellings are treated as tangible assets and form part of gross fixed capital formation. Therefore, an increase (decrease) in property prices leads to an increase (decrease) of total national wealth, and vice versa.

As an indicator of economic stability and soundness and a means of measuring exposure to credit risk: Real estate price indices form part of the financial soundness indicators developed by the IMF to monitor the global financial system and financial stability of different countries. As advocated in the literature, economic cycles are strongly connected to real estate cycles (Ferrara and Koopman, 2010). Therefore, as observed in previous financial crises, a sudden drop in house prices can have serious repercussions for the robustness of the financial sector, and weigh heavily on the financial condition of households through its impact on the value of their collateral, and hence on their credit rating, as well as on their debt to disposable income ratio². This holds particularly true for countries like Cyprus where real estate constitutes a major component of national and household wealth and where home ownership rate is comparatively high.

Therefore, the inclusion of real estate price indices in the analysis of the economy is key to ensuring and maintaining financial stability and soundness. Moreover, the availability of price indices for the real estate market can prove considerably beneficial for the participants in it. Specifically, the regular publication of real estate price indices can enhance the understanding of current, future and historical market trends. In turn, more accurate and objective information on market trends allows better assessment of the market dynamics in a given period and of the market investment prospects. Consequently, real estate market participants can make rational decisions on investment projects, contributing in this way to greater market efficiency. Furthermore, real

2. Nabarro and Key (2005) describe this strong relationship as "the dangerous interdependence between real estate cycles and financial systems".

estate price indices can be used by market participants and other stakeholders in the economy to forecast the future course of prices, and hence the evolution of supply and demand in the real estate market, thereby further increasing market efficiency.

13.4 Methods for constructing real estate price indices

The literature suggests several methods for the construction of real estate price indices such as the repeat sales method, the hedonic method and the simple average method, each of which has its own advantages and disadvantages (Eurostat 2010b, Bourassa et al., 2006 and Case et al., 1991). The decision as to which method is most appropriate for the case at hand relies on various criteria such as the type of available data (e.g. transaction data, valuation data), level of liquidity in the relevant market and the coverage of property characteristics in the available data.

Regarding the type of data that can be used for the construction of real estate price indices, these may be either data obtained from conducting public surveys or data collected from various public and private entities. However, given the high cost involved in the collection and processing of survey data, in practice and in the literature, it has become customary to use data collected from state and legal agencies directly involved in property transactions or property valuations (Pollakowski, 1995).

The various types of data available for the construction of real estate price indices from public and private entities are directly associated with the different stages that make up the process of buying or selling a property, the process of securing a loan to finance the purchase of a property or the process of securing a loan using property as collateral. Therefore, one can construct real estate price indices using asking prices (from newspapers or real estate agents), property appraisals (from mortgage lenders) or actual selling prices (from lawyers, land registers and tax authorities).

Each of these types and sources of data presents some advantages and disadvantages, depending always on the ultimate purpose guiding the construction of the index, the index construction method, and the reliability of available information. The criteria for comparison include, among others, the ability to adjust for the quality of properties in the sample, and therefore the number of available property characteristics, whether there exist characteristics in the sample which identify the location of the property, the representativeness and size of the available data, the data availability, as well as the time lag and cost of the data collection process.

Therefore, in practice, the index construction method is selected on the basis of the quality and quantity of available data characteristics and not vice versa, as theoretically more advanced methods require richer data in contrast to simpler methods. For instance, the repeat sales method is more appropriate when there exist frequent re-sales of the same properties, when there do not exist many property characteristics available in the data or when the goal is not to analyse the development of prices across different locations. On the other hand, the hedonic method is more suitable when a large number of property characteristics are available in the data or when seeking a deeper and more detailed analysis of the market.

In view of the above, the quality of data, and therefore the index construction method, is determined by four main factors: the wealth of available property characteristics, the coverage offered by the data in terms of geographic locations and types of property, the reliability of available information and, finally, the volume of data that can be collected.

The choice of the index construction method and the type of data to be used would also depend on the intended application of the price index. For example, when the ultimate purpose of the index is to measure housing wealth associated with owning a property or as means for developing financial stability indicators, then it is advisable to use valuation data weighted by the available stock in the market at the given

time. On the other hand, when the index is to be used as a macro-economic indicator of inflation, this should be based on transaction prices, and more specifically, if this is to be used for the construction of a CPI or for measuring the real output of the real estate sector, it should be based on transaction prices of newly-built houses. Therefore, it is obvious that no single index can be argued to be the best; rather, as pointed out by Fenwick (2005, 2006); a family of property price indices should be available.

Finally, the choice of the index construction method, although, as already suggested, is constrained and often determined by the type of available data, should also be made in awareness of its potential benefits and weaknesses, which should also be taken into account in the interpretation and use of the results.

The sections that follow describe the various index construction methods along with their main strengths and weaknesses.

13.4.1 Simple Average method

The least complicated method for constructing real estate price indices is the simple average (mean or median) method. It is a non-parametric statistical technique based on the mean or median price per square metre of a particular type of property sold at a particular point in time. Consequently, the data requirements for the application of this method are very limited. Nevertheless, the limited amount of information required by this method also gives rise to several serious shortcomings compared with other more theoretically and computationally advanced methods. One major limitation of the simple average method is that it takes into account only one property characteristic, i.e. the area, thus ignoring the effect of other physical and spatial characteristics on the property price. As a result, the quality of the constructed price index can be seriously impaired by the presence of outliers in the data and by a non-representative data sample.

It has been argued in the literature that in cases where the distribution of prices is skewed to the right, a median-based index should be used, as it can more reliably and accurately estimate the middle part of the distribution than a mean-based index (Mark and Goldberg, 1984). However, even in cases where the data follows a normal distribution, the failure of the method to take into account disparities in the characteristics of the sample properties can lead to mismeasurement of the intertemporal changes in the resulting index.

Therefore, the intertemporal changes in the prices of properties included in the sample may in fact be attributed either to changes in the composition of the property characteristics in the sample of that specific period compared with that of the base period, or changes in the level of market prices, or both. If, for example, in a given period the quality of the properties in the sample is much higher than the quality of the properties sold or appraised during the preceding period, the actual change in property prices will be significantly overestimated, given that the quality of the properties is not taken into account by the index construction method.

The issue of standardised price indices is particularly important for the housing market where property characteristics can vary significantly across different properties, making the probability of having two relatively homogeneous “baskets” of properties in two successive periods very small.

13.4.2 Repeat Sales method

An index construction method that overcomes some of the weaknesses of the simple average method is the repeat sales method³. This corrects some of the shortcomings of the simple average method by keeping the property characteristics constant across the different sampling periods. This method was developed by Bailey et al. (1963) and later expanded by, among others, Case and Shiller (1987, 1989), Shiller (1991), Meese and

3. See Pennington-Cross (2005) for a brief explanation of the method, and Wang and Zorn (1997) for a more detailed review.

Wallace (1997), Englund et al. (1998) and Clapp and Giaccotto (1998). The repeat sales method estimates changes in the sale price⁴ of the same property across different periods. These changes are then combined through a regression technique to derive the price index. Thus, the difference in the sale price of a property between two distinct points in time is an indication of the change in market prices that has occurred during that period.

By definition, only properties that have sold at least twice can be included in the sample, thus limiting the application of the method to highly liquid real estate markets and to secondary market properties, while sales of new homes are omitted from the sample. Nevertheless, the exclusion from the sample of primary market properties can lead to insufficient number of observations for the reliable estimation of the price index, particularly in areas where property transactions are relatively infrequent (Abraham and Schauman, 1991 and Cho, 1996).

Apart from the restricted number of properties that can be used, the repeat sales method can also suffer from sample selection bias, given that the more frequently transacted properties are not always the most representative of the market⁵ (Case et al., 1991, Cho, 1996, Gatzlaff and Haurin, 1997 and Hwang and Quigley, 2004).

Another major problem that arises from the application of the repeat sales method is the treatment of the property depreciation that occurs over time. The repeat sales method assumes that the price of the various property characteristics remains constant over time. However, this is not a very realistic assumption, as the price of the various characteristics is liable to decline with the age of the property. Consequently, in order to correctly identify the actual trend in prices between two periods which is primarily related to changes in market prices, an adjustment for property depreciation should be made (Palmquist, 1982). Moreover, the assumption of constant property

4. The repeat sales method may also be applied when only one of the two observations is a transaction price, while the other can be a valuation price (Bourassa et al., 2006).

5. This problem can be addressed using the procedure developed by Heckman (1979).

characteristics over time does not apply to cases where the property has undergone extensive renovations⁶.

Another limitation of the repeat sales method is that this cannot be used to construct regional real estate price indices, since the same property cannot be sold in two different locations. Finally, given the nature of the method, the produced index will always be subject to revision as new transactions of previously resold properties are registered in the market, thereby altering the size of the historical sample.

13.4.3 Hedonic method

A more computationally advanced method for constructing real estate price indices is the Hedonic method. This was firstly used by Haas (1922) while the term “hedonic method” was coined by Court (1939). The theoretical underpinnings of the method were developed later on by Lancaster (1966) and further enhanced by Rosen (1974). Since then, it has been extensively used for the construction of property price indices (Gourieroux and Laferrere, 2006).

The basic premise of this class of index construction techniques is the determination of the price of a unit of marketed good relative to the set of attributes it possesses, which themselves do not encompass observable market prices. Even though the price of a property depends on the value that a buyer places on the set of both qualitative and quantitative characteristics from which the property is composed, both quantitative and qualitative, nevertheless these values are not directly observable.

Accordingly, the hedonic method derives implicit market prices for the different property characteristics through the level of correlation that these characteristics exhibit with respect to the property prices in the sample (Thwaites and Wood, 2003). Thus, through multivariate regressions, the hedonic method can disaggregate in statistical terms the property price into its constituent characteristics, and hence is able to disentangle the part of the price variation between two periods which is due to the

6. Resales occurring within six months are usually excluded from the sample, as they may indicate that the house has been renovated (Hill and Melsler, 2007).

intertemporal changes in the mix of property characteristics and the part of the price variation which is caused by inflationary factors. Hence, one is then able to estimate the intertemporal change in the average property price on a standardised basis, thus keeping the mix of property characteristics constant. An analogous technique is that used for the construction of the Retail Price Index, which is also based on a standard "basket" of goods.

It has been extensively documented in the literature that the hedonic method presents significant advantages over the simple average method and the repeat sales method. Its main advantage stems from the fact that it is the only class of index construction methods which takes into account the heterogeneous nature of the physical, structural and geographical characteristics of properties, and consequently allows for the influence of these characteristics on the overall property price level. Consequently, the results obtained from the application of the hedonic method are comparable and quality constant, unlike those obtained from simple average-based techniques. However, the assumption has to be made that those characteristics of the property which are not included in the model do not significantly affect the market value of the property.

One drawback of the hedonic approach is that it is data intensive, requiring extensive information on the set of characteristics that compose each sampled property. Thus, the more detailed the information on the property characteristics, the more reliable the resulting price index will be. Furthermore, the reliability of a hedonic price index is also dependant on the correct specification of the regression equation and its functional form.

The hedonic approach therefore assumes that each good is fully characterised by a set of characteristics $\mathbf{x} = (x_1, \dots, x_K)$, K being the number of characteristics. Moreover, it is assumed that for any good, there is a specific functional relationship between its price P and its characteristics vector \mathbf{x} , $P = f(\mathbf{x})$.

Therefore, the first step in the application of the hedonic method is to determine the characteristics vector, typical of a good, and to specify the hedonic regression function, $f(\mathbf{x})$. In the literature, the regression function

for the construction of real estate price indices is mostly of a semi-logarithmic form⁷,

$$\ln(P) = \beta_0 + \sum_{k=1}^K \beta_k x_k + \varepsilon$$

where $\beta = (\beta_0, \dots, \beta_K)'$ is the parameter vector and ε is the error term assumed to be independently and identically distributed, *i.i.d* $N(0, \sigma)$.

The semi-logarithmic form is recommended in the hedonic literature for providing better fits to the data, given that the semi-log model allows for the value added to vary proportionally with the size and quality of the property (Halvorsen and Palmquist, 1980, Follain and Malpezzi, 1980, Herath and Maier, 2010). As such, the coefficient estimates generated from the model can be directly interpreted as the percentage change in the dependent variable given a unit change in the independent variables. Furthermore, the semi-logarithmic form often mitigates heteroskedasticity in the data (changing variance of the error term) (Diewert, 2002). The only discrepancy of the semi-log model is that the anti-log of the estimated log property price does not give an unbiased estimate of the price. This however, can be fixed with an adjustment (see Goldberger, 1968).

The next step is the estimation of the parameter vector $\beta = (\beta_0, \dots, \beta_K)'$ for the base period and for all the other t time periods ahead using the Ordinary Least Squares procedure. This will then be used along with the estimated vector of average characteristics, $E(x)$, to determine an estimator of the hedonic price for the good considered. A standard method in the literature employs the arithmetic mean, $\bar{x} = (\bar{x}_1, \dots, \bar{x}_K)'$ to construct the weights $w = (w_0, \dots, w_K)'$ which will represent the proportion of data characterised by the specific characteristic, i.e.

$$w_k = \frac{1}{N} \sum_{j=1}^N (x_{j,k}) = E(x_k)$$

for $j = 1, \dots, N$ and for all $k = 1, \dots, K$, N being the total number of observations in the sample period.

7. The semi-logarithmic form of the hedonic regression is also used for the construction of the CBC residential property price indices.

Following the above, the expected logarithmic price of the good can be defined as

$$E(\ln(P)) = \hat{\beta}_0 + \sum_{k=1}^K \hat{\beta}_k w_k = \sum_{k=0}^K \hat{\beta}_k w_k$$

where $w_0 = 1$. Assuming P is log-normally distributed with variance σ_p^2 , the price of the good is then equal to

$$E(\ln(P)) = \ln(E(P)) - \frac{1}{2} \sigma_p^2$$

Hence for each period s under consideration the expected price is as follows:

$$E(P_{s,s}) = \exp\left(\sum_{k=0}^K \hat{\beta}_{k,s} w_{k,s} + \frac{1}{2} \sigma_p^2\right)$$

where the expectation is taken over all variants belonging to the good at time s , having taken into consideration the characteristic vector of time s , s taking values of either 0 or t . $\hat{\beta}_{k,s}$ are the estimated coefficients of the characteristics of the good considered at time s .

The final step consists of the construction of the hedonic price indices, the Laspeyres (PI^L), the Paasche (PI^P) and Fisher (PI^F) indices. These are defined as follows:

$$PI_t^L = 100 \frac{E(P_{t,0})}{E(P_{0,0})} = 100 \frac{\exp(\sum_{k=0}^K \hat{\beta}_{k,t} w_{k,0})}{\exp(\sum_{k=0}^K \hat{\beta}_{k,0} w_{k,0})}$$

$$PI_t^P = 100 \frac{E(P_{t,t})}{E(P_{0,t})} = 100 \frac{\exp(\sum_{k=0}^K \hat{\beta}_{k,t} w_{k,t})}{\exp(\sum_{k=0}^K \hat{\beta}_{k,0} w_{k,t})}$$

$$PI_t^F = \sqrt{PI_t^L PI_t^P}$$

TABLE 13.1 Methods for constructing real estate price indices

Method	Advantages	Disadvantages
Simple average	<ul style="list-style-type: none"> · Simple to implement · Limited number of property characteristics required for its implementation (only information on the price and the total area of the property is required). 	<ul style="list-style-type: none"> · Non-standardised index. · It does not take into account the heterogeneous nature of the property's characteristics. · Sensitive to the presence of outliers in the data. · It can record accurately the temporal changes in the market value of properties only when the sample collected at different periods is composed of similar property characteristics.
Repeated sales	<ul style="list-style-type: none"> · It does not use data on the characteristics of the property. · Compares the changes in the market value of the same property across time. 	<ul style="list-style-type: none"> · Does not make maximum use of available data (properties sold only once are omitted). · It suffers from sample selection bias, since the properties that are transacted more frequently are not necessarily the most representative of the property market. · Neither the depreciation of the characteristics of the property nor the change in the value due to of the property renovation or expansion are taken into account. · It cannot be used for the construction of property price indices across different regions, since the same property cannot be transacted in two different locations. · The results of previous periods must be continuously revised as new data become available.
Hedonic method	<ul style="list-style-type: none"> · Constant quality index. · Standardised index. 	<ul style="list-style-type: none"> · It requires a large number of property characteristics for its application. · It requires expertise in econometric and statistical techniques for its application and interpretation of results. · Risk involved in the incorrect or sub-optimal setting of the regression equation. · The accuracy of the results depends on the availability of the properties' characteristics, based on detailed and reliable data.

13.4.4 Summary of methods

Table 13.1 presents a summary of the main methods used in the literature for the construction of real estate price indices, outlining the different advantages and disadvantages of each.

13.5 Cyprus Residential Property Price Indices

As seen from the charts in **Section 13.2** (p.546), real estate composes a

vital sector of the Cyprus economy, both in terms of investment and consumption. Moreover, the high rate of home ownership in Cyprus⁸ further substantiates the dominant role of the housing market in household finances, and dictates the need for a close monitoring of developments in this field.

Therefore, as mentioned above, the construction and availability of real estate price indices can significantly enhance transparency and information in the market supporting sound decision-making by market participants, such as financial institutions, private investors, real estate appraisal agents, land development firms and households. Moreover, the availability of information on property prices can contribute positively to the effective implementation of the Directive of the Central Bank of Cyprus (CBC) on the calculation of banks' capital requirements.

Against this background, and given the absence, until recently, of an official price index for the Cyprus real estate market, the CBC, in collaboration with member banks of the Association of Cyprus Banks and the Cooperative Central Bank, proceeded in 2010 to the establishment of an organisational unit dedicated to research in this field. The Real Estate Unit (REU) was thus set up in 2010 within the Economic Research Department (ERD) of the CBC with the main purpose of developing real estate price indices based on property valuation data collected by the partner banks, and for the overall monitoring and analysis of the real estate market.

13.5.1 CBC Residential Property Price Index

13.5.1.1 Data Collection

The data collection process was carried out in two phases. During the first phase, and given that until 2010 there was no existing database of residential property valuations, the REU proceeded with the collection of historical valuation data from a number of Monetary Financial Institutions (MFIs), which covers the period 2006-2009⁹. The second phase of the data

8. In 2002, for example, 83,1% of households in Cyprus owned a primary residence, while 33,2% had invested in a secondary home (Antoniou et al., 2004).

9. Data for earlier years (before 2006) were not included in the database due to the insufficient number of annual observations for index construction purposes.

collection process began in January 2010 and involves the monthly collection of valuation data in a standardised format by all partner banks through an electronic data submission system, specifically developed at the CBC for this purpose, thus ensuring the integrity and confidentiality of the data.

The data are representative of the Cyprus property market, covering all the free territory of the Republic and refer to all types of property. Additionally, these include a wide range of geographical characteristics (such as district, planning zone, etc.) and structural parameters (such as property size, number of rooms, type of property, etc.), recorded using either quantitative or qualitative measurements. Before undergoing analysis, all entries are subject to further processing to remove any incomplete or obviously misrecorded data.

The market value of a residential property is usually estimated on the basis of transaction prices of comparable properties located in the periphery. The valuation price may thus differ from the transaction price, especially if very few transactions have occurred during the valuation period. In this context, the literature has found that price indices based on valuation data tend to be less volatile than those based on transactions data (Geltner, 1989). Also, price indices based on valuation data tend to lag behind actual changes in market prices (Case and Wachter, 2005). Yet, these indices can provide a representative and reliable insight into market price fluctuations. Moreover, the large number of available characteristics and number of valuations guarantees the quality and validity of results.

13.5.1.2 Index Construction Methodology

The hedonic methodology was used for the construction of the various property price indices and sub-indices (see **Section 13.4**, p.552). One of the primary key steps in the application of the hedonic methodology is the identification of the statistically most significant property

characteristics that can explain to a large extent its market value. In the literature, there are no clear guidelines as to how one can choose the optimal relationship between the market value and the characteristics of the property, as this depends on the type of market under consideration (i.e. its cultural and demographic characteristics, living standards of the country, etc.).

Nevertheless, several studies that have been carried out with the aim of decomposing the property price into its main determinant characteristics have identified the number of rooms and bedrooms (Li and Brown, 1980), the number of toilets (Linneman, 1980), and the area of the property (internal covered area, verandas, etc.) to be highly positively correlated with the property price (Carroll et al., 1996 and Rodriguez and Sirmans, 1994). The existence of a basement, parking space, central heating and air conditioning system were also found to carry a significant impact on the property price (Li and Brown, 1980). Characteristics that have been found to adversely affect the property price are the age of the property (Kain and Quigley, 1970, Rodriguez and Sirmans, 1994, Goodman and Thibodeau, 1995 and Straszheim, 1975) and the distance of the property from the city centre (Meese and Wallace, 2003).

In order to determine the statistically most important characteristics of a typical residential property in Cyprus, the REU carried out an extensive and in-depth data analysis on the basis of correlation coefficients and regression techniques. After the exclusion of multicollinearly related variables, the following characteristics were found to explain around 70% of the price variation in the CBC database:

- Size characteristics¹⁰: internal covered area, area of covered and uncovered verandas.
- Quality characteristics: age, maintenance condition, level of luxury.
- Locational characteristics: province/district, the planning zone and building coefficient that applies to the property, whether the

10. Size characteristics were found to explain most of the price variation in the sample.

property is located in a tourist area, whether the property has a sea view.

- Whether the property is equipped with a central heating system, central air conditioning units, whether the property has a private swimming pool.
- For house properties only: whether it is a detached house, a semi-detached house or a maisonette, whether the house is built on a plot or a field, the land area of the property, whether the house is located in an urban or rural area.

The results from the application of the hedonic methodology to the CBC valuations database using the set of characteristics selected from the above analysis are then used to construct the various residential property price indices and sub-indices. These indices are Fischer-type indices and are computed as the geometric mean of the Laspeyres and Paasche indices (see **Section 13.4.3**, p.557).

Fisher-type indices are favoured in the literature as they avoid the various shortcomings and weaknesses of the Laspeyres and Paasche indices. For example, the Laspeyres index tends to give more weight to properties whose prices have risen, while the Paasche index tends to give more weight to properties whose prices have fallen (Diewert, 1976 and 2004).

The statistical analysis and goodness-of-fit of the obtained results confirm their reliability, robustness and validity. Specifically, the results are characterised by a high coefficient of determination (R^2 above 0,65), statistically significant coefficients (at the 0,1% significance level) and small confidence intervals for the estimated coefficients.

The resulting price indices are reported in **Tables 13.2** and **13.3** (p.566). Table 13.2 lists the quarterly house and apartment price indices for the period 2006Q1 to 2011Q2 (second and third column, respectively). The same indices are shown in **Chart 13.5** (p.567). The by district residential property (apartments and houses) sub-indices¹¹ for the same period are recorded in columns four to eight, while the Cyprus residential property price index is

11. These indices are constructed using the weighted sum of the two by type price indices, i.e. house and apartment price indices respectively, weighted on the basis of the quarterly number of observations in their respective samples.

TABLE 13.2 Residential property price indices by type and by district
(quarterly data, 2010Q1 = 100)

Quarter	Residences by type		Residences by district					Residential property price index	
	Apartments	Houses	N/sia	L/sol	L/ca	Paphos	F/sta		
2006	Q1	74,6	66,0	71,7	64,7	66,2	84,3	60,3	69,8
	Q2	75,3	71,2	73,1	67,3	70,4	86,2	67,6	73,2
	Q3	77,9	72,1	74,5	71,2	66,5	85,9	71,7	74,8
	Q4	83,3	76,3	79,5	72,8	81,7	86,1	73,8	79,3
2007	Q1	84,5	82,2	82,8	75,8	82,3	88,6	82,9	83,6
	Q2	89,1	89,6	90,1	82,2	87,9	90,8	89,2	90,0
	Q3	93,8	91,3	91,2	88,0	93,2	93,1	90,6	92,2
	Q4	97,5	94,7	91,0	91,1	99,3	98,5	98,7	96,1
2008	Q1	104,4	103,2	103,0	99,7	103,6	99,7	102,9	103,5
	Q2	104,6	107,9	104,3	103,5	104,9	99,9	100,6	106,3
	Q3	104,4	108,9	106,9	103,2	104,3	102,5	113,4	107,3
	Q4	105,8	104,3	104,4	106,6	100,0	102,4	108,9	105,1
2009	Q1	100,9	98,8	99,7	95,6	99,4	103,7	108,3	100,0
	Q2	96,8	101,2	100,8	93,7	99,3	104,1	106,0	100,1
	Q3	101,0	100,6	101,1	96,7	103,4	102,6	101,1	101,3
	Q4	102,1	103,0	100,2	101,5	103,0	101,6	102,3	103,6
2010	Q1	100,0	100,0	100,0	100,0	100,0	100,0	100,0	100,0
	Q2	99,2	98,8	100,1	96,7	99,5	96,8	95,9	99,0
	Q3	97,9	99,5	100,7	96,0	95,9	94,2	95,1	98,8
	Q4	96,9	97,4	101,1	96,5	95,8	90,3	94,9	97,2
2011	Q1	93,5	96,1	100,7	93,6	92,7	86,6	91,7	95,0
	Q2	92,7	95,2	100,6	92,7	92,6	84,6	90,2	94,2

Source: CBC.

TABLE 13.3 Residential property price indices by type and by district
(quarterly data, 2010Q1=100)

Quarter	Apartments					Houses					
	N/sia	L/sol	L/ca	Paphos	F/sta	N/sia	L/sol	L/ca	Paphos	F/sta	
2010	Q1	100,0	100,0	100,0	100,0	100,0	100,0	100,0	100,0	100,0	
	Q2	100,0	96,8	100,0	95,0	94,5	100,3	96,7	99,1	98,2	97,0
	Q3	100,9	93,1	98,3	91,6	95,9	100,6	97,6	94,0	96,2	93,9
	Q4	102,4	97,6	97,2	84,5	94,2	100,2	96,0	94,8	94,1	95,4
2011	Q1	101,2	93,4	90,2	79,5	87,9	100,3	93,7	94,6	93,1	94,1
	Q2	101,2	92,8	89,2	77,5	84,8	100,1	92,7	92,9	90,9	93,5

Source: CBC.

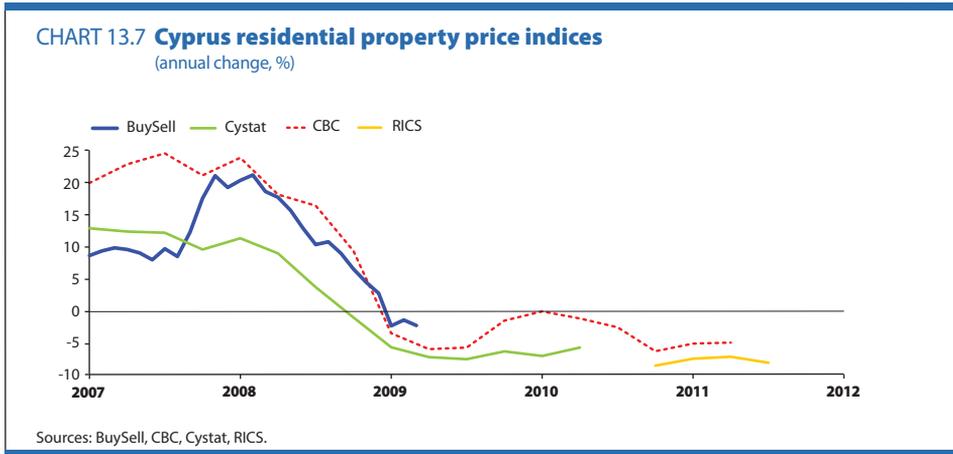
reported in the last column of **Table 13.2** and in **Chart 13.6** (p.567). **Table 13.3** lists the by district¹² and by type quarterly price indices for 2010.

12. Since the speed and nature of the developments in the real estate market may vary across districts depending on the structure of the local economy (e.g. well-off areas, areas with high concentration of specific business activities, tourist or industrial areas) and the local supply and demand factors (e.g. demand from residents or foreigners, demand from businesses seeking office space, areas with limited land availability, etc.), the construction of by district residential property prices is essential in order to be able to capture the peculiarities in the evolution of prices in each district, given these differences.



13.5.2 Other residential property price indices for the Cyprus real estate market

Other residential property price indices that have been constructed for the Cyprus real estate market include the one developed by Platis and Nerouppos (2005), which is based on asking prices, as these are recorded in the database of BuySell Real Estate Ltd. The index is available on a monthly basis and covers the period from January 2004 to March 2009. Platis and Nerouppos (2005), using the hedonic methodology, have found that the age, the internal covered area, the number of rooms/bedrooms, the location of the property and type

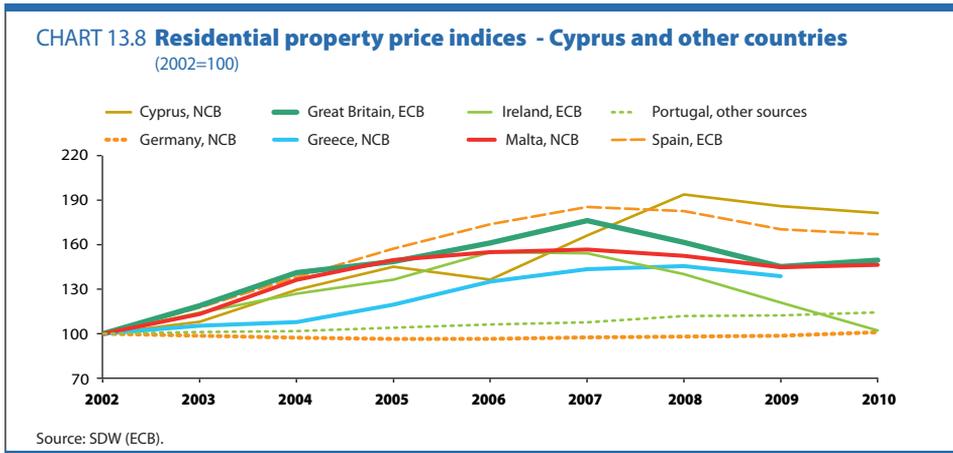


of residence and the existence of a private swimming pool are the most important determinants of the price of a typical house in Cyprus¹³.

The European Statistical Office (Eurostat), in cooperation with the national statistical institutes of the different EU Member States, has recently launched a pilot project for the development and compilation of owner-occupied house price indices to be used as a component of the Harmonised Index of Consumer Prices (HICP). As part of the project, the Statistical Service of Cyprus (CYSTAT) constructed an owner-occupied housing price index for the Cyprus market. This is based on transaction prices collected from various construction and real estate development firms (Eurostat, 2011). The simple average method is the main method used in the construction of the index, which covers the period 2006Q1-2010Q2.

Another residential property price index has been launched in January 2010 for the Cyprus real estate market by the Royal Institute of Chartered Surveyors (RICS) (Royal Institute of Chartered Surveyors, 2010). The index is based on valuation prices of hypothetical dwellings of a predetermined type and characteristics, including the hypothetical location of the property (McAllister and Fuerst, 2010). These valuations are reported on a quarterly basis from a number of chartered surveying firms, three from each district. **Chart 13.7** illustrates the four aforementioned residential property price indices available for the Cyprus real estate market (BuySell, CBC, CYSTAT, RICS).

13. These property characteristics were also employed by the REU for the construction of the CBC residential property price indices, along with other characteristics (see **Sub-section 13.5.1.2**, page 563).



13.5.3 Comparison of Cyprus residential property price indices with respective indices in other countries

Chart 13.8 shows the annual residential property price indices of selected countries along with the CBC residential property price index. It can be seen from the chart that, in absolute terms, the increase in residential property prices during the years 2007 and 2008 was much more pronounced in Cyprus than in the other countries. In contrast, the decline in prices was most pronounced in Ireland, Spain and the United Kingdom and more moderate in Cyprus, while residential property prices in Germany were rather flat throughout the 2002-2010 period.

13.6 Real estate market characteristics

13.6.1 Stylised facts

Empirical analysis and research have established a number of characteristic trends in house prices, found to be pertinent to most international real estate markets. One of the most important of these characteristic trends is the tendency of property prices to move in large cycles (Alvarez et al., 2009 and Ferrara and Koopman, 2010). Large price

cycles are characterised by long periods of growth, followed by long periods of contractions. During growth periods, property prices tend to raise, usually at a varying speed, while during recessions prices follow a downward trend.

This cyclicity in the real estate market has been found to significantly affect several other sectors of the economy, and hence a country's GDP. Ferrara and Vigna (2009) and Alvarez and Cabrero (2010) for example, using data from France and Spain, argued that property prices are a leading indicator of economic cycles. Additionally, Alvarez and Cabrero (2010) have recorded asymmetries in property price cycles with periods exhibiting negative growth rates in property investment and GDP having a shorter duration than periods with positive growth rates. Moreover, they recorded that periods during which property investment was leading developments in GDP had a longer duration when there were increases in property prices than when there were declines.

Case and Shiller (1990) and Cooper et al. (1998), among others, argued that the aforementioned cyclicity in real estate prices makes them predictable in the short to medium term. However, this does not imply that one can easily profit from this market, not least because of the high purchase and maintenance costs associated with buying a property (Mei and Liu, 1994). Furthermore, given the inherent low liquidity in the real estate market, it is not always certain that there will be buyers willing to buy at the asking price at any given time.

The above mentioned low level of liquidity is another salient feature of the real estate market and is largely due to three main reasons: a) the relatively high cost of buying or selling a property; b) the fact that a property can be mortgaged only partially; and c) the fact that a property is not movable (Diaz and Jerez, 2009). However, the generally low level of liquidity in the real estate market is not static but changes with current price trends and the level of confidence prevailing in the market (Krainer, 2001 and 2008). Therefore, when the market is growing and prices are rising, liquidity also increases and properties for sale are absorbed more quickly, while the

opposite occurs when prices are declining and the market is in recession. The positive correlation between house prices and transaction volume, and hence liquidity in the market, has been documented in a number of research studies and for various countries, such as in the work of Clayton et al. (2010) and Leung et al. (2003).

It has also been suggested in the literature that supply in the real estate market is inelastic in the short to medium term (Paciorek, 2011 and Stevenson and Young, 2007). This reflects the relatively lengthy time required for the completion of a property. As a result of this inelasticity, a surge in demand can lead to a short-term increase in prices that could outpace the respective growth in demand over the same period.

13.6.2 Supply and demand factors

Countries may record parallel movements in real estate prices (e.g. a protracted rise), but this does not necessarily translate to equal economic drivers of such developments. This has been supported in the literature through research by Englund (2011) and Hilbers et al. (2008). Identifying the major supply and demand factors that can affect the course of house prices is therefore important for designing a proper and targeted economic policy and for informed decisions to be taken by economic and political players and market participants. The subject has become the focus of extensive empirical and theoretical research worldwide, including Sutton (2002), European Central Bank (2003), Capozza et al. (2002) and DiPasquale and Wheaton (1994).

On the demand side, one of the main factors that have been identified to significantly affect developments in real estate prices at an international level is households' disposable income. *Ceteris paribus*, permanent or temporary increases in household income result in the purchase of a property becoming more affordable (Bourassa et al., 2001, and Capozza et al., 2004). Another factor which is closely associated with disposable income is the level of unemployment. This is negatively correlated with demand for

properties since higher unemployment reduces households' disposable income, and hence their demand for property (Smith and Tesarek, 1991).

Another very important factor determining the level of demand for property relates to a country's demographic developments (Mankiw and Weil, 1989, Green and Hendershott, 1996 and Van der Vlist et al., 2010). For example, net migration (immigration minus emigration) can create immediate demand for housing, while birth and death rates tend to have a longer-term effect on the housing needs of the population. Also, social factors such as household creation rate, divorce rate, the length of the period during which adult children live under the parental roof, etc., can significantly influence demand for housing.

The interest rate on housing loans can also have a significant impact on housing demand, since higher mortgage rates translate to higher borrowing costs (Muellbauer and Murphy, 1997 and Maclennan et al., 1998). Moreover, closely linked to the interest rate on housing loans, the availability of mortgage credit can significantly affect demand for properties since, given the high cost of buying a property, mortgage loans are the primary means of acquiring a property (Tsatsaronis and Zhu, 2004).

Other factors identified in the literature as determinants of property demand, and hence of property prices, are the per capita GDP and inflation. GDP is positively correlated with property prices as it is directly linked to the levels of housing consumption and housing investment (Giussani et al., 1992). The higher the per capita GDP of a country, the higher the housing consumption and investment can be. On the other hand, inflation adversely affects property prices through the dampening of housing investment and the increasing of the nominal payments on mortgage loans (Kearl, 1979, Hendershott, 1980 and Poterba, 1992).

Supply, on the other hand, cannot drastically vary in the short run due to the long time required for new construction to be completed. It can however be influenced in the long run by several factors. One such factor is the availability of land. The more limited the available land in an area, the more radical the house price changes in that area can be (Davis and

Palumbo, 2008, Glaeser et al., 2005, van Nieuwerburgh and Weill, 2006 and Kiyotaki et al., 2011). Furthermore, the higher the cost of land for development, the lower the supply of housing properties on the market (Haughwout et al., 2008). An example of this is the higher volatility of the Case-Shiller house price index compared with other residential property price indices constructed for the US real estate market (e.g. the 50-state FHFA national index), which can be attributed to the fact that most of the twenty cities involved in the construction of this index are characterised by limited land supply, and therefore higher costs for land market development (Demographia, 2011).

Another important factor affecting supply in the real estate market is construction cost (e.g. cost of construction materials, labour cost, etc.). Higher construction costs, when property prices remain unchanged or fall, imply lower profit margins for construction and land development firms (Sanchez and Johansson, 2011). Thus, on the basis of construction costs and according to their desired profit margins, construction firms decide where to construct new buildings, thereby increasing market supply in their chosen areas. Additional factors that may affect supply are sellers' expectations with regards to selling prices (Bramley et al., 2010), the ease and cost of obtaining a building permit (Sanchez and Johansson, 2011), the creation and availability of new planning zones (Goodman et al., 2010) and the opportunity cost associated with real estate investments (Vermeulen et al., 2008).

13.7 Cyprus real estate market characteristics

13.7.1 Overview

The Cyprus real estate market operates on free market principles with no intervention from the state to regulate supply and demand and thus influence property prices. Although the state and its various institutions may employ indirect means to implicitly intervene; for example through taxation, directives on the preferred loan-to-value ratio, legislation

regarding the operation of land development firms, legislation regarding the issuance of title deeds, etc., this does not, however, negate the fact that the housing market operates as a free market with minimal government intervention. Thus, market participants are left to determine supply and demand levels at any given time and, through these levels, to determine equilibrium market prices.

Until 2000, the Cyprus real estate market featured an oligopolistic structure. Private property owners traditionally did not proceed in frequent sales of their property, while new market entrants (e.g. young couples) preferred to build their house on family land rather than purchase one on the secondary market. Also, there were only a very small number of property developers active in the market and construction activity was moderate and driven mainly by domestic demand.

During the 2000s, however, the Cyprus real estate market began to undergo some major transformations. Favourable developments, such as the prospect of Cyprus joining the EU and the associated attractiveness of Cyprus properties to foreign investors, the shift away from the stock market and the transfer of capital into alternative investments (mainly real estate) and the relatively low nominal mortgage rates that prevailed in the market, which became even lower after the accession of the island to the euro area, all led to a radical transformation of the market, giving impetus for growth. Specifically, during the period 2000-2008, with a large number of property developers entering the market, Cyprus experienced an unprecedented boom in building activity. Precisely, the construction output index rose by 39,2% between 2000 and 2008, while the same index excluding civil engineering projects showed a corresponding increase of 47,9%. This resulted in the creation of new jobs in the construction sector and the emergence of new professions, e.g. quantity surveyors, in the domestic real estate market.

As a result of the turning of investment interest towards the real estate sector and the market overheating that followed, prices increased dramatically. According to the CBC residential property price index¹⁴, residential property prices rose by 34,9% in the period 2006Q1-2011Q2,

14. Central Bank of Cyprus (2011).

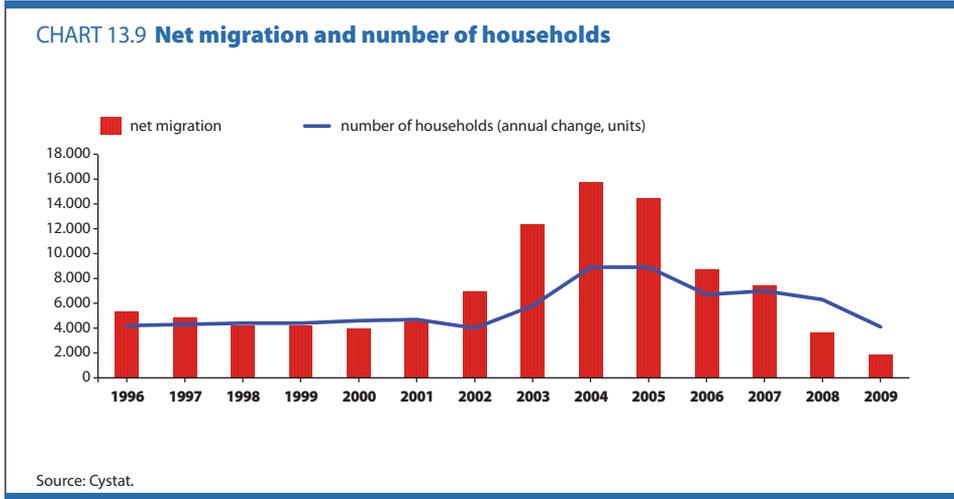
while in the period 2006Q1-2008Q3, when the CBC residential property price index reached the highest price level in the covered period, the increase amounted to 53,7% (see **Section 13.5**, page 561).

By contrast, since the third quarter of 2008 and with the spiralling of the global financial crisis following the collapse of Lehman Brothers, residential property prices embarked on a downward path, falling by 11,5% according to the same index. This was primarily due to the spreading of the economic crisis in markets that have traditionally constituted the source of foreign demand for Cyprus properties, such as the United Kingdom and Russia.

Against this background, and as evidenced by various construction sector indicators such as the domestic sales of cement, the number of authorised building permits, the index of production in construction and the number of submitted sale contracts, the downward trend in property prices is expected to continue in the near future. Risks of further deterioration in the housing market are closely related to the increased uncertainty and precariousness that prevails in the euro area as a result of the sovereign debt crisis faced by several European countries, while the possibility of further depreciation of the euro undermines further the attractiveness of any form of investment in euro-denominated real estate assets. Therefore, prospective real estate buyers appear more cautious for fear of adverse developments in the market amid a lack of confidence. Another source of risk to the Cyprus real estate market is also the capital adequacy problems faced by domestic banks which negatively affect and constrain the supply of credit to households for house purchases and to land development firms for investment projects.

13.7.2 Supply and demand factors

In line with international literature on real estate markets, the various economic factors affecting real estate prices and in particular residential properties were studied specifically for the Cyprus market (Pashardes and



Savva, 2009 and Platis, 2006). These macroeconomic factors were found to affect property prices through the broader economy, and their correlation with real estate property prices is manifested through time. Below is a detailed analysis of the different demand and supply factors identified to have played a key role in the evolution of residential property prices in Cyprus.

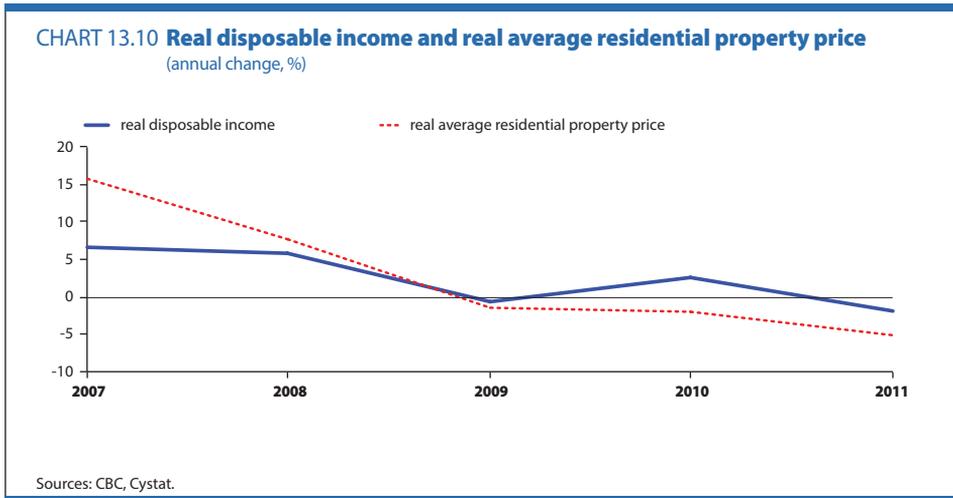
Demand factors:

Demographics

Despite the low birth rate witnessed in Cyprus in recent years, the population has nevertheless increased significantly due to the momentous migration of foreign nationals to Cyprus, as well as to the repatriation of Cypriots. It is worth noting that Cyprus population rose from 694.000 inhabitants in 2000 to 798.000 in 2009, an increase of 15% (Statistical Service of Cyprus, 2009a). As expected, the increased population growth resulted in turn in increased demand for housing, which contributed to the increases of property prices experienced over the last decade.

Specifically, with the prospect of Cyprus accessing the EU, net immigration¹⁵ exhibited a gradual increase, reaching approximately 16.000

15. The level of immigration to Cyprus during the years 2006-2009 was 160% above the level of emigration during the same period. Moreover, the sharp decline in net migration observed in 2008 and 2009 was mainly due to significant declines in the level of immigration rather than in the levels of emigration.



in 2004 before decreasing significantly from 2005 onwards (**Chart 13.9**, p.576). A similar pattern is observed in the annual changes in the number of households (**Chart 13.9**, p.576).

The large declines in net migration observed during 2008 and 2009 (51,4% and 48,7% respectively), which were in line with the reductions in the number of households, indicate that the overheating of the Cyprus real estate market during the period before the third quarter of 2008 may have been fuelled primarily by external demand.

Income

A household's income and budget constraint are central to its decision making process to either buy or rent a property. As illustrated in **Chart 13.10**, residential properties in Cyprus have become less affordable in the years after 2006, culminating in 2008, when increases in property prices far outpaced increases in household disposable income. This indicates that the observed large increases in property prices are attributable to factors other than growth in disposable income; such as for example credit availability, which will be discussed later. After 2008, residential properties became gradually more affordable relative to the preceding period.

Mortgage rates and credit availability

Mortgage rates are effectively the main cost of borrowing. When costs increase (decrease), demand for loans and therefore demand for properties declines (rises). Economic theory predicts that the correlation coefficient between interest rates and house prices is negative, since a rise in interest rates, and hence in the cost of purchasing a house, leads to a fall in demand for properties, and consequently in property prices.

Undoubtedly, one of the key factors underlying strong property demand over the last decade was the gradual reduction in mortgage rates for house purchase which was triggered by the liberalisation of interest rates in January 2001¹⁶. The real interest rate¹⁷ on mortgage loans was relatively low in Cyprus during the period mid-2005 to mid-2008. Specifically, from an average level of 5,8% in 2001, real interest rates declined to an average level of 4% in 2005 and 3,6% in 2006¹⁸. However, since mid-2008 and following the accession of Cyprus into the euro area, real interest rates embarked on an upward path which lasted until early 2009, when it began to decline again, reaching a trough in April 2010 (**Chart 13.11**¹⁹ p.579). CBC statistical measurements confirm the existence of a negative relationship between changes in house prices and mortgage rates for the Cyprus market. Specifically, for the period 2007Q1-2011Q2, the correlation coefficient between changes in real house prices and two-period (quarters) lagged changes in mortgage rates was -0,3²⁰. Nevertheless, in 2010 and 2011, in consequence of the adverse conditions prevailing in the market owing to the global economic crisis, this relationship became unstable. During this period, the two variables often moved in tandem, ostensibly weakening the negative relationship between them. In statistical terms, this is observed through the results of the

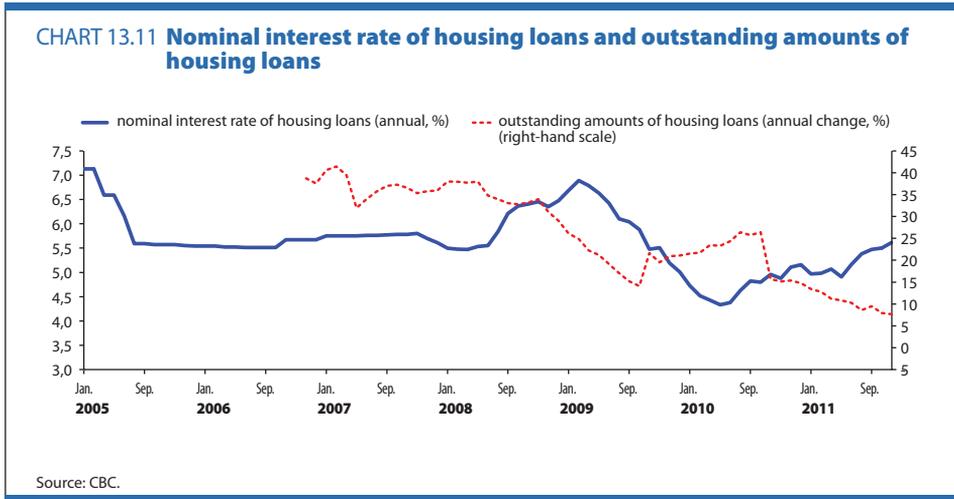
16. Until the end of 2000, the *Interest Rates Act of 1977* was in effect which was establishing a statutory ceiling of 9% on the annual interest rate. Within this ceiling, the CBC determined the maximum lending and deposit rates. On January 1st, 2001, the Liberalisation of the *Interest Rate* and related *Matters Law* entered into force which abolished the interest rate ceiling.

17. Nominal interest rate minus the inflation rate.

18. Central Bank of Cyprus (2008).

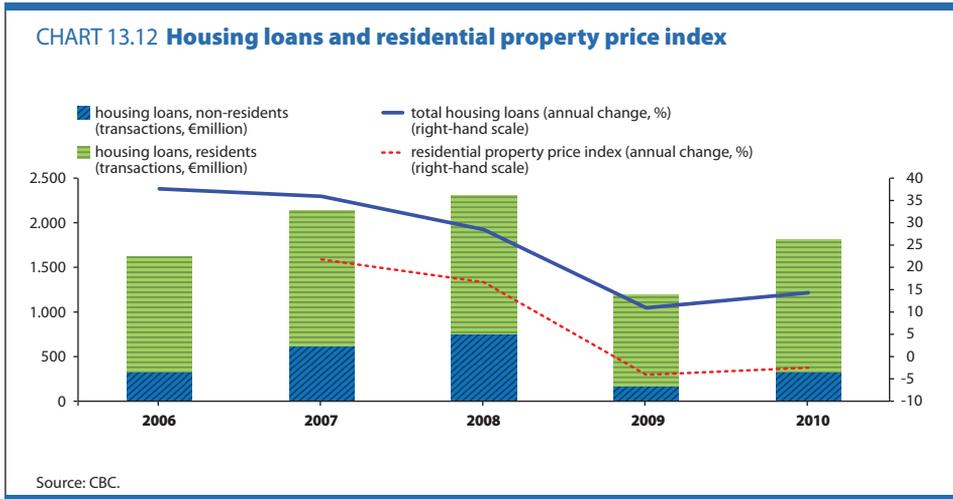
19. The series was constructed by merging the interest rate on housing loans against collateral in the form of an assignment of life insurance series, which ceased to be available in March 2008, with that of the floating and up to one year fixed mortgage rate.

20. Correlation coefficient equal to minus one (-1) indicates perfect negative correlation and equal to one (1) indicates perfect positive correlation.



correlation coefficient, which for the period 2008Q3-2011Q2 decreased to -0,1. This does not necessarily imply that the negative relationship between house prices and interest rates no longer holds. On the contrary, the simultaneous decline of the two variables is most probably due to the fact that house prices during this period were drastically impacted by other factors such as, for example, the recession, a withdrawal of foreign investors' interest away from the real estate market, the decline in property transactions and the negative market psychology. The above factors most probably resulted in the offset of any impact on house prices from declining real interest rates.

Chart 13.11 corroborates that a negative relationship also exists between interest rates and the outstanding amount of mortgage loans, confirming that when mortgage rates fall, demand for loans increases, and vice versa. Specifically, the outstanding balance of mortgage loans to residents and non-residents has increased dramatically since 2005, with weaker growth rates seen after 2009. In particular, the outstanding balance of mortgage loans to non-residents increased by 179% between 2005 and 2006, 120% between 2006 and 2007 and 66% between 2007 and 2008, substantiating the contribution of foreign demand to increases in house prices seen during this period. Conversely, the outstanding balance of mortgage loans to residents exhibited an average annual growth rate of about 23%.

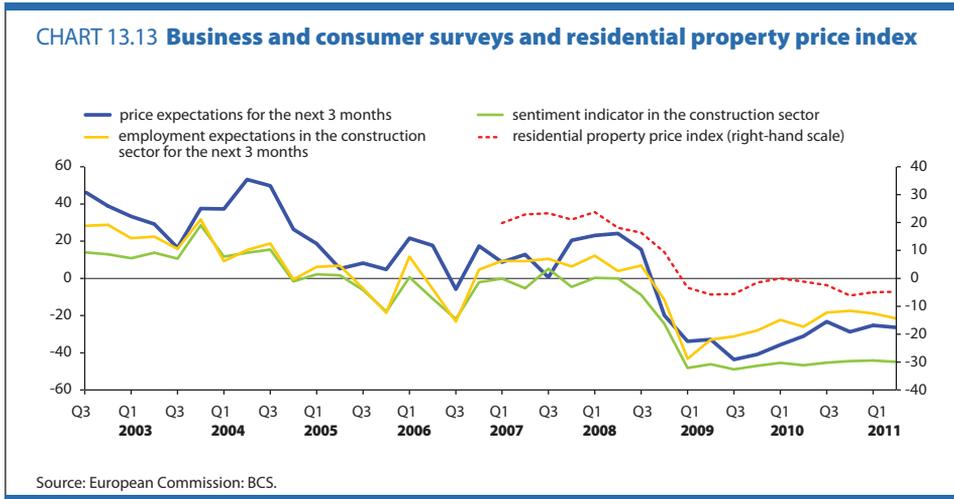


As shown in **Chart 13.12**, the annual growth rate of housing loans to residents and non-residents in Cyprus was 37,6% in 2006, 35,9% in 2007, 28,5% in 2008, 10,9% in 2009 and 14,3% in 2010²¹. With respect to new loans granted to residents and non-residents, these exhibited an upward trend over the period 2006-2008. Transaction volume increased from €1.290,5 million and €331,8 million in 2006 for residents and non-residents respectively, to €1.541,5 million and €759,5 million in 2008. In 2009 this number declined for both residents and non-residents, while in 2010 it presented a slight increase relative to the levels of 2009, but still remained at levels lower than those observed in 2008. **Chart 13.12** outlines also the effect that credit availability can have on house prices. Annual changes in the outstanding amount of mortgage loans moved in tandem with those in house prices, both during the boom period of 2007-2008 and during the crisis period of 2009-2010.

Confidence/Expectations Indicators

It is well known that the prevailing sentiment in the market and the psychology of market participants can play a crucial role in their decision-making process. This also holds true for the real estate market. Buyers are expected to be more

21. The observed slowdown in the growth of housing loans is partly due to the imposition of a reduced maximum allowable loan-to value ratio, which was in effect between July 2007 and May 2008 (Box A, *Economic Bulletin*, Central Bank of Cyprus, December 2010).



cautious when the climate is negative and more willing to engage in transactions when there is a positive climate, causing demand to change accordingly. Chart 13.13 illustrates the climate and confidence indicators for the construction sector in Cyprus, as these are derived from the Business and Consumer Survey (BCS) of the European Commission, and compares these with the annual changes in the CBC residential property price index.

The construction sector sentiment indicator measures the change in the construction activity of the respondent firms over the last three months. For the period 2002Q3-2005Q2, this indicator fluctuated at positive levels, averaging 11,1, thereby suggesting a positive climate in the construction sector. Subsequently, in the period 2005Q3-2008Q2, the indicator remained relatively stable at broadly neutral levels as a climate of euphoria prevailed in the construction sector, which, as indicated by the CBC residential property price index, led to increases in house prices. By contrast, during the third quarter of 2008, in the wake of the collapse of Lehman Brothers and the severe banking and financial crisis that followed, the construction sector sentiment indicator began to record negative values accompanied by house price declines. The indicator averaged at -41,2 during this period, with negative values being recorded at all points in time. The index of selling prices expectations over the next three months is a good leading indicator of the future course of house

prices, and hence of the future demand for real estate. In consonance with economic theory, when the market, either from the demand or the supply side, is anticipating a decrease in house prices, buyers observing the overall negative sentiment and expectations in the market are likely to postpone buying a property for a later stage. The subdued demand is then likely to lead to market stagnation on the demand side and, subject to the existence of a large surplus in supply, to house price declines. On the other hand, if the market expects higher prices then consumers are more willing to buy a property now rather than in the future; resulting in property price increases, fulfilling thereby market expectations (self-fulfilling prophecies²²).

Data from the European Commission survey and the index of selling price expectations over the next three months show that for the period 2002Q3-2005Q2, expectations about property prices in Cyprus were at historically high levels averaging at an index level of 32,7. Thereafter, for the period 2005Q3-2008Q2, selling price expectations remained positive, albeit at lower levels than in the previous three years. The average level of the index in this period was 12,8. Subsequently, with the onset of the global financial crisis, expectations declined and, in November 2008, became negative. The average level of the index in the period 2008Q3-2011Q2 was -27,2.

Chart 13.13 (p.581) illustrates the relation between the CBC residential property price index and the index of selling price expectations for the next three months. The two indices have been broadly aligned during the years 2007-2010, suggesting the existence of a strong positive correlation between them. Moreover, the selling price expectations index turned negative for the first time in the fourth quarter of 2008, one quarter before the CBC residential property price index recorded its first negative value, exhibiting in statistical terms a one-period lagged correlation (i.e. the CBC residential property price index at time t corresponds to the selling price expectations at time $t-1$), with a correlation coefficient of 0,55.

Chart 13.13 (p.581) also shows the index of employment expectations in construction over the next three months. When the market climate is positive

22. The phenomenon in which expectations or predictions about market developments affect the behaviour of market participants in such a manner that cause those expectations to be fulfilled.



and there is expectation for increased demand, construction and land development firms tend to expand construction activity and thus hire more staff. Conversely, when the market climate is negative, firms tend to reduce construction activity and therefore plan staff cutbacks. For the period 2002Q3-2005Q2, this index remained at positive levels, reflecting the optimistic climate about the future of the sector that prevailed in the market at the time. The average level of the index for that period was 17. However, in the period 2005Q3-2008Q2, the average level of the index fell to 1,3, indicating a levelling-off of employment expectations in the construction sector. In contrast, during the period 2008Q3-2011Q2, the average level of the index became negative and was at -22, reflecting the negative effects of the wider economic crisis, which affected significantly the construction sector. Similar to the aforementioned expectation indicators, the employment expectations index for the construction sector followed a broadly parallel path to that of the CBC residential property price index.

Sale Contracts and Transaction Volume

The volume of transactions in the market is another important indicator of property demand which, for the Cyprus market, is measured by the number

of sale contracts submitted to the Land and Registry department. In 2007, when data are available, the recorded number of sale contracts submitted was 31,2% higher than in the previous year. However, in the two succeeding years 2008 and 2009, a significant decrease of 34,1% and 44,3% was recorded respectively. The figure for 2010 indicated a slight increase of 5,2%.

Chart 13.14 (p.583) illustrates the existence of a positive correlation between the number of sale contracts and the annual change in residential property prices. It is evident that during the period 2007Q1-2008Q3, there was a significant increase in demand for properties, which was accompanied by a substantial increase in residential property prices. By contrast, from the third quarter of 2008 onwards, demand for properties began to decline in line with investors' diminishing interest in real estate. The major reasons underlying this decline were the global financial crisis, triggered by the US subprime²³ loan crisis, and the loss in price competitiveness of Cyprus properties, occurred as a result of the extreme hike in real estate prices which took place in previous years.

Studies have supported the existence of a positive correlation between house prices and the number of transactions in the market, found to hold for many international markets. For example, Stein (1995), Berkovec and Goodman (1996) and Ortalo-Magné and Rady (2004), using data from the United Kingdom and the United States, argued that there is a positive temporal correlation between the annual percentage change in house prices and the number of transactions. Leung et al. (2003) supported the existence of this relationship for the Hong Kong real estate market.

For Cyprus, although no specific statistical studies have been carried out on this issue, preliminary statistical checks of the REU indicated that the annual change in residential property prices (based on the CBC residential property price index²⁴) is positively correlated with the lagged annual change in the number of sale contracts. Specifically, the correlation coefficient between the annual growth rate of real residential property prices and the lagged annual growth rate of the number of sale contracts for the period 2006Q1-2011Q2 was 0,56.

23. Loans where the borrower faces difficulties of keeping up with the loan repayment program. These loans are typically characterised by higher interest rates and less favourable terms, in order to compensate for higher credit risk.

24. Central Bank of Cyprus (2011).

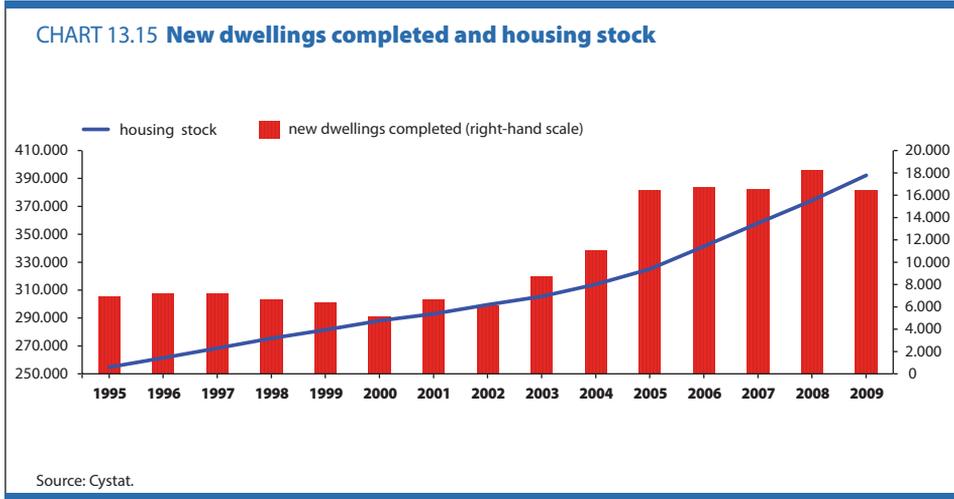
Supply factors

It is a fact that the high increases in residential property prices observed during the aforementioned period were largely driven by strong demand. The examination of various demand factors indicate that rising immigration flows to Cyprus, in conjunction with growing foreign demand for investment in Cyprus property during the years before the country's accession to the EU and until the beginning of the global economic crisis in 2008, led to an unprecedented increase in property demand.

Moreover, easy access to credit through housing mortgage loans, combined with a buoyant economic climate and high consumer confidence, played a further significant role in the decision of many residents to purchase or construct a new house. Therefore, given that housing supply is inelastic in the short term and can adjust to match demand only in the long run, it is necessary to examine the various supply factors in order to determine whether supply was sufficient to satisfy the high demand for housing during the booming period of 2002-2008, or whether housing stock shortages also contributed to the strong growth in house prices.

Newly built houses/ housing stock

Newly built properties are a significant indicator of the supply levels in the market, given that a large proportion of these are built by construction firms for resale purposes. In Cyprus, since 1995, when relevant data began to be compiled, more than 6000 new residential properties were completed on an annual basis, with the exception of 2000, when newly built houses barely exceeded 5000, probably reflecting the effect of the bursting of the Cyprus Stock Exchange bubble (**Chart 13.15**, p.586). During this year, an annual decrease of 19,7% was recorded in the number of newly built properties.



During the flourishing years of 2002-2008, the number of newly built houses rose rapidly reaching a total of 93.565, a significant increase from the number recorded in the seven-year period 1995-2001 which was 45.846, thus registering a growth of 105,2% (**Chart 13.15**). This increase reflected the momentous construction activity growth that took place during this period and that was intensified further after the island’s accession to the EU. However, in 2009, due to the negative impact of the global economic crisis on the Cyprus housing market, the number of newly built residential properties registered a negative growth.

In conjunction with the number of newly built houses, the housing stock²⁵ can also serve as an indicator of the availability of housing units in the market, even if only a small proportion of this is available for sale at any given time. The fact that the housing stock in Cyprus has been growing increasingly since 1995, suggests that there has been an ongoing construction activity (including renovations, extensions and conversions of existing buildings), albeit at a varying pace. As shown by CYSTAT (Statistical Service of Cyprus, 2009b), the annual growth rate of the Cyprus housing stock, although positive, exhibited a downward trend up until 2003. Nevertheless, from 2004 onwards, as a result of the increase in the

25. The definition of the housing stock, according to CYSTAT, refers to regular (permanent) dwellings, occupied or not, and does not include farmsteads (temporary) or makeshift housing units (cottages, cabins, shanties), mobile housing units (i.e. trailer tents, caravans, tents, wagons, boats) and units not intended for housing (stables, barns, mills, covered car parks, warehouses).



number of newly built houses, the growth rate of the housing stock picked up again and remained high until 2009 (**Chart 13.15**, p.586).

Construction cost

Construction cost is another important factor that can influence supply in the housing market and thus affect property prices. Higher construction costs when selling prices remain stable mean lower profit margins for construction firms and therefore less incentive to undertake new building projects, and thus increase supply in the market. Alternatively, assuming that the profit margin of construction and land development companies remains broadly unchanged over time, an increase in construction costs will result in approximately a commensurate increase in property prices. Consequently, higher construction costs could translate to greater financial strain for young couples and renters looking to acquire a residential property of their own.

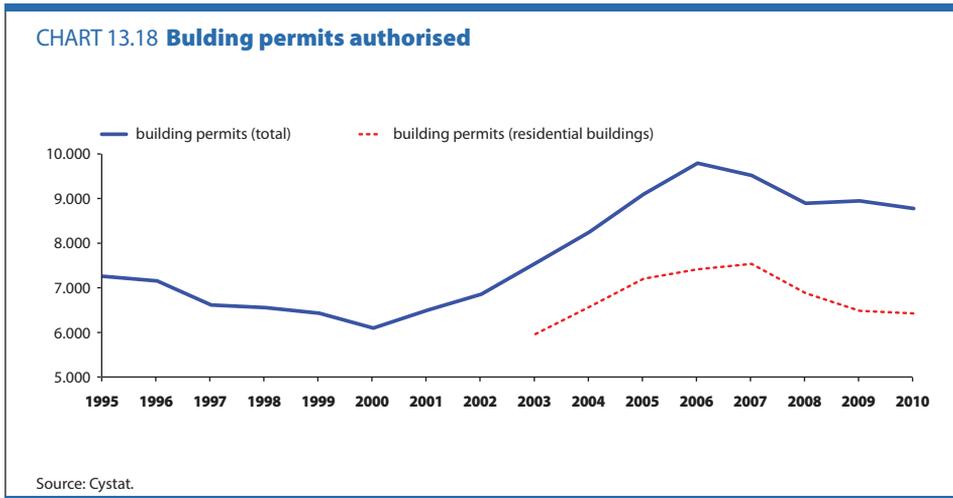
As shown by the price index of construction materials, construction costs increased during the period 2006-2008, albeit at a lower pace than residential property prices (**Chart 13.16**). Between 2006Q1 and 2008Q3, prices of construction materials rose by 22,5%, compared with an increase of 53,7% in residential property prices over the same period, as indicated by



the CBC residential property price index²⁶. Thus construction firms' profit margin widened significantly during this period and was thus translated into higher construction output. During 2009, the prices of construction materials recorded a decrease, probably due to declining oil prices, and rebounded in 2010. Nevertheless, the upward trend observed in the prices of construction materials during 2010 and the first two quarters of 2011, in conjunction with the decrease in residential property prices during the same period, imply a reduction in construction firms' profit margin. Regarding the statistical correlation between the residential property price index and the price index of construction materials, the correlation coefficient of quarterly annual changes in the two indicators is 0,69.

The index of hourly labour costs in the construction sector provides an indicator of the labour compensation costs incurred by construction firms. Throughout the period for which data are available, this exhibited positive rates of growth (**Chart 13.17**). In addition, throughout the period 2007Q1-2009Q2, annual percentage changes were greater than in the subsequent period (2009Q3-2011Q2). Undoubtedly, most of the former period saw increased construction activity, and hence increased demand for labour, which can explain higher compensation costs. Also, as nominal hourly wages in the construction sector (i.e. not taking into account the effect of inflation)

26. Central Bank of Cyprus (2011).

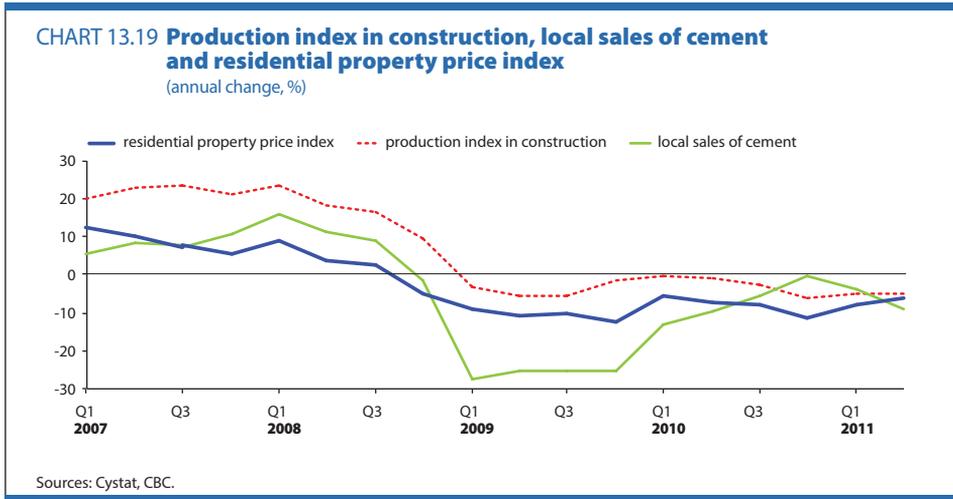


kept rising, nominal construction costs increased. As a result, any reduction in real estate prices meant (as already mentioned) lower profit margins for construction firms, acting as a disincentive to increase supply in the market.

Building permits

The number of authorised building permits constitutes a leading indicator of future construction activity, and therefore of supply in the real estate market. It is obvious from **Chart 13.18** that from 1995 to 2000 this number followed a downward trend, whereas from 2000 onwards it climbed significantly. This is probably owing to the fact that the stock market crisis of 2000 triggered a marked shift of funds towards the property sector. The upward trend in the number of authorised building permits from 2000 until after the accession of Cyprus to the EU is consistent with the intense building activity observed during that period, sustained until the end of 2006. From 2007 onwards, the number of authorised building permits recorded a negative trend, with some stabilisation observed in 2009 and 2010.

Chart 13.18 shows the annual number of authorised building permits for residential buildings since 2003, when data became available. This



moved on an upward trend during the period 2003 to 2007 and, unlike the number relating to all types of properties, rose in 2007 before starting to fall thereafter. From 2008 onwards, the number of authorised building permits embarked on a downward trend. The fact that housing supply in the years 2006 to 2008 grew more strongly than demand (indicatively, the increase in the number of newly built homes far outpaced the increase in the number of households and net migration) suggests that a stock of available residential properties had begun to accumulate. This discouraged new buildings construction, resulting in the reductions in the number of authorised building permits from 2008 onwards.

Sales of cement/ index of production in construction

The domestic sales of cement compose an indicator of future construction activity. Between 2002 (when data are available) and 2008, these recorded annual increases in line with larger construction output (**Chart 13.19**). Nevertheless, in 2009, due to the recession that the Cyprus economy was undergoing, domestic cement sales fell sharply, only to decline further in 2010. In terms of statistical correlation, for the period 2007Q1-2011Q2, annual changes in residential property prices and those in domestic sales of cement had a correlation coefficient of 0,84.

Production in construction followed a similar path during the aforementioned years (**Chart 13.19**, , p.590), thus confirming the correlation between sales of cement and construction activity. Regarding the correlation between quarterly changes in residential property prices and in the production in construction index, in the period 2007Q1-2011Q2, the two indices had a correlation coefficient of 0,97.

13.8 Concluding remarks

This chapter examined various aspects of the real estate market in Cyprus, documenting its great importance for the island's economy. This importance was evidenced by its high contribution to GDP, the labour market and the construction sector. In addition, it was shown that real estate often composes the largest component of household investment and household wealth, as well as of household debt, further emphasising the significance of this market for Cyprus. Moreover, it was discussed that over the years and in the context of ongoing globalisation and increasing integration of the world markets, real estate is becoming increasingly important for the broader economy, as also illustrated by the recent global economic crisis, which originated in the collapse of the US real estate market.

Therefore, given the great significance of the real estate sector and developments in this for the broader economy and the various direct and indirect market participants and stakeholders, further research in this area would prove particularly beneficial for policy makers, investors and households alike. Through more extensive research and market analysis, a deeper insight will be gained into the factors affecting this very important sector of the economy, thus enabling better informed and targeted decisions to be made.

Specific issues, the research and analysis of which could yield important insights and benefits for the short and medium term future of the Cyprus real estate market, include the construction of price indices for commercial and land (plots and fields) property. These indices, along with

the residential property price index and its sub-indices which are already available from the aforementioned sources, would provide a more comprehensive view of market developments. In addition, these will be instrumental to research focusing on specific types of property. It would also be of particular interest to investigate the effect that the building coefficient and other similar property characteristics (e.g. coverage coefficient, maximum building height allowed, etc.) have on the price of the land and the structure of the property, separately. Moreover, the construction of residential property price indices based on transaction data would provide a useful benchmark for comparing indices based on valuation and transaction data, in order also to establish the temporal relationship between the two.

Regarding the international environment and in view of the current trend towards greater integration and homogeneity of markets (in the context of increasing globalisation and establishment of supranational arrangements such as the EU, NAFTA, etc.), further research and analysis into the real estate market would prove beneficial for the better understanding of the international dynamics that drive this market, thereby facilitating a healthy convergence of international markets, with all the benefits that this entails. Moreover, the investigation of the interactions and linkages between real estate markets of different countries would further enhance market knowledge in both an academic and technocratic level, helping to prevent future crises or, should such crises become unavoidable, to manage them in a timely manner, which is of major importance, as the recent crisis has shown.

In conclusion, the real estate market is an area where there is ample scope for deepening and enhancing knowledge at both academic and technocratic level. Given the far-reaching and strong impact of developments in this sector on the broader economy of a nation, decision-makers should study and manage it systematically and with due attention and accountability, so as to ensure the stability and soundness of the sector, as well as of the broader economy in general.

Βιβλιογραφικές αναφορές

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INDEX OF TERMS

A

(Age) Dependency ratio, 406
 Adoption of the euro by Cyprus, 129
 Ageing of population, 313-315, 512-513
 Apartment price index -
 Central Bank of Cyprus, 566-567
 Assets, 509, 511, 513-514, 516, 520
 Association of Cyprus Banks, 562
 Athens Exchange, 272, 285
 Authority for the supervision
 and development of cooperative
 societies (CSSDA), 267
 Automatic indexation, 312, 418
 Automatic stabilisers, 306

B

Balance of payments, 44
 Banking intermediation, 280
 Banking law, 268, 297
 Banking sector, 271
 Basel III, 35, 278, 298
 BEER, 98
 Beveridge curve, 425
 Bilateral investment agreements, 265
 Bonds, 304
 Broad Economic Policy
 Guidelines (BEPGs), 144
 BuySell home price index, 567-568

C

Capital adequacy, 295
 Capital and financial account, 60
 Central government, 349
 Challenges, 30-31, 35

Code of industrial relations, 417
 Common platform (generally)/Single shared
 platform (TARGET), 270
 Companies law, 268
 Competitiveness, 69
 Construction activity, 574, 581, 583
 Construction materials price index, 587
 Consumer price index, 311, 550
 Convergence criteria, 120, 122
 Cooperative credit institutions,
 266, 269, 280
 Core Tier 1 capital, 279
 Credit, 510, 513-514
 Credit rating agencies, 292
 Crisis management and
 resolution framework, 297
 Currency/Money, 83-105
 Current account (of the balance of payments),
 45, 85, 93-95, 98, 103, 106-107, 312-313
 Customs union, 25, 42
 Cyclical in the housing market, 569-570
 Cyprus pound, 84, 90-100, 103, 107
 Cyprus Stock Exchange (CSE), 285
 Bubble, 286

D

Debt securities, 285, 288-289, 529, 531
 Demand for real estate, 294
 Direct investment, 60
 Direct taxes, 326-327
 Discretionary fiscal measures, 305-306
 Downgrade of credit rating, 340-341, 349
 Dutch disease, 5

E

- Econometric models,
 - 452-454, 465, 471, 473, 478, 489
 - Autoregressive integrated moving average model (ARIMA), 458-459
 - CYMCM Macroeconomic Model, 453, 478-489
 - AWM, 479-480, 490
 - Dynamic adjustments to ECM equilibrium, 484
 - Phillips curve, 483
 - Scenario analysis, 453, 480, 487-489
 - Simulation exercises, 485
 - Dynamic model, 457
 - Ordinary least squares (OLS), 457, 465, 468-471
 - Dynamic stochastic general equilibrium models DSGE, 489-491
 - EAGLE, 490
 - NAWM, 490
 - Seasonal autoregressive model (SAR), 458
 - Structural vector autoregressive models (SVAR), 306, 478
 - Vector autoregressive model (VAR), 454, 466-478
 - ADF investigation, 474
 - Cointegration test, 474-475
 - Impulse response function, 475-476
 - Vector error correction mechanism (VECM), 475
 - Working group on econometric modelling, 453, 478
- Economic integration, 113, 115
- Economic miracle, 1, 18
- Economic stability and soundness indicator, 553
- Effective Exchange Rate (EER), 95-96, 107
- Electricity Authority of Cyprus, 350, 517
- EU-wide stress tests, 279
- EURIBOR (Euro Interbank Offered Rate), 291-292
- Euro area, 507-508, 516
- Euro Commercial Paper (ECP), 288
- Euro Medium-Term Note (EMTN), 288, 291
- European System of Central Banks (ESCB), 120-121
- Eurosystem
 - European Central Bank (ECB)
 - Accountability, 134, 137
 - Decision-making bodies, 121
 - Independence, 133-134
 - Monetary policy strategy
 - Communication, 137
 - Nominal anchor, 134, 136
 - Two-pillar approach, 136
 - Price stability mandate, 132, 134, 136
 - Transparency, 134, 137
 - National Central Banks (NCBs), 121
- Excessive Deficit Procedure, 142, 323, 350
- Exchange control law, 269
- Exchange Rate Mechanism II (ERM II), 29, 31, 88-89, 93, 123, 125
- Exchange rate policy, 83-85, 87, 89, 90, 100, 108
- Exchange rate regime, 83-90, 108
- Exchange rate, 83-101, 103, 105, 107-108
- External/foreign debt, 63, 310

F

- Family Budget Survey, 537
- FEER, 94, 97-98, 103, 107-108
- Financial centre, 1, 22, 35
- Financial crisis, 292
- Financial stability, 296
- Financial Stability Fund, 297
- Financial system, 267-268
- Fiscal balance, 319-320
- Fiscal policy, 140, 303-352
- Fiscal sustainability, 306, 309, 338-346
- Fiscal/budgetary consolidation, 306-311
- Fisher, Laspeyres and
 - Paasche indices, 546, 551
- Free market, 575
- Funds under management, 336, 339

G

- General government, 349
- Globalisation, 293
- Government bond yields, 304, 345-346
- Government Registered Development Stocks (GRDS), 288-289
- Growth model, 3-4, 29, 33

H

- Hedonic method, 553, 557-561
- HFCS questionnaire, 518-523
- Hourly labour cost index, 590
- House price index – Central Bank of Cyprus, 566-567
- Household Finance and Consumption Network (HFCN), 508
- Household Finance and Consumption Survey (HFCS), 507, 531
- Housing stock, 587-588

I

- Implementation of monetary policy, 199-260
 - Euro area, 244-254
 - Exchange rate regime, 199
 - Exchange Rate Mechanism II (ERM II), 237-239
 - Fixing session, 223
 - Independence of the Central Bank of Cyprus, 226
 - Monetary Policy Committee (MPC), 221-222, 224-226, 256-257
 - Liberalisation of interest rates, 221-229
 - Movement of capital, 212-213
 - New operational framework for monetary policy, 183, 211, 213
 - Key monetary policy instruments, 200
 - Cost of credit, 200-201
 - Credit restrictions, 201
 - Flexible system of liquidity margins, 203
 - Foreign exchange controls, 200
 - Minimum liquidity ratio, 201
 - Reserve requirement/ratio, 201
 - Special Fund for financing priority projects, 205
 - Special liquidity margins, 204-205
 - Stock market bubble, 215-220
 - Open market operations, 182, 209, 211, 259, 292
 - Liquidity-providing/absorbing reverse transactions/operations, 211
 - Lombard rate, 211-212, 221, 228, 230
 - Standing facilities, 211-212

- Import substitution strategy, 11
 - Income criteria, 334, 347
 - Indirect taxes, 327-328
 - Industry, 8, 12-13, 16, 18
 - Inflation, 357-400
 - Competitiveness, 363-364
 - Productivity, 362-364
 - Unit labour cost, 364
 - Consumer Price Index (CPI), 311, 359, 369, 371-384
 - Local goods, 371-373
 - Imported products, 362, 371
 - Services, 371
 - Harmonised Index of Consumer Prices (HICP), 359, 373-375, 385-397
 - Energy, 385, 390-392
 - Excluding energy, 394-396
 - Excluding energy and food, 395-396
 - Gap/differential, 386-387, 394-396
 - Non-energy industrial goods, 385, 391-392
 - Processed food, 385, 389
 - Services, 385, 392-394
 - Unprocessed food, 385, 388-389
 - Weights, 385-387
 - Keynesian school, 378
 - Optimum currency area, 363
 - Phillips curve, 378-380
 - Price stability, 357-359, 374, 398
 - Stagflation, 358, 360, 378
 - VAR model estimation, 370-371
 - Impulse response function, 370-371
 - Initial conditions, 7
 - Interbank market, 291
 - Interest rates, 509, 513, 516, 520-521
 - International banking units (IBUs), 269
 - International Business Companies (IBC), 23-24
 - International investment position, 62
 - Intragovernmental borrowing, 336, 338
 - Irrevocable conversion rate, 94
- J**
- JCC payment system, 270
- K**
- Key leading indicators of economic activity, 455-464
 - Exports, 462-464
 - GDP, 455-460
 - Private consumption, 460-462
- L**
- Labour force, 407
 - Labour productivity, 436
 - Lebanon, 22
 - Lender of last resort, 268
 - Liberalisation/deregulation
 - Interest rates, 201, 211-213, 266, 269, 337
 - Movement of capital, 213, 221
 - Limited liability companies, 268
 - Loan to Value Ratio (LTV), 575
- M**
- Maastricht Treaty, 120
 - Macro-prudential supervision, 151, 296
 - Macroeconomic and structural policies, 144
 - Macroeconomic forecasts/projections, 451, 479, 491-502
 - Accounting framework, 463
 - Comparison of forecasts, 499-502
 - Forecasting/ projection performance, 495-499

- Common assumptions, 452-453, 463, 466-468, 484, 486, 491
- Out-of-sample forecasting, 459
- Risk assessment, 491-495
 - Fan charts, 491-492
- Root of mean squared error (RMSE), 459-460, 470-471, 498
- Working group on Forecasting, 452
 - Inflation forecasting, 464-471
 - Three digits analysis method, 467
- Working group on Public Finance, 452
- Maritime centre/hub, 22, 27
- Medium-term fiscal framework, 348
- Micro-prudential supervision, 151, 297
- Monetary policy, 86-88, 305, 548-549
- Monetary policy strategy, 159-196
 - Alternative monetary policy strategies, 161-163
 - Exchange rate targeting, 169-171
 - Balassa-Samuelson (BS) hypothesis, 187
 - Discretionary policy, 162, 170-171
 - ECU, 86, 90-91, 170
 - Effective Exchange Rate (EER), 188
 - Exchange Rate Mechanism (ERM), 170, 176, 181, 186-188
 - Inflation rate equality theory, 170
 - Marshall-Lerner condition, 177
 - Problem of time inconsistency, 161, 166, 170
 - Purchasing power parity theory, 169, 177
 - Inflation targeting, 163-167
 - Taylor's rule, 165-166
 - Monetary targeting, 167-169
 - Quantity theory of money, 168
 - Balance of payment crises, 177
 - Communication policy, 188, 190
 - Euro area, 189, 191-192
 - European System of Central Banks (ESCB), 160, 175
 - Financial liberalisation, 181-186
 - "Impossible trinity" theory, 177-179
 - Independence of the Central Bank of Cyprus, 161, 175-177
 - New policy framework, 183-184
 - Non-traditional monetary policy tools, 179-180
 - Price stability, 160, 163, 167-168, 171-175
 - Consumer Price Index (CPI), 173-174
 - Core inflation, 173-174
 - Harmonised Index of Consumer Prices (HICP), 173
 - Mortgage (collateral), 512, 525, 528, 530
 - Movement of capital law, 269
 - Multiplier effects on the economy, 550

N

 - Natural population growth, 404
 - NIBOR (Nicosia Interbank Offered Borrowing Rate), 291-292
 - Non-performing loans (NPLs), 278

O

 - Okun's law, 434
 - Output gap, 321-325
 - Overbanking, 270
 - Oversampling of wealthy households, 515, 517
 - Owner occupancy ratio, 551, 562

Owner-occupied housing, 511, 520
 Owner-occupied housing price index - Statistical Service of Cyprus, 568

P

Pension funds, 314-315, 348
 Pension plans, 512, 521
 Per capita income, 1
 Phillips, 425, 435
 Phillips curve, 435
 Potential GDP, 321-324
 PPP, 98
 Primary balance, 320, 340
 Primary sectors, 8, 29-30
 Productivity, 435
 Property valuation, 554, 565
 Protectionism, 12
 Public debt, 338-341, 344-345
 Public expenditure, 319-320, 331-338
 Public revenue, 319-320, 324-331
 Public sector pay structure/payroll, 331-333

R

Real Estate Unit (REU), 562
 Real exchange rate,
 71
 Repeated Sales method,
 552, 554-558, 561
 Residential property price index –
 Central Bank of Cyprus, 565-567, 583-584,
 587, 590
 Return on assets (ROA), 279
 Return on capital employed ratio (ROCE), 279
 Royal Institute of Chartered Surveyors (RICS)
 house price index, 568
 Rural economy, 1

S

Sampling frame, 518
 Sampling plan, 516-517
 Savings bonds, 289
 Savings certificates, 289
 Self-fulfilling prophecy, 582
 Sentiment/confidence indicators, 581
 Service centre, 22
 Simple Average method, 554, 558, 561
 Sinking funds, 339, 351
 Social benefits/transfers, 334-335
 Social Insurance Fund, 314-315, 328-329,
 334-335
 Specialised financial institution, 273
 Stability and Growth Pact,
 120, 141, 303, 344, 348
 Stability Programme of the Republic
 of Cyprus, 314
 Strategy "Europe 2020", 146-147
 Structural fiscal/budget deficit, 321-324
 Structural policies/reforms, 144, 346-350
 Subprime, 292, 296
 Survey of Consumer Finances
 (Federal Reserve), 507, 515
 Sustainable current account,
 103, 106, 107

T

Tax regime, 324
 Tax system, 265
 Temporary (non-recurring) measures,
 322, 324
 Total fertility rate, 405
 Treasury bills, 288-290
 Trend current account, 103, 106-107

Turkish invasion,

1-2, 15, 17, 23-24, 263, 280, 332, 335, 339

Twin deficits, 73, 312

U

Unit labour cost, 70

United Kingdom, 546

University of Cyprus, 507, 515

Usury, 268

V

Value added, 12, 14, 17, 21, 30

W

Wage rigidity, 419

Windfall revenues, 316, 319, 320-324

AUTHOR INDEX

A

Abbas, S. 74
 Abraham, J. 558
 Adamou, A. 34, 55
 Afonso, A. 316
 Alesina, A. 307-308
 Ali Abbas, S. 312
 Alvarez, L. 571-572
 Andreou, E. 370, 474, 475
 Antoniou, G. 528-529, 562
 Archontopoulos, D. 456
 Ardagna, S. 307-309
 Arestis, P. 223
 Argyridou-Dimitriou, C. 159, 199, 263
 Arghyrou, M. 170
 Aristovnik, A. 76
 Arnold, J. 310
 Aschauer, D. 310
 Asdrubali, P. 128
 Asseery, A. 176
 Atkeson, A. 495
 Attanasio, O. 515, 548
 Attinasi, M. 341
 Auerbach, A. 307
 Ayres, R. 28, 42

B

Badinger, H. 364
 Bagnai, A. 75
 Bailey, M. 556
 Baldwin, R. 113
 Barro, R. 133, 166, 310
 Bartolini, L. 75

Bean, C. 369
 Belsky, E. 550
 Berben, R. 511
 Berg, C. 174
 Berkovec, J. 584
 Bernanke, B. 134, 162-163,
 166, 215, 514
 Bini Smaghi, L. 173-174
 Blanchard, O. 307, 379
 Bollerslev, T. 119
 Bordo, M. 293
 Börsch-Supan, A. 513
 Bostic, R. 511
 Bourassa, S. 552, 556, 571
 Bouthevillain C. 306, 321-322
 Bover, O. 510, 511
 Brainard, W. 136
 Bramley, G. 573
 Brandolini, A. 515
 Brauer, D. 367, 368
 Bridges, S. 512
 Britton, E. 492
 Brown, J. 564

C

Cabrero, A. 570
 Caldara, D. 307
 Cambell, J. 548
 Capozza, D. 571
 Carolina, G. 170
 Carroll, M. 564
 Case, B. 550, 552, 556, 563
 Case, K. 548, 550, 556, 570

- Cecchetti, S. 166
 Central Bank of Cyprus, 8, 12, 15, 20, 22, 30,
 32, 35, 574, 578, 580, 584, 587
 Checherita, C. 310
 Cho, M. 556
 Christodoulou, C. 232-233, 268
 Christodoulou, D. 415
 Christophides, L. 440
 Clapp, J. 556
 Clarida, R. 379
 Clayton J. 571
 Cleanthous-Petoussi, L. 159, 165,
 199, 357, 451
 Clerides, S. 34, 55-56
 Clerides, M. 284, 292, 296
 Cocco, J. 548
 Coenen, G. 310
 Cooper, M. 570
 Cordella, T. 310
 Court, A. 557
 Cyprus College, 286
 Cyprus Tourism Organization, 56
- D**
- Davies, J. 515
 Davis, M. 572
 De Grauwe, P. 127, 133
 De Larosière, J. 151
 Debelle, G. 166
 Demetriades, E. 12
 Demetriades, P. 223
 Demographia, 573
 Diaz, A. 570
 Diewert, W. 559, 565
 DiPasquale, D. 571
- Disney, R. 512, 548
 Djuric, S. 76
 Dougekos, T. 166, 169
 Drehmann, M. 279
 Driver, R. 85, 103
 Duisenberg, W. 134
 Dynan, K. 512, 514
- E**
- Elmendorf, D. 512, 514
 Engelhardt, G. 511
 Engle, R. 484
 Englund, P. 556, 571
 European Central Bank, 121, 125, 132,
 137-138, 545, 547, 571
 European Commission, 115, 139,
 142, 146, 147
 European Council, 125
 Eurostat, 1, 32, 545, 552, 568
 Eurosystem Household Finance and
 Consumption Network, 510
 Evangelou, I. 507
- F**
- Fagan, G. 479
 Fatás, A. 307
 Fenwick, D. 554
 Ferguson, R. 215, 217
 Ferrara, L. 551, 570
 Finocchiaro, D. 552
 Fischer, S. 185
 Fisher, I. 471
 Flamini, V. 102
 Flood, R. 177
 Follain, J. 559
 Frankel, J. 83, 128

Friedman, M. 116, 133, 135, 162, 378

Fuerst, F. 568

G

Gabriel, S. 511

Gali, J. 379

Garber, M. 177

Gathergood, J. 512

Gatzlaff, D. 556

Geltner, D. 563

Georgiadou, L. 266

Geraats, P. 134

Gertler, M. 379

Ghalanos, M. 111, 440

Ghosh, A. 89

Giaccotto, C. 556

Giammarioli, N. 340

Giannelis, N. 99

Giavazzi, F. 307

Giussani, B. 572

Glaeser, E. 572

Goldberg, M. 555

Goldberger, A. 559

Goodhart, C. 549-550

Goodman, C. 564

Goodman, J. 584

Goodman, R. 573

Gordon, D. 133, 166

Gouriéroux, C. 557

Granger, C. 484

Grant, C. 510

Green, R. 572

Greenspan, A. 215

Gruen, D. 216

Guiso, L. 510, 514

H

Haas, G. 557

Hadjispyrou, S. 369

Haliassos, M. 514, 525-526, 532

Halvorsen, R. 559

Hammond, G. 168

Haroutunian, S. 303, 321, 507

Hassett, K. 307

Haughwout, A. 573

Hauptmeier, S. 316

Haurin, D. 556

Heckman, J. 556

Hellwig, M. 292

Hendershott, P. 572

Heracleous, A. 281

Herath, S. 559

Herrala, R. 515

Hilbers, P. 571

Hill, R. 557

Hoffmaister, A. 101, 315

Hofmann, B. 549-550

Hume, D. 116

Hwang, M. 556

I

International Monetary Fund, 129, 266, 419

Isard, P. 85

Issing, O. 136-137

J

Jappelli, T. 514

Jarociński, M. 549-550

Jaumotte, F. 77

Jerez, B. 572

Johansson, A. 573

Jonsson, G. 166

K

Kain, F. 564
 Kalemli-Ozcan, S. 128
 Kamps, C. 307
 Kanaris, E. 263
 Kapatais, D. 357
 Karamanou, P. 159, 165, 199, 219, 222
 Kazandjian, A. 98
 Kearl, J. 572
 Kenen, P. 127
 Kennickell, A. 513, 515, 518
 Key, T. 553
 Kiyotaki, N. 573
 Kohn, D. 215, 511
 Koopman, J. 551, 569
 Kouretas, G. 99
 Krainer, J. 570
 Kranidiotes, G. 26, 42
 Krugman, P. 177
 Ktoris, M. 39, 403
 Kumar, M. 309
 Kydland, F. 133, 161, 164
 Kyriacou, G. 39, 47, 65, 83, 97-98, 102-103,
 186, 403, 425

L

Laferrère, A. 557
 Lahiri, A. 75
 Lancaster, K. 557
 Lane, P. 307
 Latter, 85
 Lerner, A. 177
 Leung, C. 571, 584
 Li, M. 566
 Lim, H. 166

Linneman, P. 564
 Little, R. 533
 Liu, C. 572
 Loizides, A. 284
 López-Salida, D. 364
 Louca, M. XXV, 1, 403
 Lucas, R. 163, 310, 378
 Lusardi, A. 513

M

MacDonald, R. 85
 MacLennan, D. 572
 Maeso-Fernandez, F. 99
 Maier, G. 559
 Malpezzi, S. 559
 Mamounes, T. 56
 Mankiw, N. 569
 Mark, J. 555
 Markidou, A. XXV, 1
 Marshall, A. 177
 Matsis, S. 17
 Mayer, A. 11
 McAllister, P. 568
 McKinnon, R. 127
 Meese, R. 556, 564
 Mei, J. 570
 Melitz, J. 128
 Melsner, D. 557
 Michael, M. 409, 424, 446
 Michaelides, P. 111
 Michaelides, S. 360-361
 Mihov, I. 307
 Milesi-Ferretti, G. 64-65, 68-69
 Ministry of Finance, 201, 267, 287,
 289, 290, 297

- Miroslav, G. 492
 Mishkin, F. 161-163, 166, 169, 170-171, 216
 Mountford, A. 307
 Mourmouras, A. 170
 Muellbauer, J. 549
 Münchau, W. 155
 Mundell, R. 127, 363
 Murphy, A. 549, 572
 Myrdal, G. 11
- N**
- Nabarro, R. 551
 Nerouppos, M. 567
 Nurkse, R. 11
- O**
- Obstfeld, M. 178, 310
 Ohanian, L. 495
 Oparty, T. 492
 Orphanides, A. XXV, 134, 136, 151, 174, 177, 179, 180-181, 245, 248-250, 296, 298, 357, 398
 Ortalo-Magné, F. 584
- P**
- Paciorek, A. 571
 Padoa-Schioppa, T. 114, 116
 Pagano, M. 307
 Paiella, M. 510
 Painter, G. 511
 Palmquist, R. 557, 559
 Palumbo, M. 572
 Panayiotou, A. 439
 Papademos, L. 143
 Papadopoulou, N. 451
 Papageorgiou, M. 47, 65, 83, 97-98, 102-103, 186
 Pashardes, P. 56, 321, 369, 424, 575
 Patsalides, C. 11
 Patsalides, A. 18
 Pattichis, C. 98, 186
 Pattillo, C. 310
 Peltonen, T. 510-511
 Pennington-Cross, A. 555
 Perdikis, N. 176
 Peri, G. 310
 Perotti, R. 307
 Persson, T. 128
 Pezzuto, I. 292-293
 Phang, S. 550
 Phelps, E. 133, 378
 Phillips, A. 133, 378
 Phylaktis, K.
 200, 268, 270, 282
 Pischke, J. 514
 Planning Bureau, 43
 Platis, S. 567, 575
 Polemidiotis, M. 303
 Posen, A. 166, 215
 Poterba, J. 572
 Prakken, J. 550
 Prebisch, R. 11
 Prescott, E. 133, 161, 164
- Q**
- Queijo von Heideken, V. 550
 Quigley, J. M. 564
- R**
- Rady, S. 584
 Ranis, G. 7
 Razin, A. 64-65, 68-69
 Reinhart, C. 310

- Rich, R. 174
Rodriguez, M. 564
Rogoff, K. 310
Rose, A. 128
Rosen, S. 557
Rosenberg, C. 239
Rother, P. 310
Roubini, N. 65
Royal Institute of Chartered
Surveyors (RICS), 568
Rubin, D. 533
Runkle, D. 514
- S**
- Sanchez, C. 573
Sargent, T. 378
Savva, C. 575
Schauman, W. 556
Scheller, H. 134
Schuknecht, L. 316
Schwartz, A. 135
Shambaugh, C. 178
Shiller, R. 556, 570
Shorrocks, A. 515
Sichel, D. 512, 514
Sierminska, E. 510
Sims, C. 164, 471
Singer, H. 11
Sirmans, F. 564
Smets, F. 549-550
Smith, B. 571
Sodsriwiboon, P. 77
Souleles, N. 514
Soumeli, E. 415
Spanos, A. 370, 474, 475
- Statistical Service of Cyprus (Cystat), 8, 11-12,
20, 30-31, 33
Stein, J. 584
Steindel, C. 174
Stephanou, C. 292, 296, 298-299
Stevenson, S. 571
Straszheim, R. 564
Sutton, G. 571
Svensson, E. 164
Syrichas, G. XXV, 1, 134, 159, 172, 193, 219,
222, 234, 238-239, 357, 361-362, 368-
371, 375, 474-475
- T**
- Tabellini, G. 308
Takhtamanova, Y. 510
Tanzi, V. 316
Tarashev, N. 279
Taylor, J. 165
Taylor, M. 178
Temple, J. 8
Terlizzese, M. 514
Tesarek, W. 571
Theodosiou, M. 495
Theodosiou, M. 543
Thibodeau, T. 564
Thorp, W. 10, 40
Thucydides, G. 543
Thwaites, G. 557
Timmermann, A. 454
Trichet, J. 138, 293
Triffin, R. 116
Tsatsaronis, K. 572
Tsoukalis, L. 117
Tumpel-Gugerell, G. 217

U

Uhlig, H. 307

UN, 30, 31

V

Van der Vlist, A. 572

Van Nieuwerburgh, S. 572

Van Norden, S. 136

Van Wincoop, E. 128

Vasiliou, N. 25, 41

Vermeulen, W. 573

Vetlov, I. 490

Vigna, O. 570

Visco, I. 510

Vrachimis, K. 440

W

Wachtel, P. 65

Wachter, S. 550, 563

Wallace, N. 556, 564

Walsh, C. 134

Wang, T. 555

Weil, D. 569

Weill, P. 572

Westaway, P. 85

Wheaton, W. 571

Woo, J. 309

Wood, R. 557

World Bank, 9-11, 13, 19-21

Wren-Lewis, S. 103

Wyplosz, C. 113, 179

Y

Young, J. 571

Z

Zeldes, S. 514

Zemanek, H. 363-364

Zhu, H. 572

Zorn, P. 555

