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Assessing the Equilibrium Exchange Rate

of the Cyprus Pound at the time of Euro

Adoption

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Assessing the Equilibrium Exchange Rate of the Cyprus Pound at the time of Euro Adoption

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Abstract

One of the landmark events in the recent history of Cyprus was the adoption of the euro on 1 January 2008. A crucial element of the preparatory discussions between the Cypriot authorities and the competent European bodies was the search for an agreement on the conversion rate of the Cyprus pound vis-à-vis the euro, which was decided by the Economic and Financial Affairs Council (ECOFIN) on 10 July 2007. This paper describes part of the work undertaken at the Central Bank of Cyprus as background material for these discussions. Using a qualitative and quantitative approach, the paper suggests that the exchange parity rate of the Cyprus pound vis-à-vis the euro which existed for a number of years prior to euro adoption was broadly in line with economic fundamentals. Evidence examined include the stability of the Cyprus pound vis-à-vis the euro within a credible exchange rate policy framework, robust growth, low levels of unemployment, high Foreign Direct Investment (FDI) coverage of the current account deficit as well as low and stable inflation. This conclusion is also supported by a model-based approach using the Fundamental Equilibrium Exchange Rate (FEER) framework.

Keywords: Equilibrium exchange rate, euro adoption, FEER.

JEL Classification: F31, F32.

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1. Introduction

The concept of the equilibrium exchange rate has historically attracted considerable interest by both academic economists and policymakers. Following the establishment of the European Monetary System in the 1970s and, more recently, the launch of the Economic Monetary Union (EMU) in 1999, the concept's importance in the European Union (EU) has increased significantly. In the context of recent EU enlargement, new member states are expected to join the Exchange Rate Mechanism II (ERM II) some time after accession and, after having satisfied the Maastricht convergence criteria, they are expected to adopt the euro. These institutional arrangements in Europe have resulted in extensive discussions on exchange rate issues. In particular, the focus has been on equilibrium exchange rates in the context of joining an exchange rate mechanism, and then a monetary union, with an appropriate and sustainable exchange rate in line with the economic fundamentals. The importance of the issue is highlighted by the costly experience of currency misalignments in ERM in the early 1990s.

At the time of finalising the technical work presented in this paper in the first half of 2007, Denmark and six new member states, namely Estonia, Lithuania, Cyprus, Latvia, Malta and Slovakia were members of ERM II, while Slovenia had already adopted the euro on 1 January 2007, following more than two years of successful participation in ERM II. In the case of Cyprus, the Cyprus pound joined ERM II in May 2005 with a view to early euro adoption. This was realised on 1 January 2008.

The purpose of this paper is to examine the issue of the equilibrium exchange rate of the Cyprus pound in the period leading to euro adoption on 1 January 2008, and to lay down the relevant parameters which were analysed in view of the need to identify the appropriate exchange rate for joining EMU. The bulk of the work in this paper was undertaken prior to the final decision by ECOFIN on the irrevocable exchange rate between the Cyprus pound and the euro on 10 July 2007. The results and conclusions of this work were part of the policy discussions that preceded the decision[1].

The paper is organised as follows: Section 2 contains background information on developments in the Cyprus economy during the period leading to the 10 July 2007 decision and sets the stage for the subsequent main discussion. Section 3 focuses on the analysis of a number of indicators, which were useful for the qualitative assessment of the appropriateness of the

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[1] Similar technical work was also conducted for the period leading to ERM II entry on 29 April 2005, with data covering the period up to the year 2004. The main conclusions of that work are similar to that of the updated work, namely that the central parity between the Cyprus pound and the euro in the period leading to ERM II entry was broadly in line with the fundamental equilibrium.

exchange rate parity of the Cyprus pound in the reference period. To complement the qualitative assessment, Section 4 presents the results of an econometric model, namely the FEER model[2]. Section 5 provides concluding comments and discusses a number of forward considerations relevant to the exchange rate issue in conjunction with competitiveness considerations for Cyprus. Finally, an appendix presents some post-euro adoption reflections, with the hindsight of assessing developments two years after the euro adoption.

2. The Cyprus economy: macroeconomic and structural background

In the three subsections that follow, the overall macroeconomic background of the economy is presented for the period leading to the date of the decision for euro adoption, that is the period of a few years up to the first half of 2007. A description of the exchange rate framework and developments in Cyprus follows, and finally in the last subsection some structural features of the economy are discussed. These features are often analysed in order to assess the ability of an economy to participate in a monetary union.

2.1 Economic developments and prospects in the period leading to the decision for euro adoption

Cyprus is a small and open economy which, since its independence in 1960, has exhibited solid growth within a broadly stable and market-oriented macroeconomic environment. In 2006 per capita income, measured in Purchasing Power Standards (PPS), reached around three quarters of the euro area average. The economy is service-oriented, with the tertiary sectors (including legal, accounting and financial services as well as shipping and tourism) accounting for about three quarters of GDP. The overall macroeconomic performance of the economy has been characterised by moderate inflation and low unemployment, despite the influx of foreign workers in recent years, accounting for 16% of the labour force in 2006. Moreover, the economy has historically registered manageable levels of fiscal and current account deficits, with the external debt service to exports ratio and foreign reserves being at comfortable levels.

In the context of EU accession, which took place on 1 May 2004, Cyprus underwent substantial structural reforms, which contributed to the better functioning of the economy and set the stage for the achievement of nominal and real convergence. These reforms also contributed to the further integration of Cyprus in the EU economy, which constituted an important

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[2] The original background work by the authors for the 2005 and the 2007 exchange rate parity decisions include a Purchasing Power Parity (PPP) exercise, which is not presented here.

element for successful participation in the euro area. For instance, one can point to the gradual three-phased liberalisation of capital controls, completed on 1 May 2004, and the harmonisation of the monetary policy framework with that of the European Central Bank (ECB), which had been in place for some years. Within the context of the latter policy framework, the Central Bank of Cyprus (CBC) became fully independent in 2002, with a monetary policy framework fully consistent with that of the ECB including its primary goal of maintaining price stability. The overall progress in achieving real convergence and implementing structural reforms in Cyprus in the period leading to euro adoption, was highlighted in the European Commission's Broad Economic Guidelines reports (e.g. Commission of the European Communities, 2004).

Table 1 presents a snapshot of Cyprus's macroeconomic developments that prevailed in the years prior to euro adoption, i.e. 2000-2007. For 2007 the table includes both the final yearly figures and the estimated figures for the year at the time of euro adoption discussions, that is mid-2007. This table constitutes the reference point for the discussion of the macroeconomic background of the Cypriot economy, which follows below.

With regard to growth, the Cyprus economy performed well, growing at an average rate of 3,8% over the period 2000-2007. This was much higher than the EU and euro area average. Being a small and open economy, growth in Cyprus was also affected significantly by adverse external developments during this period. For instance, in 2002 and 2003 the economy was affected by the weak international economic environment and exhibited a slowdown in growth, with foreign demand falling significantly mainly as a result of the adverse developments in the tourism sector. In line with the improvement of the international economic environment, growth in Cyprus during 2004-2006 rebounded, but was mainly driven by domestic demand. The growth prospects for 2007 were equally favourable due to the positive economic environment in Europe and strong domestic demand fuelled partly by the anticipation of euro adoption.

Table 1: Selected economic indicators for Cyprus, 2000-2007

|		2000	2001	2002	2003	2004	2005	2006	2006*	2007**	2007***
Gross Domestic Product (Real Growth)	% change	5,0	4,0	2,1	1,9	4,2	3,9	4,1	3,8	4,2	5,1
Unemployment rate (LFS)	%change	5,0	4,0	3,3	4,1	4,7	5,3	4,5	-	4,2	3,9
Inflation rate	% change	4,1	2,0	2,8	4,1	2,3	2,6	2,5	2,5	-	2,4
Harmonised inflation rate	% change	4,9	2,0	2,8	4,0	1,9	2,1	2,2	2,2	2,5	2,2
Current account balance	% of GDP	-5,3	-3,3	-3,7	-2,2	-5,0	-5,9	-7,0	5,9	-5,8	-11,7
New FDI flows	% of GDP	7,3	7,2	5,1	2,4	2,5	3,7	5,2	-	-	4,6
Official international reserves	€ billion	2,0	2,7	3,0	2,7	3,0	3,7	4,5	-	-	4,4
General government surplus (+) deficit (-)	% of GDP	-2,3	-2,2	-4,4	-6,5	-4,1	-2,4	-1,2	-	1,5	3,5
Domestic public debt	% of GDP	44,5	48,4	51,4	53,5	51,1	52,0	50,4	-	-	44,9
Foreign public debt	% of GDP	14,3	12,3	13,2	15,5	19,1	17,0	14,2	-	-	13,4
Total public debt	% of GDP	58,8	60,7	64,6	68,9	70,2	69,1	64,6	-	60,5	58,3

Source: CBC.

* Preliminary data for 2006 used in the FEER estimations

** Estimates according to the stability programme 2007

*** Final data

Inflation has historically been moderate in Cyprus, in part owing to the pursued exchange rate policy (see next section). The inflation spikes recorded in 2002 and 2003 mainly reflected increases in the standard rate of value added tax (VAT), from 10% to 13% on 1 July 2002 and from 13% to 15% on 1 January 2003, as well as other harmonisation-induced increases in excise taxes in 2002 and 2003 (see Figure 1). Various measures of core inflation[3] indicate that during recent years underlying inflation in Cyprus hovered mostly between 2% and 2,5%. In 2007 inflation remained at 2,4%, as the increases in oil and food prices were counterbalanced by the impact of a decline in the excise tax on motor vehicles in November 2006.

Figure 1: Inflation rates in Cyprus and the EU, 1986-2006
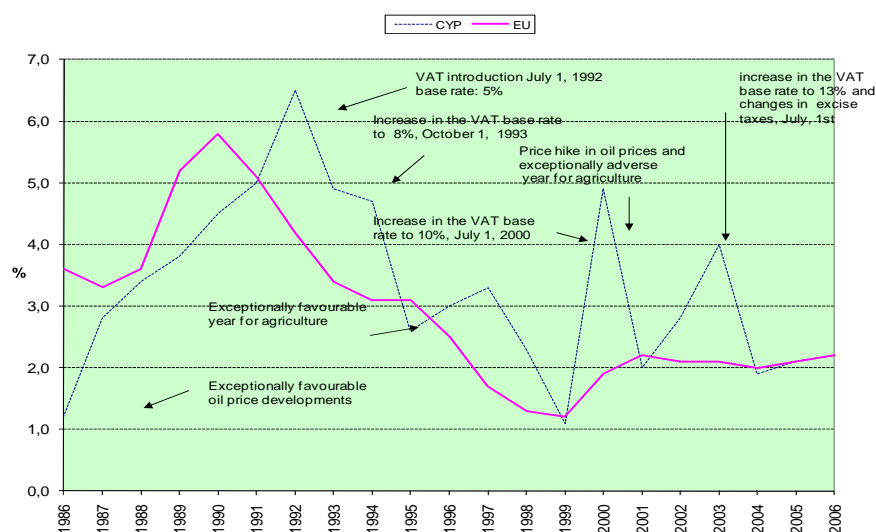
Sources: Cystat, ECB, CBC.

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As regards the labour market, the economy had been growing at almost full employment conditions in recent years with the unemployment level being among the lowest in Europe. The number of registered unemployed as a proportion of the economically active population exhibited limited variation in recent years, levelling at 3% in 2007. Besides the measure of registered unemployment, which has been available on a monthly basis since 1960, unemployment in Cyprus is also measured using the Labour Force Survey (LFS). The LFS measure is considered to be a more appropriate measure comparable with those in other countries as it is based on the internationally accepted International Labour Organisation (ILO) definition. Quarterly data on a yearly basis which are systematically available from 2004 onwards[4], also indicate low levels of unemployment compared with the EU average, albeit of a higher magnitude than the measure of registered unemployment.[5]

On the fiscal front, a sharp deterioration in public finances was recorded in 2002 and 2003, partly due to the aforementioned slowdown in economic activity. The widening of the fiscal deficit was also attributable to the adverse impact of a major tax reform in July 2002, through which increased revenue from hikes in VAT were more than offset by a reduction in income tax rates and an increase in social expenditure. In 2004 the situation was clearly reversed and a downward path for the fiscal deficit was achieved. The fiscal deficit declined gradually to 1,2% in 2006, in line with the objective of fulfilling the relevant Maastricht criterion[6]. In 2007 the fiscal balance turned positive, reflecting buoyant economic activity and increased revenue from real estate activity.

On the external front, non-negligible but manageable current account deficits were recorded, ranging from -5,3% to -7% of GDP in 2000 and 2007, respectively. These deficits were partly dependent on exogenous or one-off factors such as the increase in the price of oil and the change in the classification of excise taxes for cars in November 2006, which resulted in a surge of car imports in 2007. Furthermore, a construction boom, which started soon after EU accession, contributed significantly to the worsening of the current account deficit.

As far as the financing of the current account is concerned, it was to a large extent non debt-creating. The current account deficit in Cyprus was

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[3] Core inflation is defined here as a measure of inflation which excludes variations in the prices of agricultural and petroleum products and ignores the impact of changes in indirect taxes.

[4] Data is also available for the second quarter of 2000, 2001, 2002 and 2003

[5] On the differences between the two measures of unemployment in Cyprus see Kyriacou et al 2009.

[6] The fiscal consolidation since 2004 was based in part on a number of revenue measures, such as income from a bank secrecy and tax amnesty scheme. Furthermore, notable expenditure containment was achieved.

financed through FDI (see Table 1) and to a lesser extent by portfolio and other investments.

2.2 Exchange rate policy in Cyprus up to 2007

Exchange rate policy in Cyprus was historically geared towards maintaining macroeconomic stability through the linkage of the Cyprus pound with a currency anchor, either a single currency or a basket of currencies. The currency anchor changed several times. During the period of 1963 – 1972 the Cyprus pound was pegged to sterling. As a result of the collapse of the Bretton Woods system of fixed exchange rates, this link was terminated in 1972 and the Cyprus currency was linked for a short period to the dollar. The Cyprus pound was subsequently linked to an import-weighted currency basket during the period 1973-1984 and to a trade-weighted currency basket during the period 1984-1992.

On 19 June 1992, the Cyprus pound was unilaterally pegged to the ecu, at the central rate of CYP1=ECU 1,7086, with fluctuation margins of ±2,25%. Following the smooth ecu-peg policy, the Cyprus pound was subsequently pegged to the euro on 1 January 1999, with the same central parity. Initially, the fluctuation bands were maintained at ±2,25%. On 1 January 2001, together with the abolition of the long–standing and statutory interest rate ceiling, wider bands of ±15% were introduced in order to enable the CBC to absorb any shocks from possible destabilising capital movements and to deter speculative capital flows resulting from capital account liberalisation. At the same time, the narrower softer bands of ±2,25% were temporarily maintained to help anchor prices and expectations. In order to curb excessive borrowing in euros by residents who were taking advantage of the interest rate differentials between debts denominated in Cyprus pounds and euros, the softer bands were abolished on 13 August 2001. The ±15% margins became the effective limits, in line with ERM II. Even though exchange rate policy became more flexible through the abandonment of the narrow margins, the actual fluctuations of the Cyprus pound against the euro continued to be small, broadly remaining within ±2,25% until the last day of the pound's existence.

There are a number of reasons why the fixed exchange rate policy framework described above was deemed appropriate. Cyprus is a service-oriented small and open economy with a high degree of import dependence. Potential gains from a possible nominal devaluation would tend to be largely offset by higher import prices, including the prices of petroleum products and other raw materials. This would in turn fuel inflation, thus undermining the price competitiveness of the country's exports of goods and services. It should be underlined that the pass-through process from a devaluation to higher

inflation was likely to be particularly rapid in the case of Cyprus because of the existence of the cost of living adjustment (COLA) system, which applies to most wages and pension benefits twice a year, and also because of the close to full employment conditions that prevailed in the country for many years.

Partly as a result of these characteristics of the economy, the Cypriot authorities did not actively use the exchange rate instrument to address macroeconomic challenges or to buttress economic growth. Even in the extreme case of the 1974 Turkish invasion of the island, which constituted a major adverse shock to the economy, the exchange rate tool was not used. Instead, one of the major measures undertaken at the time to help the economy rebound was a wage reduction by 20% for three years and a concomitant suspension of the COLA system.

It should be noted that when the Cyprus pound was devalued in 1967 following sterling's devaluation[7] by about 13% vis-à-vis the US dollar, the impact on the Cyprus economy was in fact negative. Inflation during the subsequent five years deteriorated compared with the five-year period before the devaluation, while at the same time neither GDP growth nor the current account balance had shown any improvement; in fact they exhibited some worsening.

Finally, as regards the implementation of exchange rate policy prior to euro adoption, a noteworthy development in 2004 should be mentioned, namely the short-lived pressure on the Cyprus pound during April, the month prior to EU accession. This pressure arose in anticipation of the referendum on the UN sponsored plan for the reunification of Cyprus which took place on 23 April. In view of the politically charged and uncertain environment prior to the referendum and in anticipation of the full liberalisation of capital controls on 1 May, relatively small but persistent amounts of capital outflows were recorded against the background of unfounded rumours of an imminent devaluation. In response, on 30 April 2004 the CBC raised the marginal lending facility by 100 basis points to 5.5%. Rates were then kept unchanged until 25 February 2005 when they were reduced by 25 basis points, with capital flows returning to 'normal' levels and the Cyprus pound appreciating marginally by April 2005, just prior to ERM II entry. Thereafter, and until euro adoption, the Cyprus pound fluctuated within narrow margins around the central parity vis-à-vis the euro, exhibiting a marginal appreciation.

2.3 Other structural features and euro area prospects

The discussion so far has highlighted macroeconomic evidence suggesting the readiness of Cyprus to become a member of the euro area. The level of real

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[7] At that time the Cyprus pound was linked to sterling.

convergence, both in terms of per capita income and in terms of the high degree of market orientation of the economy, as well as the macroeconomic stability described earlier, constituted strong arguments in favour of Cyprus during the discussions for euro area entry. In addition, a number of other structural characteristics of the economy reinforced further the argument and provided more evidence of the readiness of the Cyprus economy to face the challenges associated with euro area membership. These characteristics mainly related to the robustness of the financial sector, the flexibility of the labour market and the degree of business cycle synchronisation vis-à-vis the European economies and particularly the euro area countries.

As regards the first structural characteristic, it is well known from the literature that a country joining a monetary union must do so with a healthy and robust financial sector. The progress achieved by Cyprus on this front prior to euro adoption was significant. Both the banking and the wider financial sector were fully compatible and harmonised with the *acquis*, while the legal, regulatory and supervisory frameworks were fully aligned with the relevant EU directives. Banks were also in good shape to meet fully the requirements of the new capital adequacy framework which were implemented by the EU at the end of 2006.

Despite a difficult year in 2003[8], Cyprus's domestic banks remained financially sound during the period leading to euro adoption, backed by a strong capital base. Furthermore, the high quality of human resources, the increasing range of products and services offered as well as the buoyant economic performance in the years leading to euro adoption, contributed positively to the long-term prospects of banks and increased profitability.

As regards the second structural characteristic, namely labour market flexibility, this is regarded as one of the crucial factors that can enable a member of a monetary union to face the challenges associated with the management of asymmetric shocks. As mentioned earlier, despite the existence of the COLA system, the Cypriot labour market is very flexible (see IMF, 1996 and 2005b, and Backe and Thimann, 2004). This conclusion is also supported by the very low unemployment levels prevailing in the country as described in Section 2.1. A factor underpinning the flexibility of the labour market, especially in recent years, is the significant and increasing influx of foreign workers to the island, amounting to 16% of the labour force by 2006. Evidence for the role of foreign labour in dampening wage pressures is

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[8] During 2003 the prolonged slowdown in the world economy and in Cyprus, the reduction in interest rates, the war in Iraq, the decline in tourist arrivals and the underperformance of the stock market had a negative impact on the banking sector's financial performance.

provided by Michael et al (2006) who found a significant downward impact on sectoral wages of about 15%.

An additional and equally important indicator of the readiness of Cyprus for the EMU, was the degree of business cycle synchronisation with respect to the euro area. As shown in Figures 2a and 2b, growth variations in Cyprus were closely correlated with those of the EU in the period 1996-2006, particularly the euro area countries. Table 2 presents the simple correlations between the GDP growth of selected euro area member countries and Cyprus vis-à-vis the euro area growth in the period 1996-2006. As indicated in the table, the correlation of Cyprus's GDP growth with that of the euro area average (0.72) is comparable with that of other individual euro area countries[9]. This also relates to the strong historical ties of Cyprus with Europe, particularly in services, and the progression of the island's economy toward further EU integration, which had been accomplished through a demanding harmonisation process. More specifically, recent evidence suggests that the shares of traded goods and services with EU countries both increased to 37%. More significantly, the share of FDI inflows from the EU increased to 85%.

Figure 2a: Business cycles, 1996-2006

(annual GDP growth rate)
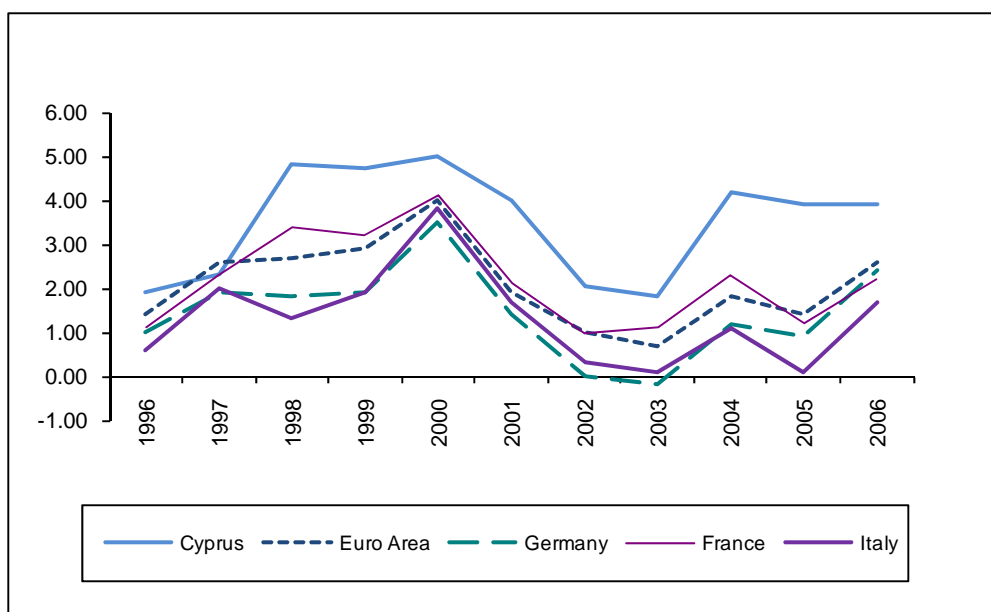
Source: International Financial Statistics, (IMF).

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[9] It should also be recognised that the correlation of the growth of each individual euro area country with that of the euro area average is biased upwards, particularly for large economies, as the growth rates for these countries are themselves components of the average euro area growth rate.
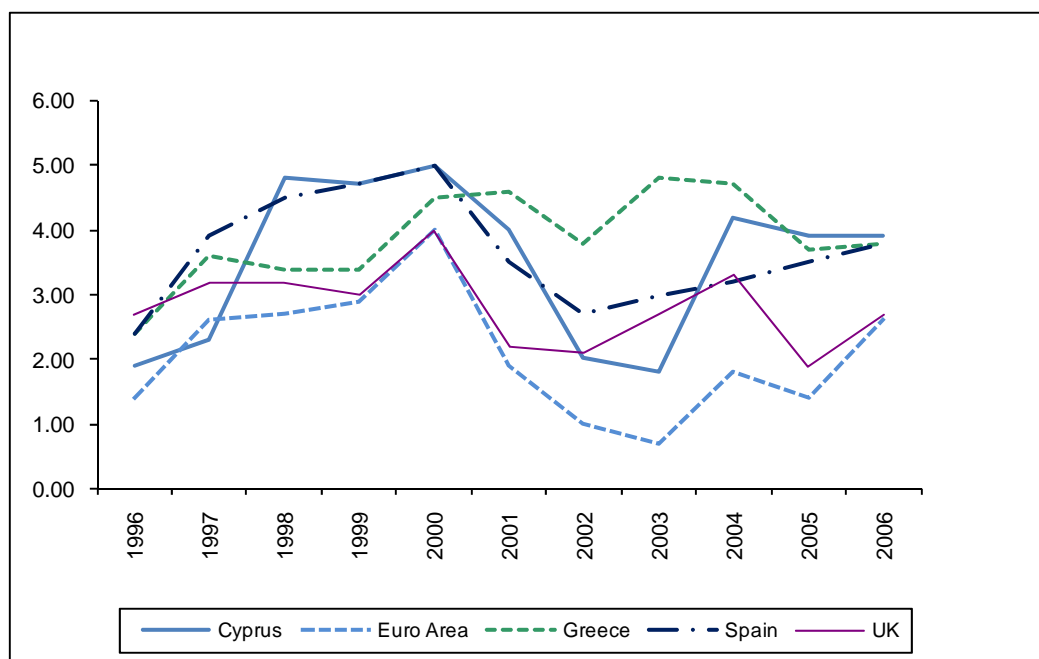
Figure 2b: Business cycles, 1996-2006

(annual GDP growth rate)

Source: International Financial Statistics, (IMF).

All in all, the aforementioned structural characteristics of the economy provided support to the argument that the Cyprus economy was indeed mature and ready to operate smoothly in the euro area at the time of the euro adoption discussions.

3. The equilibrium parity of the Cyprus pound: a qualitative assessment

Having discussed the overall macroeconomic and structural background of Cyprus in the period leading to the decision for euro adoption, we now turn to the main question addressed in this paper, namely the assessment of the appropriateness of the exchange rate parity of the Cyprus pound in that period. It is widely accepted that the notion of an equilibrium exchange rate is not only multidimensional but it is also extremely difficult to empirically determine with accuracy. In view of this challenge, it is acknowledged that in order to formulate a thorough and robust view on the range of values within which the equilibrium exchange rate level lies, one should approach the issue from a variety of different perspectives and evaluate a number of alternative indicators and a wide range of models. Against this background, a qualitative analysis of the issue is undertaken below by first examining a wide range of relevant indicators (Subsection 3.1) and then focusing on effective exchange rate indices (Subsection 3.2). The analysis of this section is subsequently complemented by an econometric analysis in Section 4, which is based on a FEER model.

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3.1 An assessment of a range of relevant indicators

It can be asserted that the parity of the Cyprus pound was broadly in line with the economic fundamentals in the years leading to euro adoption. This view has also been supported by independent observers. One line of argument often used to support this view is the historical performance of the exchange rate of the Cyprus pound. Even though historical performance is characterised by lasting exchange rate stability and full employment conditions, it is by no means a sufficient indicator nor does it secure a similar performance in the future. Nevertheless, it provides useful information which can be assessed in conjunction with other relevant indicators and models.

As already mentioned in the previous section, the pound was pegged to the ecu from 1992 to 1999, at the rate of CYP1=ECU1,7086, and to the euro since 1999, with the same central parity. Fluctuations around the central parity were small, in most cases within the ± 2,25% narrow margins. In parallel with the observed exchange rate stability, the concurrent overall macroeconomic performance of the country was characterised by high rates of growth and low levels of unemployment as well as subdued inflation. The broadly stable and full-employment conditions, along with the high import content of the production process in Cyprus, including almost total dependence on energy imports and inelastic import demand, suggest that the pursued policy served the economy well. In support of this argument, net FDI inflows in recent years were very strong, albeit with high fluctuations (see Table 1). Furthermore, international reserves were at comfortable levels, reflecting the willingness and readiness of foreign investors to finance the current account deficit during the catching-up phase of the economy, which was speedy and smooth.

Against the above argument, one could point to the existence of capital controls during the period prior to EU entry and their potential contribution in supporting a misaligned exchange rate parity. Nevertheless, this argument is significantly weakened if one considers the long duration of the exchange rate framework and the high level of financial integration of the Cyprus economy with the rest of the world, particularly Europe. It could be argued that no form of capital controls could have been so effective as to preserve a disequilibrium environment for so many years, particularly given the openness of the economy and its financial and cultural relations with the rest of the world. It follows, therefore, that the value of the Cyprus pound was, on average, not significantly misaligned over the years. This argument is also supported by the fact that despite the existence of an informal parallel foreign exchange market in Cyprus for most of the period under consideration, no

misalignments were ever reported.[10] Also, the spot and forward exchange rate markets in Cyprus, particularly after their liberalisation in 2001, did not give any indication of currency misalignment.

As mentioned earlier, a major justification for a strong and stable exchange rate prior to euro adoption, was the openness of the economy and the significant share of imports in domestic production. These characteristics would undermine possible nominal devaluations as they would swiftly lead to an increase in inflation and a real appreciation of the currency.   In this context, it should be noted that 28% of the goods included in the Consumer Price Index (CPI) basket of 2005 were imported.

A complementary line of thought in assessing the appropriateness of the parity in case of a fixed exchange rate regime is to assess interest rate differentials vis-à-vis the interest rates of the currency anchor. As described earlier, in the case of Cyprus short-term interest rates were exceptionally raised on 30 April 2004 by 100 basis points widening the spread vis-à-vis euro interest   rates.   At the same time, long-term interest rates had risen disproportionally, reflecting a range of factors that did not appear to be related either to expectations of higher inflation or other structural changes associated with the exchange rate outlook. More specifically, it should be pointed out that the increase in the yield of the 10-year government bond, which refers to only one primary auction in June 2004 - as there was no secondary market for government paper - reflected the high financing needs of the government at the time and a 'correction' of the yield curve, which was previously very flat due to excess liquidity[11].   Successive primary auctions suggested a clear downward path of long-term interest rates, falling from 6,58% in June 2004 to 5,89% by end-February 2005 and to 4,44% in April 2007.

The ability of both the private and government sectors to borrow from abroad constitutes another important indicator of the confidence that foreign investors showed in the exchange rate and in the performance of the domestic economy as a whole. It should be noted that the government had always been able to finance its foreign debt comfortably, never facing repayment problems and with no external assistance, with the exception of a few years following the Turkish invasion in 1974.   In the decade leading to euro adoption, the government issued on five different occasions a European Medium Term Note (EMTN), a five-year issue on two occasions and three 10-year issues, which

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[10] Due to the significant interaction of Cypriots with foreign tourists and entrepreneurs, foreign notes had been widely traded semi-officially in non-bank institutions such as hotels and retail shops. At no time was there any evidence that the parallel market exhibited any signs of misalignment vis-à-vis the official market.

[11] Characteristically, it should be mentioned that the 10-year development stocks previously had a spread of about 50 basis points only vis-à-vis the German bunds.

were oversubscribed. The spreads over LIBOR ranged between 12 and 74 basis points. The highest spread was recorded in 1999, a few months after the financial crisis in Russia, which had caused turbulence and uncertainty in the international markets. The lowest spread was recorded in April 2007, eight months prior to euro adoption. Furthermore, it should be noted that the private sector in Cyprus managed to attract funds from abroad with relative ease. For instance, in 2007 the issuance of bonds in euros by the largest commercial banks in Cyprus had been very successful, with the issues being comfortably oversubscribed.

Another important indicator to examine within the context of an investigation of the appropriateness of the exchange rate parity, is the level of the current account deficit and its dynamics. As already mentioned, past current account deficits in Cyprus had been comfortably financed through the financial account. Even though it could be argued that such deficits might constitute a source of concern, it should be noted that the Cypriot economy had been growing rapidly during the last three decades, experiencing a successful and smooth catching-up process. This process justified the existence of a current account deficit, particularly if this was largely due to the impact of capital and intermediate goods and largely financed by non-debt creating inflows, such as FDI. In fact, FDI coverage of the current account deficit had been significant, albeit volatile, over the years, averaging close to 60% for the period 2000-2007.

A significant portion of the FDI inflows in the island relate to business services and the real estate and construction sectors, which registered significant growth during the period 2000-2007, especially following EU entry. More specifically, a large number of properties in the costal areas of the island were bought by foreigners, mostly British expatriates. Other sectors such as financial intermediation, trade and transport also registered notable FDI flows during this period. Furthermore, it should be noted that the most important contribution to the high FDI inflows in the sectors mentioned above came from recorded "reinvested earnings". A particular feature of this is that as an accounting entry, profits earned by activities of foreign companies in Cyprus are first registered as an outflow in the current account balance (through the income account) and then as inflows financing the current account, namely through FDI. This double entry results in a deterioration of the recorded current account deficit owing to the accumulation of profits of foreign companies, even though their profits are not expatriated.

An additional useful angle from where one can view the exchange rate issue is the analysis of the evolution of the country's export market shares. Even though Cyprus's export market share in goods had worsened in recent

years, due to a decline of re-exports as well as stagnant domestic exports, this was partially offset by the significant increase in the export market share of services (other than tourism). Available balance of payments data shows that rapid growth was recorded in several categories of services exports such as sea transportation and financial and other business services, which includes legal and accounting services.

In view of the above arguments, international institutions and analysts in general acknowledged the strength of the balance of payments position of Cyprus and its overall external stability, which were directly related to the appropriateness of the exchange rate parity of the Cyprus pound. For instance, credit rating agencies in their periodic assessment of sovereign risk in Cyprus did not, by and large, raise the issue of possible exchange rate misalignment or of current account sustainability, except in the theoretical context of pointing to the risks and repercussions of not achieving fiscal consolidation[12]. Furthermore, in reports on the Cyprus economy issued during the period under consideration the Economist Intelligence Unit (EIU) suggested that the parity of the Cyprus pound was broadly appropriate. For instance, in the report issued in March 2005, it argued that a devaluation in view of ERM II entry was unlikely (EIU, 2005). In the June 2007 report, the EIU stated that Cyprus was expected to adopt the euro as scheduled on 1 January 2008. Finally, it should be noted that since September 2001 the IMF had included Cyprus in its Financial Transaction Plan on the basis of its stable balance of payments position. As a result, Cyprus was one of the 49 members of the IMF with a creditor status.

3.2 An assessment of effective exchange rate indices

This section focuses on effective exchange rates (EER) indices which are used to analyse and assess exchange rate developments and competitiveness issues. These indices constitute a useful tool for monitoring overall exchange rate developments in a country by tracking changes in the average value of the domestic currency vis-à-vis a basket of other currencies, typically those of the country's principal trading partners.

In its nominal form, an EER index of a country is a weighted average of bilateral exchange rates with the country's trading partners. The index can be constructed in a variety of ways, with the main differences largely lying in the selection of the currencies and their weights in the basket. The selection of currencies is typically based on a variety of indicators, such as the direction of either total trade of goods or exports and imports of goods and services. The

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[12] The last sovereign risk assessments prior to euro accession were undertaken by Fitch (July 2007) and Standard & Poors (January 2007).

so called 'third country competition' weights are often used to calculate the index so as to reflect not only bilateral competition with trading partners in their respective home markets, but also bilateral competition in export markets elsewhere[13]. Besides its nominal form, an EER index for a country is also derived in real terms, that is it is adjusted through price or cost. Real effective exchange rates (REER) are considered to be more relatively informative indicators, capturing changes in the price or cost competitiveness of the economy.

Even though EER indices are very useful and are widely used, they suffer in general from limitations related to data comparability but also to inherent conceptual and methodological problems. To address these caveats, a number of different weights or methods are typically used for their computation in order to produce a wide range of indicators so as to enhance their usefulness and the robustness of their results. No single index is problem-free or clearly superior in all cases.

A number of representative REER of the Cyprus pound are depicted in Figures 3a and 3b. In Figure 3a the real IMF index and the real and nominal IMF-based indices, as constructed by the authors, are presented. The above-mentioned real index is deflated by the consumer price index. Figure 3b shows the same index using weights derived by ECB staff (Buldorini et al, 2002). The course of all of the indices depicted in Figures 3a and 3b roughly track those of a wide range of other EER indices for Cyprus, including those constructed by the ECB and the European Commission. Overall, the analysis of EER indicators for Cyprus suggests that in both nominal and real terms the Cyprus pound had remained broadly stable since the 1990s, exhibiting some strengthening since 2001 following its weakening in 1999-2000. This pattern broadly followed changes in the value of the euro, the currency anchor of the Cyprus pound. In addition, however, the real index which exhibited a stronger appreciation since 2006, also reflects the hike in inflation in Cyprus in 2002 and 2003 due to the harmonisation-induced increases in excise taxes during this period and the increase in VAT from 10% to 13% on 1 July 2002 and from 13% to 15% on 1 January 2003.

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[13] For instance, even though for the period examined there were 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.

Figure 3a: Real and nominal effective exchange rates of the Cyprus pound using IMF weights (base year 2000=100)
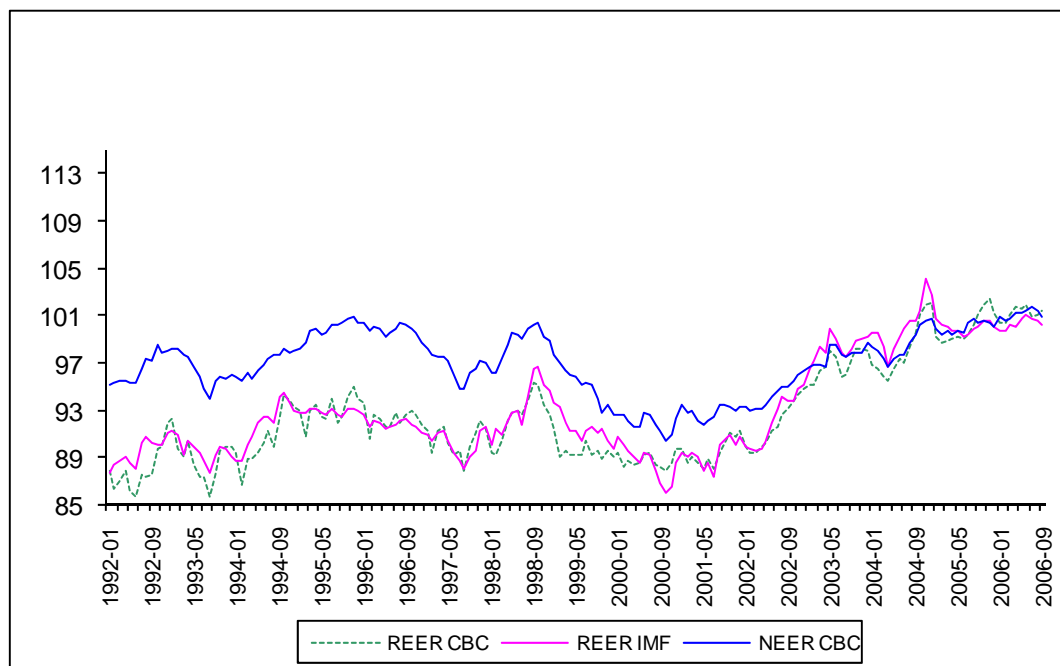
Sources: IMF, CBC.

Figure 3b: Real and nominal effective exchange rates of the Cyprus pound using ECB weights (base year 2000=100)
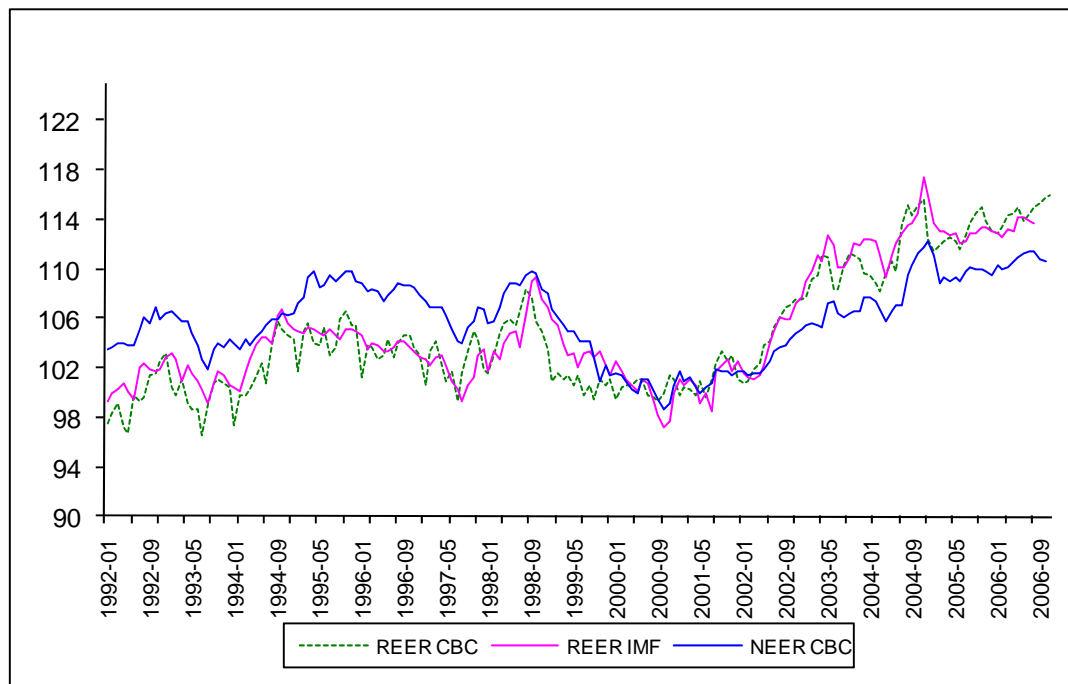
Sources: IMF, CBC.

Overall, the movements of the EER in the years leading to euro adoption suggest that the strengthening of the euro and the relatively steep increase in inflation in Cyprus in the years 2002 and 2003 led to an

appreciation of the real index between 2001 and 2006, with ranges of between 5% to 10%, depending on the index used. [14]

The REER indices for Cyprus deflated by unit labour costs typically exhibited a steeper appreciation than the CPI deflated indices. Nevertheless, it should be pointed out that in addition to increased international comparability problems of unit labour costs, the indices used often refer to the labour costs in manufacturing, which in the case of Cyprus is not a representative sector due to its small and decreasing share in GDP. What is more important for competitiveness in Cyprus is labour costs in the tourism sector, which in recent years have dampened down due to the influx of foreign workers. Furthermore, it should be pointed out that non-tourism services can be thought of as being less price sensitive than the manufacturing or the tourism sectors.

An overall assessment of the EER indices of the Cyprus pound suggest that, despite the strengthening of the currency between 2001-2006, the parity was not far from historical levels, economic fundamentals or the levels that could be justified by Balassa-Samuelson effects. Also, the appreciation in this period partly reflects a 'correction' or a reversal from the weakening trends in 1999-2000. In addition, the appreciation of the Cyprus pound was fuelled by the increase in inflation due to harmonised induced increases in VAT and excise taxes in 2002 and 2003, which were not expected to have an impact on export competitiveness, with the exception of some services, including tourism.

4. Applications of equilibrium exchange rate models for Cyprus

As mentioned earlier, in order to have a robust view of the broad range within which the equilibrium exchange rate lies, it is in general advisable to investigate a variety of indicators and models. In this context, to complement the qualitative assessment undertaken in Section 3, a quantitative approach for estimating the equilibrium exchange rate for the Cyprus pound is presented in this section. Three concepts of exchange rate equilibrium are described, namely short-run, medium-run and long-run equilibrium, followed by a survey of recent empirical applications of several models for the case of the

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[14] It should be noted that for the case of Cyprus the CPI is used instead of the Harmonised Index of Consumer Prices (HICP) as in the case of other European Countries, due to the unavailability of the HICP for Cyprus for the years prior to 1995. For 1995 onwards, when data for both indices of Cyprus exist, the CPI is always lower, typically between 0,2 and 0,3 percentage points.

Cyprus pound. Subsequently, the application of a medium-run model is undertaken, namely the FEER model[15].

4.1 Concepts of equilibrium exchange rate

It is commonly accepted that there exists no unique and widely accepted definition of what an 'equilibrium exchange rate' is. A number of different definitions capture various aspects of this multidimensional issue. One of the notable attempts to define the equilibrium exchange rate was that of Williamson (1985) who stated that:

> "…the equilibrium exchange rate is that real exchange rate which is expected to generate a current account surplus or deficit equal to the underlying capital flow over the cycle, given that the country is pursuing internal balance as best it can and not restricting trade for balance of payments reasons…" *(p.5)*

In the literature, the various concepts of exchange rate equilibrium are categorised on the basis of the time horizon to which they apply. Three different broad concepts of equilibrium exchange rates are often discussed, namely short-term, medium-term and long-term equilibria. In brief, a *short-term equilibrium* refers to the real exchange rate which prevails under free market conditions when fundamental values are at their current settings, after abstracting from the influence of random effects. A *medium- term equilibrium* rate is defined as the real exchange rate for an economy which is in both internal and external balance. Internal balance is achieved when demand meets the supply potential and the economy is running at full capacity (full employment conditions). External balance is achieved when the rest of the world is in internal balance. This equilibrium does not necessarily imply that the current account of the domestic economy is balanced. The current account balance can be in deficit at a level that can be considered as sustainable, in the sense that it is consistent with the dynamics of convergence with the flow equilibrium in the long-run. A *long- term equilibrium* is defined as the real exchange rate in an economy which has achieved stock equilibrium (steady state conditions).

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[15] The original background work by the authors for the 2005 and 2007 decisions include a long-run model, i.e. Purchasing Power Parity (PPP) model, which is not presented here. It essentially constitutes a quantitative analysis of the effective exchange rate indices in Cyprus, which were also analysed in this paper in qualitative terms (Section 3.2).

4.2 Existing empirical evidence for Cyprus

Several studies were carried out prior to euro adoption on the appropriateness of the exchange rate parity of the Cyprus pound, in the context of assessing the competitiveness of the economy. The general conclusion of these studies, which apply to the three aforementioned time horizons, is that the value of the Cyprus pound was broadly in line with economic fundamentals and hovered within ranges that are considered to be near equilibrium.

The International Monetary Fund (IMF) estimated a FEER model for Cyprus in 1998 in the context of the Article IV Consultation (IMF, 1998). During subsequent visits by the Fund in 2000 and 2002, the model was updated (IMF, 2000 and 2002). The general conclusion of these studies was that even though policies related to the fiscal stance and the containment of labour costs needed to be strengthened to safeguard long-term sustainability, the central parity of the Cyprus pound was broadly in line with economic fundamentals. The same conclusion was reached during the Article IV Consultation exercise shortly before Cyprus's entry into ERM II, where it was stated that:

> "The staff agreed that the parity appeared to be broadly in line with fundamentals given that the economy is near full employment and the reserve position remains strong" (IMF, 2005, p.14).

In the subsequent report, two years later, it was noted that 'the real exchange rate is in line with fundamentals' (IMF, 2007, p.17). In the latter two IMF Report the conclusion was reached not on the basis of a FEER model, as was the case in 1998, 2000 and 2002, but on the basis of a thorough and comprehensive analysis of a variety of relevant indicators for Cyprus.

Pattichis et al (2003) estimated a Behavioural Equilibrium Exchange Rate (BEER) model for the Cyprus pound. This was a purely statistical model which attempted to find cointegration between the real effective exchange rate and a number of behavioural variables, namely the terms of trade, the Balassa-Samuelson effect, net foreign assets, the price of oil and the real interest rate differential. The authors reported one cointegrating vector which closely followed the real effective exchange rate, suggesting that the parity of the Cyprus pound was not significantly misaligned for the period 1980 Q1 – 2000 Q3.

A third study by Maeso–Fernandez et al (2004) used a panel PPP model to examine the currencies of EU members, including the new member states. The results of this study also suggest that the central parity of the Cyprus

pound was not far from the fundamental equilibrium. In fact, based on the PPP model, the Cyprus currency was found to be marginally undervalued in 2002.

It is important to underline that the above models were applied to recent reference periods and that they were related to all three different time domains, namely short-run (BEER), medium-run (FEER) and long-run (PPP). This reinforces the soundness and robustness of their common conclusion and suggests that the Cyprus pound was indeed broadly in equilibrium during the last few years leading to euro adoption. Against the background of these empirical results, the aim of this paper is to use the most recent available data[16] for the further understanding of the impact of recent domestic and external developments on the equilibrium exchange rate in Cyprus. As mentioned earlier, we proceed with an application of an estimation of a FEER model.

4.3 An application of the FEER model for Cyprus

The FEER model is a medium-run equilibrium exchange rate model, which focuses on the requirements for simultaneously achieving internal and external balance in a country. It is widely used in the literature as it provides useful insights for policymakers into the role of exchange rates in achieving equilibrium. The model attempts to reconcile the current account which would have prevailed if exchange rates reflected conditions where both domestic and foreign outputs were in equilibrium, the so called "trend current account" (or underlying current account), with the current account level which is considered as the 'sustainable current account' (or equilibrium current account). This 'sustainable current account balance' reflects a level which can be considered as 'normal', given the differences in a number of structural macroeconomic features between the domestic economy and the economies of the country's trading partners. To the extent that the 'trend' and the 'sustainable' levels of the current account differ, the model estimates the exchange rate that is needed to restore equilibrium, the so called 'fundamental equilibrium exchange rate'.

The time domain within which the FEER model is estimated assumes that asset stocks are changing. In other words, long-run equilibrium has not yet been reached. Therefore, only a flow-equilibrium is envisaged in this medium-term framework as opposed to the stock-equilibrium which is assumed in a long-term horizon model. As a consequence of this feature, the medium-term current account balance need not be equal to zero for an economy experiencing real GDP convergence. It is in this sense that a

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[16] As was mentioned in Section 3.1, a revision of balance of payments data was undertaken for the recent years. Our study is the only econometric study that takes into consideration the new data.

country's sustainable current account can be negative, depending on some structural macroeconomic features of its economy, including its level of development or real convergence, its fiscal stance and demographic characteristics.

It is important to note that the FEER analysis produces a result that is independent of nominal magnitude. Thus, the FEER is a real exchange rate which is consistent with a range of nominal exchange rate and price combinations. Therefore, if the REER is found to be overvalued (undervalued), it does not necessarily mean that a nominal depreciation (appreciation) is required; the equilibrium could in principle be restored instead through relatively lower (higher) domestic inflation vis-à-vis foreign inflation.

As is often the case in the literature, a partial equilibrium approach of estimating the FEER model[17] is used which consists of three distinct steps: a) the estimation of the country's trend (or underlying) current account, that is the current account that would prevail in the country if its economy and the rest of the world were producing at potential output levels; b) the estimation of the sustainable current account of the country in question, that is the current account deficit which is consistent with the savings/investment position of the domestic economy, also assuming that the rest of the world is operating at potential output; and c) the estimation of the real exchange rate, namely the FEER, that is required to equalise the trend current account with the sustainable level of the current account.

Isard and Mousa (1998) refer to a fourth step in the process, namely the judgmental assessment of the outcome of the third step in order to take into consideration in a qualitative way any relevant factors that have not been adequately addressed by the formal analytic framework. Whether it is called a fourth step, or is simply considered as an integral part of the overall assessment of the process, the judgemental aspect of the analysis is very important in drawing up conclusions from this exercise. Furthermore, when the FEER is estimated, a sensitivity analysis is usually carried out with respect to the level of the sustainable current account and the elasticities used for the

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[17] An alternative way to calculate FEER is to use a complete macroeconomic model. This has the advantage of consistency and of producing FEER estimates for a number of years in the future. However, the validity of the results depend on the specification of the model and if the model does not have well defined medium or long-term properties, the FEER estimates will not make sense. The alternative approach, the partial equilibrium approach used in this paper, has the advantage of simplicity and clarity, at a cost however of compromising the structural consistency offered by a complete macroeconomic model. The partial equilibrium model does not capture the possible feedback from the FEER to the inputs for trend output and structural capital flows. In other words, it assumes that trend output and structural capital flows influence the FEER but not the other way. Nevertheless, it should be pointed out that Driver and Wren-Lewis (1996) report that the reciprocal effects not captured in the partial equilibrium model are relatively small.

estimation of the trend current account. In the following subsections, each of the aforementioned steps of the process are presented, followed by an overall assessment of the results.

4.3.1 Estimation of the trend current account

We estimate the FEER model using annual data spanning from 1980 to 2006, the latest year for which annual data were available during the period of the euro adoption discussions in mid-2007. For the calculation of the trend current account, trade and services flows were treated as behavioural equations in a partial equilibrium model, whereas trend output and structural capital flows--dividends, interests and transfers--were treated as exogenous[18]. More specifically, the current account, CA, was considered as a function of the real exchange rate, R, domestic and foreign incomes, Y and Y*, and net capital payments, Interest Payments and Dividends (IPD):

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

Following the work of Driver and Wren-Lewis (1998), the flow equations (exports of goods XG, exports of services XS, imports of goods MG and imports of services MS) were modelled as a function of domestic income Y, world income Y,* relative prices R and world trade S, in log-linear form:

$$XG = a1 * R + a2 * S$$
$$XS = b1 * R + b2 * Y^*$$
$$MG = c1 * R + c2 * Y$$
$$MS = d1 * R + d2 * Y$$

The deflators used were assumed to be a weighted function of commodity prices, domestic prices and world export prices. Commodity prices were divided into five categories: oil prices, food prices, world beverages prices, world agricultural non-food prices and world metals and minerals prices. Their relative importance for trade prices was derived from the commodity composition of trade. 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.

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[18] The model consists of nine endogenous variables; domestic real GDP (Y), exchange rate (e), foreign assets (A), domestic real interest rate (i), exports of goods (X), imports of goods (M), consumption (C), capital stock (K) and one of the three variables: government spending (G), taxes (T) and government debt (B); and six exogenous variables; world output (YW), world real interest rate (iw), debt to foreign residents (D), employment (N), and two of the following three variables: government spending (G), taxes (T) and government debt (B).

Income and price elasticities for goods and services used in the estimation of the trend current account were based on the average elasticities estimated by two different studies, the International Monetary Fund (1998) and Kyriacou and Syrichas (1999). These are presented in Table 2. Finally, for the estimation of trend output, which is treated as exogenous, we applied the commonly used HP filter.

Table 2: Trade elasticities used in FEER estimation

	Exports	Imports
Goods		
Price	0,90	1,55
Income	1,35	2,00
Services		
Price	0,50	1,40
Income	1,00	1,20

The estimated trend current account balance for Cyprus for the period 1990-2006 is presented in Figure 4 along with the actual current account balance. A noteworthy characteristic of the trend variable for Cyprus is that it is in general smoother than the actual current account balance and in some years it differs significantly. This appears to be a natural consequence of the small size of the economy, where exogenous factors, both positive and negative, have a significant impact on economic magnitudes.[19] Finally, it should be noted that overall, as expected, the trend current account balance evolves broadly in line with the developments in the REER index.

Figure 4: Trend (TCA) and actual current account (ACA) deficit
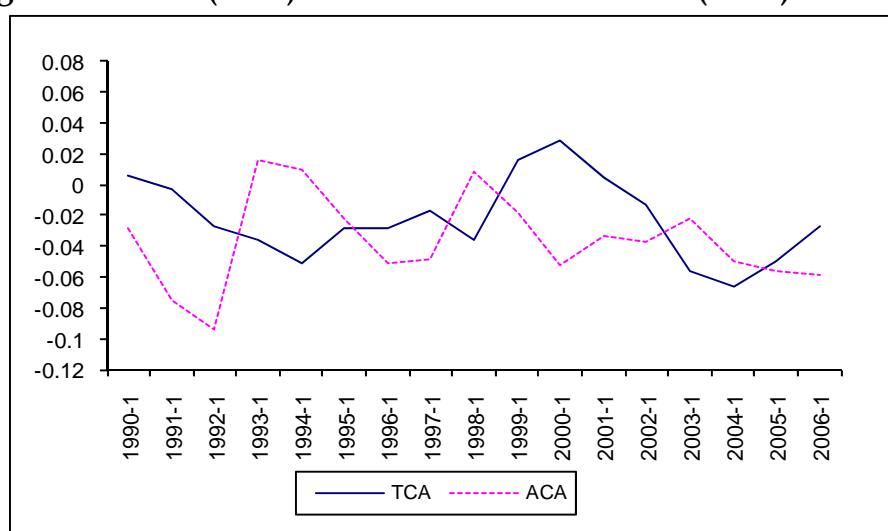
Source: CBC calculations.

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[19] For instance, in 1992 the current account deficit was burdened by a number of exogenous factors, such as the purchase of aircraft by Cyprus Airways and exceptionally higher defence imports amounting to 6,8% of GDP.

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4.3.2 Estimation of sustainable current account

As mentioned earlier, the 'sustainable current account balance' represents a level which can be considered as 'normal' or medium-term, given the differences in a number of structural macroeconomic features between the domestic economy and the economies of the country's trading partners. One of the options for deriving the sustainable level of the current account, which was also used in this paper, is through the assessment of the 'normal' level of the savings-investment balance, which depends on a number of medium-term determinants[20].

The level of the current account that can be maintained in the medium-run, given the savings/investment position and full-employment conditions prevailing in both Cyprus and its trading partners, was estimated using a panel of countries consisting of Belgium, Cyprus, Egypt, France, Germany, Greece, Italy, Malta, Morocco, Portugal, Spain, Tunisia, Turkey and the UK. Following the work of other researchers, including the IMF, a number of variables were tested as candidates for explaining variations in the sustainable current account. Based on tests for statistical significance, our model includes the dependency ratio, per capita GDP and the cyclically adjusted budget deficit[21].

The derived sustainable current account balance for Cyprus is presented in Figure 5, along with the trend current account discussed earlier. It should be noted that the sustainable current account deficit is decreasing over time, (less negative balance) which is consistent with economic fundamentals and the catching up process. This result is consistent with the work of the International Monetary Fund (1998 and 2000).

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[20] An alternative approach used in the literature is to estimate the deficit that generates sufficient trade surpluses in the future, in order to at least stabilise the existing debt-to-GDP ratio at a sustainable level.

[21] The panel estimation method followed in this case was the within group estimation so as to eliminate the group and time specific fixed effects. It is, however, possible that a more thorough analysis could have been carried out in this panel estimation. More precisely, panel unit root tests and cointegration could have been carried out as well as a panel endogeneity test. Recent preliminary estimates by the authors on the twin deficits hypothesis suggest that this proposition holds in the case of Cyprus, which would be interesting to test in the panel group. For the above reasons, the sustainable current account is used with caution and sensitivity analysis is carried out when conducting FEER estimation, as an alternative solution.

Figure 5: Trend (TCA) and sustainable (SCA) current account deficit

Source: CBC calculations.

4.3.3 Estimation of the FEER

In view of Figure 5, which presents the sustainable and trend current account balances, the question that needs to be addressed is what level of real exchange rates is required in order to alter the trend current account deficit so as to set it equal to the sustainable current account? This, of course, presumes that the Marshall - Lerner condition holds.

Before addressing this question for the case of Cyprus, some practical considerations need to be mentioned at the outset. Due to the inherent limitations of the simplified analytical framework of the FEER model, it is recognised in the literature that the quantitative assessment provided by this model includes significant margins of errors that need to be taken into account. For instance, Isard and Mussa (1998) note that in the absence of formal confidence bands, the IMF considers that deviations from estimates of equilibrium exchange rates of 10% or even 15% as being non-significant. Moreover, they note that the range of 10% or 15% serves not as a definite signal for a serious misalignment but rather as a threshold suggesting the existence of such a possibility.

Bearing in mind the above considerations, Figure 5 shows that the sustainable and trend current account balances move relatively close to each other for the period 1990-2006.[22] The recorded deviations exceeded the aforementioned 10% margin only in the period 1999 – 2000, in which case the

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[22] It should be noted that the results did not change materially in the context of a sensitivity analysis conducted both with respect to the level of the elasticities used in the estimation of the TCA and the level of the SCA.

euro was significantly undervalued. Therefore, the FEER estimation suggests that the Cyprus pound has been broadly in line with fundamentals during the period examined . For this period, the FEER estimations suggest that the Cyprus pound hovered close to fundamentals with a tendency of being slightly weaker than the equilibrium exchange rate during the years 1995-2002. For the period 2003-2006, the model suggests that the exchange rate was slightly stronger, albeit well within the region of what could be considered as 'broadly in equilibrium'. It is also noted that FDI coverage in these years is very high. As noted above, a rule of thumb applicable generally is that small deviations do not require action by the authorities, given the margins of error involved in the analytical framework of these models.

Figure 6: Comparison of FEER estimations with calculations for REER
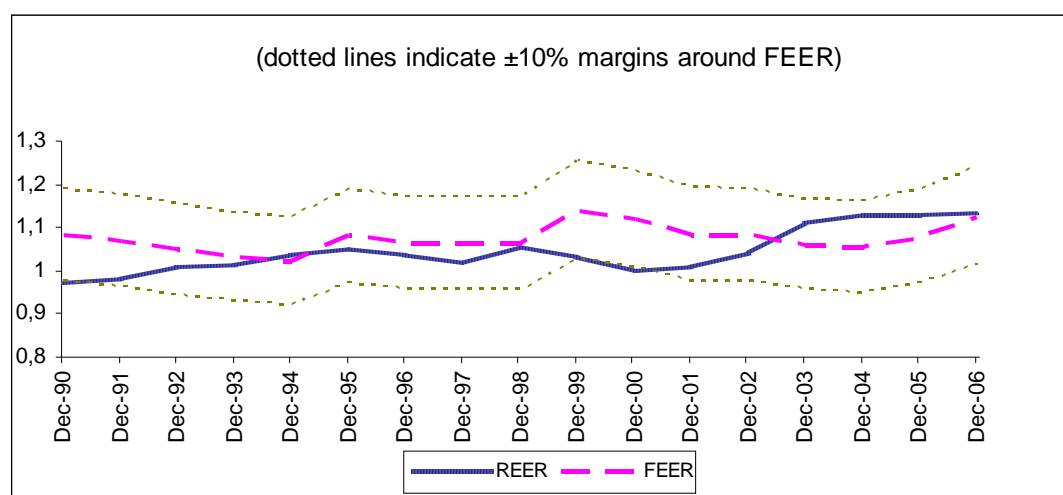
Source: CBC calculations.

5. Conclusions and forward considerations

The introduction of the euro on 1 January 2008 was a landmark event in the recent history of Cyprus. The economic benefits of joining the euro area are well known for a small and open economy. Adopting the credible currency of a monetary union offers, among other things, economic stability and security, reduced transaction costs and exchange rate risk and, given the credibility of the ECB, a macroeconomic environment of low inflation and interest rates. The use of the exchange rate policy tool in Cyprus was never exercised in the country's recent history and, therefore, the loss of this tool would not constitute a serious constraint on policymakers. In addition to the economic benefits, political benefits are also important given the catalytic role that the

euro can have on the ongoing efforts for a political solution of the Cyprus problem (see Kyriacou, 2006).[23]

The analysis presented in this paper supports the view that the exchange rate parity of the Cyprus pound vis-à-vis the euro remained broadly in line with economic fundamentals for a number of years leading to the time of Cyprus's entry into the euro area on 1 January 2008. This conclusion is supported by evidence from a qualitative examination of a wide range of relevant economic variables in Cyprus available at the time of economic assessment, that is the first half of 2007 (Section 3). It is also supported by an econometric analysis based on a FEER model for Cyprus, using yearly data from 1980 to 2006 (Section 4). Overall, the evidence examined in this paper suggest that the decision taken on 10 July 2007 by ECOFIN to adopt the long standing central parity rate of the Cyprus pound vis-à-vis the euro, that is, CYP1=€1,7086 or €1=CYP0,585274, as the irrevocable conversion rate, was appropriate.

The choice of an appropriate conversion rate is certainly of critical importance when joining a monetary union. Nevertheless, and despite the significant benefits of joining the euro area, policy challenges for Cyprus continue to exist and policymakers need to remain vigilant. In general, in an increasingly complex and competitive global environment, policy challenges, be it within or outside a monetary union, are growing dramatically. In the particular case of Cyprus these challenges relate not only to economic, but also to political considerations.

Looking forward and from an economic policy perspective, strengthening the competitiveness of the Cyprus economy is a primary challenge for the authorities. In this context, implementing further market oriented structural reforms and strengthening macroeconomic stability is a prerequisite for balanced and sustainable economic growth.

For a member of a monetary union, the economic policy challenges are well known. The role of fiscal policy and structural reforms in successfully managing the economy enhancing its competitiveness and maintaining macroeconomic stability takes centre stage. This is because in this framework the tools of monetary and exchange rate policies are no longer available to the domestic authorities for addressing economic shocks. In this environment, economic policy-making has to largely focus on fiscal policy and structural reforms with the aim of rendering the economy more flexible and competitive as well as more resilient to shocks. This is of paramount importance in order to safeguard sustainable growth, employment and welfare in the increasingly

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[23] It should be recalled that the analysis presented in this paper covers only the areas under the effective control of the Government of the Republic of Cyprus.

competitive international environment. Wage moderation and increased productivity contribute importantly to achieving this goal. Needless to point out, the above policies are easier said than done. In order to be successfully implemented, they require strong political will and leadership. As the recent economic and financial crisis has shown prudent economic policies need to be implemented and safeguarded during the good times, before a downturn or crisis develops. This adds to the credibility of the authorities and signals their capability to manage an economic crisis effectively, if and when it emerges. As shown in the appendix, this challenge proved to be extremely demanding in Cyprus, at least in the three-year post euro-adoption period.

As regards the political challenges facing the Cypriot economy, it could be argued that a possible reunification of Cyprus following euro area membership would, from an economic perspective, be very challenging, more so than in the case where Cyprus was not a member of the euro area. More specifically, given that: (i) the absence of monetary and exchange rate policy instruments, and (ii) the significant income disparity between the economy of the Republic of Cyprus and the economy in the occupied northern part of the island, one could raise the concern that following reunification, macroeconomic policy would be very difficult to implement without facing significant policy dilemmas. Nevertheless, against this argument, it should be pointed out that the relative magnitudes of the two economies (approximately 90% versus 10% in terms of GDP) suggest that the short-term impact of reunification can be a manageable challenge, assuming reasonable conditions related to the political solution. As such it can be addressed with the help of transfers, from European structural funds, where needed, and within the context of the framework of the Stability and Growth Pact. In addition, it should be pointed out that over a medium and long-run horizon the impact of reunification would be beneficial to both economic areas of the island. This, of course, is subject to an assumption of a sensible economic policy framework to be derived from the political negotiations and also under reasonably prudent policies after the solution. Given the above, the adoption of the euro by the Republic of Cyprus is not likely to impede the implementation of the solution but, on the contrary, it can be a catalyst for a solution, as pointed earlier. This is because the euro is a currency already familiar to the Turkish Cypriots and widely used and preferred in the north as a foreign currency. The choice of currency in the envisaged Unified Republic of Cyprus in the 2003-2004 negotiations proved to be very sensitive and one of the thorniest issues given the existence of the Cyprus pound which Turkish Cypriots could not accept politically. This was not the case in the more recent talks, owing to the wide acceptability of the euro.

It can be argued that early versions of the UN sponsored plan for the solution of the Cyprus problem, the so called "Anan Plan", did not safeguard the sustainability and the financial viability of a united Cypriot economy (see Eichengreen et al, 2004). Nevertheless, the involvement of technical committees on economic issues during the negotiations in early 2004 contributed to introducing a number of improvements of the economic provisions of the 5th version of the Anan Plan vis-à-vis its earlier editions. A number of these improvements have been based on Eichengreen et al (2004). Nevertheless, it appears that more needs to be done. It is hoped that in the context of the renewed political talks since 2008 and the help of a working group on economic matters consisting of both Greek Cypriot and Turkish Cypriot economists, further improvements in the economic provisions of an envisioned solution will be incorporated in order to safeguard the island's economic and financial viability.

In general, there are a number of important issues that need to be addressed in the context of an envisaged solution in order to safeguard the competitiveness of the unified economy. For instance, the principle of free movement of goods, capital, labour and services within a single market should be safeguarded. Also, in achieving economic and social convergence between the two existing economies the agreed policy framework should give emphasis to fiscal prudence and financial soundness strictly within the context of the Stability and Growth Pact. It is thus of paramount importance that fiscal policy in the Republic of Cyprus is also geared towards delivering fiscal outcomes that would also be appropriate in the context of the short-term costs arising from the implementation of a solution to the Cyprus problem.

All in all, despite the number of unique features and characteristics of the Cypriot economy, the main principles for the appropriate policies needed to address economic challenges are standard and straightforward: maintain fiscal discipline and promote structural reforms with a view to maintaining a business friendly economic environment and improving the competitiveness of the economy. This will promote sustainable growth and enable the economy to absorb exogenous shocks.

Post euro-adoption reflections

Following the ECOFIN decision of 10 July 2007, and given the associated boost to consumer and investor confidence, domestic demand surged in Cyprus, leading to economic overheating which lasted until the end of 2008, when the impact of the global financial and economic crisis began to affect the island. The economic overheating, also associated with the influx of foreign funds for the acquisition of holiday homes in the coastal areas of the island, was also fuelled by an increase in credit growth, facilitated by the significant reduction of the minimum reserve ratio on 1 January 2008 from 5% to 2% of euro deposits.

In the light of the above developments the current account deficit rose sharply to 17,7% of GDP in 2008, also leading to concerns about competitiveness. Needless to say, for some sectors of the Cyprus economy, e.g. manufacturing and tourism, competitiveness in recent years has been gradually eroding. Nevertheless, other sectors have been contemporaneously expanding, outweighing the losses. Such sectors include financial, shipping and other business services, which, along with the construction sector mentioned earlier, have by and large supported economic growth in recent years. An important question to be addressed is the degree to which the post euro-adoption worsening of the current account is a reflection of an overall deterioration of competitiveness or a result of aforementioned overheating as well as other exogenous factors. Given the sharp increase of the current account deficit in 2008, and the close attention that external imbalances have attracted in the light of the economic and financial crisis, this question is of vital importance and is examined below.

Developments on the current account deficit in Cyprus and its main components are presented in Table A.1 for the years 2006- 2009. As mentioned earlier, the year 2006 was the last year to be included in the econometric analysis conducted and the current account deficit was found to be at a level consistent with equilibrium.[24]

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[24] It should be recalled that at the time of completing the exercise, the preliminary figure for the current account in 2006 was somewhat lower than the final figures, that is, 5,8% of GDP.

Table A1: Main components of the current account in Cyprus, 2006-2009
(as a percent of GDP).

(1)	2006 (2)	2007 (3)	2008 (4)	2009 (5)	2006-2008 difference (6)	2008-2009 difference (7)
Current account balance	**-7,0**	**-11,7**	**-17,7**	**-8,5**	-10,7	9,1
Goods and services balance	**-4,0**	**-6,5**	**-11,7**	**-5,3**	-7,7	6,5
Income account and current transfers	**-2,9**	**-5,2**	**-5,9**	**-3,2**	-3,0	2,7
Total Imports of goods (FOB)	34,9	36,5	38,8	30,8	3,9	-8,0
Imports of goods destined for home consumption (FOB)	31,4	33,6	36,1	28,7	4,8	-7,5
of which						
consumption goods/ durable	*1,2*	*2,1*	*2,1*	*1,9*	*0,9*	*-0,2*
intermediate inputs and raw materials	*9,4*	*10,3*	*10,9*	*8,1*	*1,5*	*-2,8*
transport	*3,8*	*5,1*	*5,1*	*2,9*	*1,2*	*-2,1*
oil	*5,2*	*5,1*	*6,5*	*4,7*	*1,3*	*-1,8*
Export of goods	7,7	6,8	6,7	5,7	-1,0	-0,9
of which						
domestically produced goods	*3,1*	*3,2*	*3,2*	*2,8*	*0,1*	*-0,3*
Services payments	16,2	17,2	16,9	13,9	0,7	-3,0
of which						
travel	*5,3*	*6,7*	*6,1*	*5,3*	*0,8*	*-0,8*
transportation	*5,9*	*5,6*	*6,4*	*5,3*	*0,5*	*-1,1*
Sea	*4,1*	*3,5*	*3,7*	*2,6*	*-0,4*	*-1,0*
Air	*1,8*	*2,0*	*2,7*	*2,6*	*0,9*	*-0,1*
Services receipts	39,4	40,3	37,3	33,7	-2,1	-3,6
of which						
travel	*13,0*	*12,3*	*10,8*	*9,1*	*-2,2*	*-1,6*
financial services	*1,7*	*3,3*	*4,3*	*4,7*	*2,6*	*0,4*
other business services	*9,6*	*9,0*	*8,1*	*8,2*	*-1,5*	*0,1*
transportation	*9,2*	*9,7*	*10,3*	*9,1*	*1,1*	*-1,2*
Sea	*6,4*	*6,4*	*7,9*	*7,4*	*1,5*	*-0,5*
Air	*2,6*	*3,1*	*2,3*	*1,6*	*-0,4*	*-0,7*
Government services	*2,1*	*2,3*	*1,0*	*0,9*	*-1,1*	*-0,1*

Source: CBC.

The table attempts to shed light on the developments that led to the sharp increase of the current account from 7% in 2006 to 17,7% in 2008 and its subsequent reduction to 8,5% in 2009. In a nutshell, what Table 3 suggests is that a significant portion of the deterioration of the current account between 2006 and 2008 can be attributed to exogenous factors and the overheating of the economy. Nevertheless, losses in the competitiveness of some sectors of the economy, particularly the tourist sector, continued to take place, even though other sectors, especially financial, shipping and services, outweighed, at least to some extent, these losses.

More specifically, column 6 of the table, which shows the difference between current account items in 2006 and in 2008, suggests that the deterioration of the current account deficit between these two years reached 10,7 percentage points of GDP, from 7,0% in 2006 to 17,7% in 2008. This deterioration can be decomposed into a widening by 7,7 percentage points in the goods and services balance and 3 percentage points in the income account and current transfers. It is asserted that for the examination of the sustainable current account balance what is directly relevant is the first component, namely the goods and services balance. In fact, this is the emphasis given by the FEER methodology, which was applied in Section 3 of this paper.

More specifically, as column 6 shows, the 7,7 percentage point deterioration of the goods and services balance from 2006 to 2008 can be mostly explained by a sharp increase in imports for home consumption of the order of 4,8% of GDP and a significant decline in export of services by 2,1% of GDP. Analysing further these two main categories, nominal imports sharply increased due to oil imports (1,3% of GDP) and import of transport equipment (1,2%). These categories of imports do not relate to competitiveness but rather to exogenous factors, that is, the increase in the price of petroleum products and the decline in excise tax on cars introduced in November 2006, respectively[25].

In addition, a large portion of imports appears to be related to the overheating of the economy, especially in the construction sector. As noted earlier, the demand for holiday houses in Cyprus by foreigners increased significantly in recent years, contributing to the overheating of the economy. A corollary of these developments was the sharp increase in imports related to the building of holiday homes such as raw materials, intermediate goods, etc. It can then be reasonably assumed that the increase in the imports of this category (by 1,5%) can be largely attributed to the overheating of the economy in the construction sector and not to the erosion in competitiveness. The same argument can be used for the case of durable goods (such as electric appliances and furniture) which increased by 0,9 percentage points in the period examined.

In addition to the changes in imports analysed above, the category of exports of services contributed to the significant worsening of the current account deficit, particularly the goods and services balance, by 2,1 percentage points, between 2006 and 2008. Indeed, of this deterioration of exports of services, loss of competitiveness in the tourist industry seems to play a significant role as the sector shrunk by 2,2 percentage points of GDP during the two-years period examine[26]. It should be pointed out, however, that other sectors increased their contribution, such as shipping (sea transportation) and the financial services sector which as a percentage of GDP increased by 1,5 and 2,6 percentage points, respectively. Also, the overall shrinkage of exports of services as a percent of GDP between 2006 and 2008 is attributed to some extent to an exogenous factor, that is, the reduction of the category "government services" by 1,1% of GDP. This reflects the reduction in the funds transferred to the British military bases in Cyprus and can be considered to be

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[25] Cyprus is neither an oil producing nor a car manufacturing country.

[26] Perhaps of equal importance, however, is the impact of the economic crisis on the demand for Cypriot tourist services.

exogenous, i.e related to UK developments rather than a consequence of competitiveness erosion.

A reflection of the largely cyclical nature of the current account deficit increase between 2006 and 2008, is its sharp reduction in 2009, following the reversal of economic overheating and the recording of negative growth in the year. The current account deficit declined to 8,5% of GDP whereas the goods and services balance levelled at 5,3% of GDP, which is 1,3% higher than the 2006 level. Therefore, the current account deficit, although reduced, continues to remain at relatively high levels. It is true that in 2009 the tourism sector continued to decline and this partly reflects the erosion of competitiveness. Nevertheless, the adverse economic environment in 2008-9 has affected the sector globally and with a normalisation of the economic environment some rebound should be expected. This is true also for other services sectors in the Cyprus economy which have demonstrated a dynamic performance in recent years such as shipping, other business services as well as financial services[27]. It is likely that, *ceteris paribus*, with the normalisation of the global environment these sectors will rebound thus contributing to both higher growth and improved current account balances.

In addition to the analysis highlighted above, of the exogenous and/or one-off factors that have affected the current account deficit in the post-euro adoption period, one should also acknowledge that policy decisions in Cyprus also had an impact on the current account developments. Useful insights into the interpretation of recent current account developments can be provided by revisiting the policy challenges mentioned in Section 5. More specifically, the role of fiscal policy and structural reforms, which was underlined in the context of a monetary union, has to be taken into account. Since entry into the euro area, development in the fronts of fiscal policy, wages, credit and structural reforms in Cyprus have not been in line with what might be considered as necessary to maintain healthy economic fundamentals. These developments, against the background of a sharply increasing current account deficit, lead to concerns about the appreciation of the real exchange rate and competitiveness erosion.

As Table A2 shows, the fiscal deterioration from 2007 to 2009 was particularly acute and only partly attributable to the adverse economic environment. A fiscal surplus of 3,4% of GDP in 2007 rapidly turned into a deficit of 6,1% in 2009. Public expenditure increases have been exceptionally and unsustainably high, increasing from 42,2% of GDP in 2007 to 46,4% in 2009, despite lower interest payments. This sharp increase in public

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[27] For instance, sea transportation as a percent of GDP increased from 6,4% in 2006 to 7,9% in 2008, shrinking to 7,4% of GDP in 2009.

expenditure coincided with increasing private consumption fuelled by a dramatic increase in private credit growth. The fiscal developments have also had a substantial negative impact on debt dynamics. The downward trend of the public debt to GDP ratio was swiftly reversed in 2009 with the risk of reaching unsustainable levels if no measures are undertaken. In fact in his address to the Employers' and Industrialists' Federation in March 2010, the Minister of Finance stated that with no corrective structural measures the public debit might increase to beyond 80% of GDP by 2013.

**Table A2: Selected macroeconomic indicators for Cyprus
             and the euro area, 2006-2009**

	2006	**2007**	**2008**	**2009**
Unit labour costs (rate of growth)*				
Cyprus	0,6	1,1	2,4	4,0
Euro Area	1,0	1,6	3,3	3,7
Compensation per employee (rate of growth)*				
Cyprus	3,0	2,9	3,4	2,9
Euro Area	2,3	2,5	3,2	1,4
Fiscal deficit (%of GDP)				
Cyprus	-1,2	3,4	0,9	-6,1
Euro Area	-1,3	-0,6	-2,0	-6,3
Public Debt (% of GDP)**				
Cyprus	64,6	58,3	48.4	56,2
Euro Area	68,3	66,0	69,4	78,7
Credit growth**				
Cyprus ***	10,9	23,4	19,5	8,4
Euro Area	10,8	11,2	5,8	-0,1

Sources: Cystat, CBC calculations and SDW (ECB).

*   Based on physical persons
**   Loans to non-MFIs, excluding general government
*** Domestic residents loans to non-MFIs by MFIs excluding companies without a physical presence

At the same time wages have increased in the public and some other sectors exercising pressure on unit labour costs. For instance, in 2009 the wage bill in the public sector increased by 8,8 %. And this was a year of recession in Cyprus with unemployment rising to levels never experienced in the economy since the Turkish invasion in 1974. As a result unit labour costs in 2009 grew at a much higher rate than in previous years and at a higher rate compared with that of our euro area partners (Table A2).

These developments highlight the importance of the need to maintain appropriate economic policies. The competitiveness of the economy does not depend only on the nominal exchange rate. In order to preserve macroeconomic stability and the competitiveness of the economy real variables matter. All economic policies need to be geared towards that end, including a credible fiscal consolidation policy and structural reforms.

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