

Chapter 1. US Imbalances

5.1. US current account deficit

In 2001 US current account deficit reached 4.1% of GDP. According to the OECD and IMF forecasts, it could escalate to 5% by 2003¹. Such a trend, begun in the second half of the 90s, is a source of constant worry among the international institutions, as its sustainability could become very problematic. If the deficit keeps widening, US external liabilities would represent a growing share of world portfolios that at some point investors could become unwilling to hold. The ensuing large adjustment in the current account and fall in the external value of the dollar would lead to substantial dislocations in the world economy and disruptions in US and world financial markets.

The deficit rose very quickly from 1.5% of GDP in 1995, a reading in line with the previous two decades average, to 4.5% in 2000. The rapid growth of the US economy relative to the Euro area and Japan, coupled with a steady strengthening of the dollar driven largely by capital inflows are the main factors contributing to the emergence of the deficit. The domestic counterpart was the investment boom occurring between 1996 and 2000 and the contemporaneous drop in private agents' saving rate. The mild slowdown in economic activity slightly contributed to reduce the gap.

However, the most recent developments have raised new doubts about the possibility of a return of the deficit to a less worrying level. First of all, the reduction in economic activity coupled with the sizeable measure of fiscal stimulus enacted by the Bush administration has turned US government budget to deficit. Economic theory and the historical evidence establish a strong linkage between government and current account deficits, with the latter growing in line with the former. Following an expansionary fiscal shock (i.e. a combination of lower taxes and increased expenditures, such as the recent policies implemented by the US administration) national savings decrease, leading to a worsening of the current account position. One of the most striking examples is the occurrence of the so-called "Twin deficit" in the United States during the 80s. The huge increase in government (mainly defence) spending coupled with hefty tax reductions pushed the government deficit to roughly 5% of GDP in 1985. At the same time, it contributed largely to a continuous deterioration of the current account position, reaching its trough in 1987, when deficit totalled 3% of GDP.

Secondly, if the recovery is to be faster in the US than elsewhere, American imports could pick up once again while international demand would stagnate, widening the trade deficit. In the short run the drying up of the flows of foreign capital needed for financing the deficit can be ruled out. The long term growth prospects of the US economy appear brighter than those of the other parts of the world, and investors still find the US financial market quite attractive, despite the strong correction in stock prices. However this situation is not at all warranted in the medium run, especially after the Enron crisis and the widespread concern about US corporate accounts.

Officially, the current position of the current account is not a concern for the US Government². According to US officials, such a situation is just a result of rational

¹ See IMF (2000,2001a, 2002) and OECD (2001,2001)

² See *The Economist* (2002)

saving and investment decisions by private agents, which are willing to invest in America expecting higher returns.

The rest of the paper is organised as follows. In Section 1 we describe some stylised facts about the current situation of the US external balance. Section 2 provides a selective review of the recent literature about the determinants of current account imbalances. It briefly discusses the concept of “Current account sustainability” referring to the most recent research, especially the one carried out at the IMF. Moreover, we present two estimates of the structural current account deficit, based on a simple calculation on intertemporal solvency and structural VAR analysis. In Section 3 we then consider the likelihood of a reversal in the US current account deficit with the multinational model Marmotte and assess the possible effects on the Euro area. This analysis will be complemented with some other observations drawn from the analysis of the pattern of trade specialisation of the European countries. Section 4 concludes and draws some implications for fiscal and monetary policy.

5.1.1 The US current account: stylised facts

Figures 5.1 to 5.3 show the profile of the US current account position over the last twenty years in relation with some economic variables. We can sketch a preliminary analysis of the most likely causes of the deficit and draw a comparison with what happened in the 80s.

It is easy to notice (Figure 5.1) that higher economic growth is closely linked to the deepening of the deficit: this relationship is particularly strong in the most recent period, when the strong growth in the US was not matched in the rest of the world. Figure 2 plots the current account and a measure of trade weighted real exchange rate. Looking at the most recent years quite a strong negative correlation between the two variables appears; however such a relationship is not very clear in other periods.

The charts are also useful in order to compare the deficit that occurred in the second part of the 90s with that of the 80s. Looking at Figure 5.3, we can easily see that the current deficit of the most recent years is much bigger than those occurring in the 80s and entirely due to private sector imbalances, as the US public budget has shown a sizeable surplus over the last four years. The figure also shows the IMF projections for 2002 and 2003. According to them the current account deficit is not going to shrink much, as the sharp reduction in private sector deficit will be to a large extent offset by deteriorating government balance. Moreover, the marked real depreciation occurred in the second half of the 80s had virtually no impact on the external deficit, which shrank thanks to the massive retrenchment of the government deficit and, afterwards to the sharp decrease in GDP growth in the early nineties. It is also worth noting that a quick comparison between United States GDP and GNP figures shows that almost all the current account deficit is due to the trade deficit, and that its Net Foreign assets position is much less deteriorated than that of other developed countries.

5.2. Current account determinants

There are two strands in the literature on current account determinants. The first one concentrates on medium-long term analysis and views the current account from the perspective of saving-investment balance, abstracting from the impact of business cycle

and financial variables, such as stock market performance, and therefore is well adapted to study issues such as long term sustainability. The second approach considers the behaviour of current account at higher frequencies, and focuses on the deviation of the current account from the equilibrium path, due to factors such as international business cycle asynchronisation, exchange rate movements, supply shocks, and can be used to assess the effects of reversals.

Modern theories are based on intertemporal optimisation and stress the role of the current account, defined as the difference between national saving and investment, as a buffer against transitory disturbances to output and demand. In this view, it acts as a shock absorber to temporary changes in national cash flow or net output in order to smooth consumption and maximise welfare in the face of unexpected shocks.

Figure 1.1: The US current account deficit and the GDP growth rate

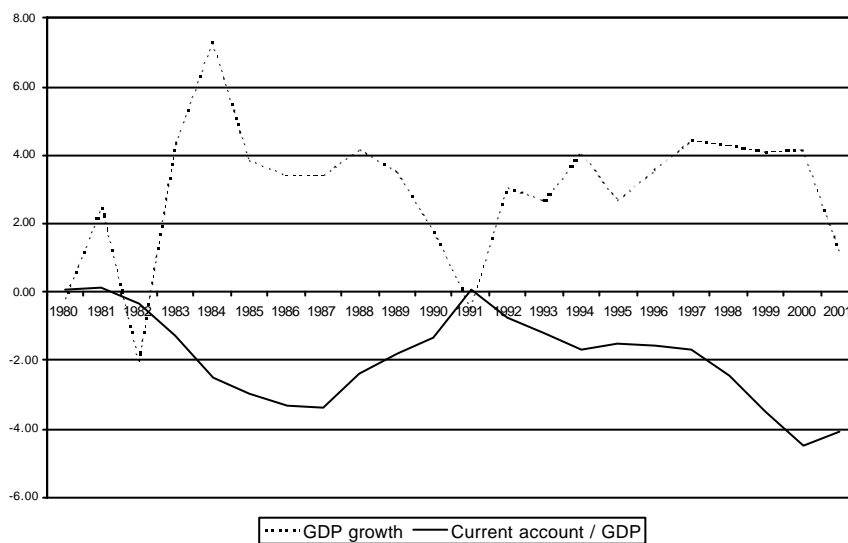


Figure 1.2: The US current account deficit and the real effective exchange rate

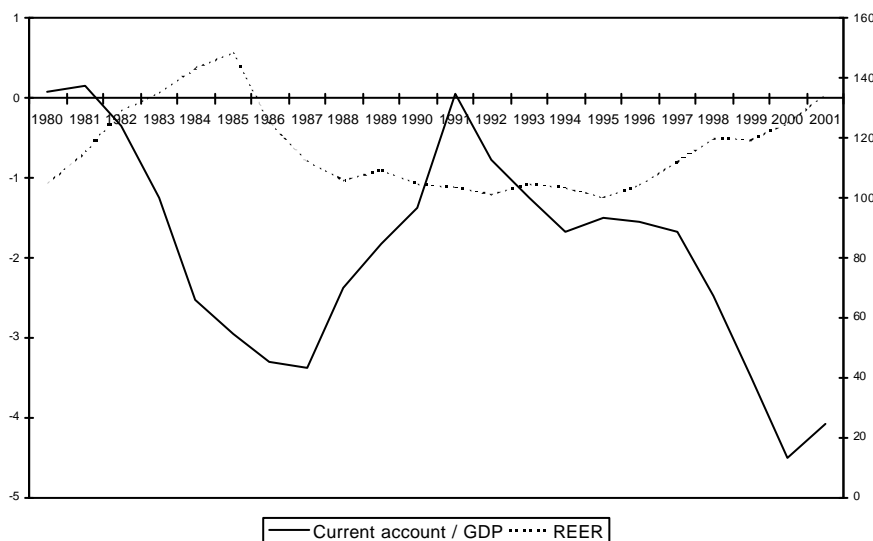
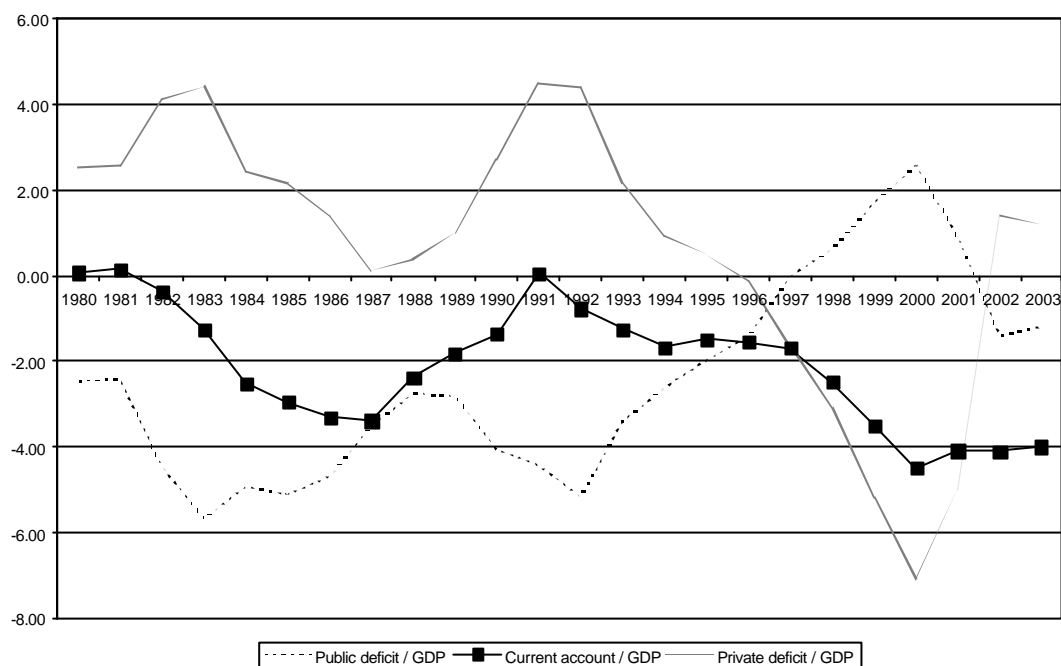


Figure 1.3: The US current account deficit and the US public deficit surplus



Such an approach, reviewed by Razin (1995), Obstfeld and Rogoff (1995), and the European Commission (2000a) in a less technical way has proven to be very useful in explaining current account movements at business cycle frequencies. But it also has many things to say about longer horizons. Intertemporal decisions by economic agents determine a desired long run stock of net foreign assets. The factors underpinning this choice can be considered as the structural determinants of the current account. The empirical literature (for example Debelle and Faruqee (1996) and Chinn and Prasaad (2000)) has identified two fundamental components. First of all the demographic profile of a country is likely to play an important role: the size of dependent population (aged below 16 years and above 65) is negatively linked with savings. Secondly, fiscal policies have an important role, with persistent deficits contributing to a worse external balance.

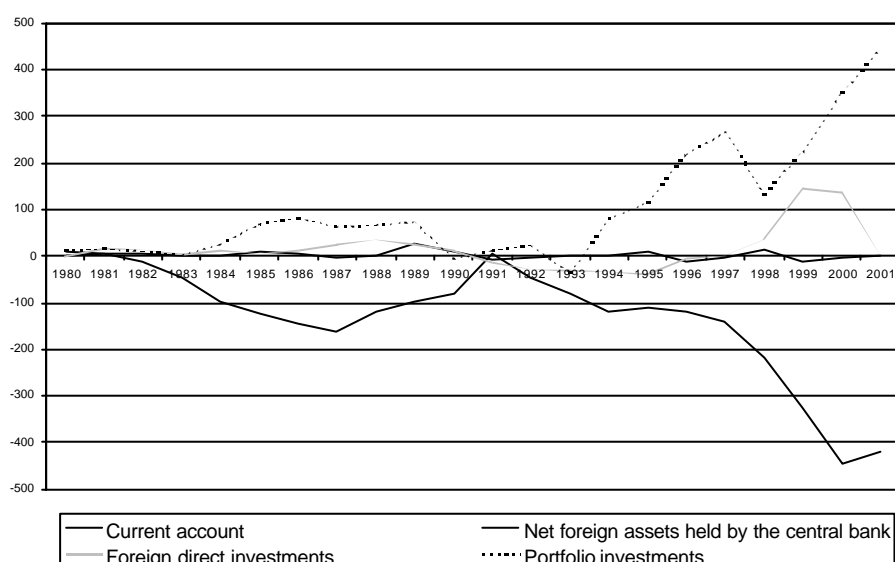
A better understanding of the medium-long term determinants of the current account is extremely helpful in assessing the compatibility between policies aimed at domestic objectives and external equilibrium³. At the same time a distinction between short run and medium-long run determinants is essential for policy making. In order to assess the sustainability of a country's current account deficit, it is important to gauge the extent to which deficits will need to be financed on an ongoing basis. High deficits resulting from the difference in business cycle patterns or from a temporary real exchange rate appreciation are likely to be easier to finance than imbalances depending on structural factors, such as, for example too high government expenditure. Conversely, countries building up excessive deficits due to structural factors, as for example a large and growing public deficit and debt as in the case of Italy in 1992 are in principle more prone to sudden current account reversals.

³ Swan (1963) is the classical reference.

Turning to the short-term determinants of external imbalances, most of the empirical literature stresses the different role played by idiosyncratic versus global shocks. One of the most important studies on this subject is the one by Glick and Rogoff (1995). Using panel techniques they find that country specific productivity shocks have a significantly negative impact on the current account, as firms revise upwards their investment plans and at the same time consumers dissave anticipating a higher future permanent income.

Another crucial aspect of current account analysis to consider is the way a deficit is financed. The recent cases of balance of payment crisis show that the sudden outflow of “hot money”, i.e. short-term investment, is usually one of the primary sources of troubles. Therefore a look at the composition of the capital inflows into the US is useful. Figure 5.4 displays the current account, the net flows of FDI, portfolio investment and the change in net foreign assets owned by the central bank. It appears that long-term investment started playing an important role only in the last few years and declined sharply in 2001. Therefore the bulk of the deficit is financed by short-term capital, which theoretically could be withdrawn quickly, triggering a crisis.

Figure 1.4: The financing of the US current account deficit♦



A comprehensive econometric study of the cyclical factor behind the US Balance of Payments dynamics can be found in Kandil and Greene (2002), which also provide some insights about the ability of the deficit to be financed by foreign capital flows. Historical evidence shows a strong cyclical pattern in the components of the US balance of payments, with current account recording surplus during recession and deficit in periods of strong growth. Conversely, the other posts of the Balance of payments show strongly cyclical behaviour. For instance it can be observed that during the second half of the 90s, when growth was much faster in the US than in the other industrialised countries, both the balance of financial account and the inflow of foreign direct investment grew strongly. Using time series analysis, Kandil and Greene show that, as expected, factors such as GDP growth or real exchange rate appreciation have negative

♦ Source: International Financial Statistics (IFS) of the IMF.

effects on the current account. These variables (together with stock prices) have a positive effect on the financial account. The important result is, however, that cyclical factors have a stronger effect on short-term fluctuations of the current account than on the capital and financial account. This suggests that capital inflows to the US have a long-term nature, even though short-term assets compose them. This can possibly reflect the confidence investors historically had on long run growth prospects of the economy and hinting that the U.S “can sustain a considerable current account deficit during periods of above average economic growth” (Kandil and Greene, 2002).

5.3. The notion of sustainability

The whole issue of current account sustainability can be summarised to the following question: what is the highest level of deficit that can be sustained without a drastic change in economic policy and/or an abrupt exchange rate adjustment? During the second half of the ‘90s several attempts to find a consistent measure of sustainability were carried over. Milesi-Ferretti and Razin (1996), looking at historical evidence, mainly for developing markets, develop a framework for current account analysis based on inter-temporal solvency. Their main conclusion is that a specific threshold for deficit size and persistency, such as the widely quoted 5 per cent of GDP for 3-4 years, is not *per se* sufficiently informative as an indicator of sustainability. They propose a set of operational indicators that, in conjunction with the size, could provide some guidance about the likelihood of a reversal. First of all one has to consider the structural features of the economy under analysis. Higher levels of investment, even though they depress the current account in the short run, normally lead to higher growth, enhancing thereby inter-temporal solvency. Coupled with a higher level of savings, it would act as a signal of creditworthiness, as they raise the perceived ability of debt service and reduce external debt. High and sustainable growth, driven by human capital accumulation and improvements in total factor productivity, reduces the external-debt to GDP ratio and raises solvability. Trade openness plays an important part, as a source of foreign exchange. Clearly, countries with a large export sector face fewer problems in servicing the external debt, as debt service absorbs a lower fraction of export proceeds. The last structural determinant of sustainability is the composition of external liabilities. A higher share of equity financing would in principle lead to less painful adjustment, as part of its burden would be borne by foreign investors via lower asset prices.

Of course macroeconomic policy stance has to be carefully checked too. The International Monetary Fund has developed over the years a methodology to arrive at a quantitative measure of sustainability, based on several Macroeconomic indicators⁴, which at the same time provides an indication of exchange rate misalignment. The approach consists of determining first the current position that would exist in the long run given the current level of the exchange rate once the temporary effects of past levels of activity have been absorbed by the economy, or in other words, the economy operates at a ‘normal level’ of capacity utilisation. This “underlying” measure of the current account is then compared with a measure of “sustainable” balance, which would be financed by nominal capital flows assuming that the country under investigation and its trade and financial partners have low inflation and operate to a reasonable rate of

⁴ Knight and Scacciavillani (1998) provide an extensive overview of the methodology employed, together with an exhaustive survey of theoretical models of current account determination.

capacity utilisation. The following steps imply finding a level of the effective real exchange rate that equates the two definitions of balance described above, and therefore derive the necessary adjustment. According to IMF estimates (see IMF, 2001, p. 30), the sustainable long-term deficit for the US should fluctuate around 0.5 % of GDP, within a range of 0-2.5%.

The framework for policy analysis sketched above is applied for both developing and industrialised countries. However, given the strength of the US economy and, above all, the widespread international use of the dollar, one could legitimately ask if such a model could be fully applied to the United States. More specifically, one could question the likelihood of a dramatic collapse of the currency even though the imbalance continues to widen.

McKinnon (2001) points out that the peculiar role of the dollar in international transactions imposes some corrections to the standard current account analysis, but that nevertheless the size of the deficit can become a problem for less evident reasons. The economic developments occurred since the end of the Second World War gave the dollar the status of truly international money, as most of the international trade transactions are invoiced in this currency⁵. It can be observed that, in normal times, the international dollar prices are relatively invariant to dollar's exchange rate fluctuations. Any country whose currency is free to fluctuate widely against the green back is likely to experience a considerable degree of price variability as a consequence of exchange rate pass through: moreover, in case of depreciation it will have a hard time servicing dollar denominated foreign liabilities. These are the reasons why most countries do not let their currency fluctuate too much against the dollar, the "fear of floating", well documented by Calvo and Reinhart (2000). On the other side a non-completely free-floating regime constraints monetary policy, as witnessed by the extreme case of currency board agreements. Taking this line of reasoning to the extreme (and remembering the consistent exception of Europe), only the United States have the freedom of conducting its own monetary policy, and therefore the American price level becomes the nominal anchor for the international monetary system. This reinforces the role of the dollar, making governments prefer to accumulate exchange rate reserves denominated in dollars and consisting of US Treasury securities. The implication of this is that basically foreign countries cannot avoid being creditors of the United States. This allows the US to enjoy a "soft budget constraint" on its international borrowing. The demand of (dollar denominated) international liquidity rises with global income growth. It can be satisfied by US, through paper currency, corporate or government bonds and so on) and represent claims on American firms and households without a well defined time frame for net repayment for the country as a whole. Therefore, according to McKinnon, even though the current account deficit would at some point trigger a run on the dollar, this will be offset by foreign central banks accumulating reserves in order to prevent their currency from appreciating and thereby undermine trade competitiveness. However, this argument is somehow weakened by the notorious ineffectiveness of foreign reserves management in stabilising the exchange rate, but can keep its relevance noticing that reserves are not the only tool central banks have for managing the exchange rate, and that interest rate policy can play an important role.

The true problems McKinnon sees in the widening current account deficit are linked to the decline in creditworthiness by America's private sector, and the threat of protectionism that stems from the continuing trade deficit eroding America's industrial

⁵ Of course the advent of the euro will alter substantially this picture, at least for the European economies.

base. The leveraging of American households and firms has reached very high levels, due to the fact that they can finance themselves easily on the international capital markets. However the problem is much less important for firms, as they can sell to foreign investors stocks and bonds. Consumers obviously cannot issue these instruments: therefore the a considerable part of foreign capital inflows contributes to the build-up of household debt, as American banks finance household, issuing on the international market claims on their profits, satisfying a strong international demand for dollar denominated liquidity. Such a massive spending translates into the problem of the low saving rate.

In the case of the United States, the current account deficit is mainly the reflection of the gap between exports and imports. Given the size of protectionism and state intervention for agriculture and, partially, services the burden of the swings in trade balance is borne by the industrial sector. Therefore if, the inflow of capital persists at this rate, the ensuing trade deficit widening will imply a contraction of American manufacturing industries. Such a pattern is already visible, as America has already exited some industries, giving rise to a sort of “Dutch Disease” phenomenon. This trend, if coupled with a cyclical downturn, is very likely to increase the demand for protectionism, with the obvious dangerous consequences on free trade.

Ventura (2001) presents an innovative explanation of current account dynamics, based on very recent research on the linkages between current account and international investors’ portfolio choices (see Kraay and Ventura, 2000 and 2002). According to this approach, current account dynamics is determined by changes in the country portfolio, defined as the sum of productive assets located in a country plus its net foreign assets position, and by its recomposition. Ventura claims that this model is capable to explain the surging of the deficit in the 90s as the manifestation of the unprecedented increase in US wealth. During the late 90s a bubble or a Ponzi scheme appeared in the stock exchange. Stocks were bought with the expectation of reselling them later at a higher price, and not expecting higher expected firms’ profits. Prices must incorporate the possibility of not finding a buyer, therefore the higher the probability of a crash the higher the price increase. When no buyers are found the bubble eventually burst. Under the assumption of risk adverse investors, holding mean-variance efficient portfolios, the increase in wealth produced by the bubble induce the investors to buy more productive capital in order to keep the shares of their portfolios constant. This implies capital stock and GDP expanding along with the bubble. Assuming that on average, risk aversion and the distribution of asset returns do not depend on wealth, and determine solely the portfolio shares, as in standard portfolio theory, changes in wealth modify just the size of the country portfolio, and not its composition. Therefore, the stocks of net foreign assets increase linearly with wealth. If asset price revaluation is not too big, the current account position corresponds roughly to the product between national savings and the share of NFA in the country portfolio.⁶ In such a model, an increase in saving increases or reduces the current account depending on the country having a positive or negative share of NFA. During the late 90s US investors enjoy hefty returns, which were invested roughly in the same proportion as the average country portfolio. Being US portfolio short in NFA, this implies that US investors borrowed abroad to invest in domestic assets. The final result was the surging current account deficit. The immediate implication of this model is that the future dynamics of the current account is closely linked to the development of the stock exchange, and namely on the bursting of the

⁶ Kraay and Ventura (2000) found evidence for this claim for a sample of thirteen industrial countries.

bubble. A correction in stock prices engenders a reduction in wealth and savings: being the US a debtor country this will in turn imply a parallel reduction of the external deficit. The magnitude and the speed of the adjustment depend on how quick the bursting of the bubble takes place.

Box 5.1. Sustainable deficit: a quantitative assessment

In this section we develop two methods to construct an estimate of a long term or “sustainable level of current account deficit/GDP ratio, employing two contrasting methodologies. In the first case we use a debt dynamics equation stressing the role of potential GDP growth, exchange rate and reserves. The approach is in many ways similar to the one applied to developing countries by Milesi-Ferretti and Razin (1996).

Consider first an economy in steady state. Call L the liabilities as ratio to GDP that foreigners are willing to hold. In equilibrium, i.e. with L kept constant the accumulation of net liabilities, in proportion to long run nominal GDP growth is equal to the current account deficit plus the net accumulation of international reserves. We then have

$$CAD + \Delta FX = \gamma L$$

With

CAD : current account deficit to GDP ratio

FX : foreign reserves to GDP ratio

γ : long run GDP growth rate

The level of import is obviously an important determinant of the demand for reserves. Denoting its growth by μ we have that the variation in the desired reserve ratio is

$$\Delta FX = [(1 + \mu) / (1 + \gamma)] FX - FX$$

we therefore have

$$\gamma L = CAD + [(\mu - \gamma) / (1 + \gamma)] FX$$

In the long run, due to the Balassa Samuelson effect, relative growth leads to real exchange rate appreciation, reducing both debt and foreign reserves as ratio of GDP. Denoting by ε the real exchange rate appreciation by unit of GDP, we get

$$(\gamma + \varepsilon)L = CAD + [(\mu + \varepsilon - \gamma) / (1 + \gamma)] FX$$

solving for CAD we get the steady state current account deficit that can be sustained in the long run if the debt ratio remains constant and the reserves ratio grows in line with import

$$CAD = (\gamma + \varepsilon)L - [(\mu + \varepsilon - \gamma) / (1 + \gamma)] FX$$

We use this equation to provide an estimate of sustainable Current account deficit. The value chose for the parameters are the following

γ is average nominal annual GDP growth over the 1980-2001 period, and equal to 6.38

ε has been calculated from the long run trade elasticities calculated in Hooper et al.(2000) 0.003

μ is the average annual nominal growth rate of import over the 1980-2001 period and equal to 7.83

L is desired long run average of the debt to GDP ratio which is assumed to be 50%

FX is half of the import to GDP ratio over the 1980-2001 period, equal to 5.5

According to these simple calculation, the sustainable level of current account corresponds to roughly 3.3% of GDP

It is evident that these simple calculations provide just an indication of the sustainable deficit, and depend heavily on some assumptions. However, they offer a crude measure of the interdependence of the macroeconomic variables important to determine the current account.

The second approach utilises a structural VAR methodology and tries to assess how much of the deficit is due to cyclical factors, in order to derive a measure of long run current account, which should be the true variable to observe in assessing sustainability. To this end we estimated a four variable VAR, including GDP growth in the US and its main trade partners (Euro area, United Kingdom and Japan) the IMF measure of real effective exchange rate and the current account to GDP ratio. We use the method developed by Sims (1980) and applied to Balance of Payment issues by Clarida and Prendergast (1999). Assuming that there is a stable underlining structure linking the current account to other variables such as domestic growth, foreign demand and real exchange rate, the current account position will be the result of a combination of cyclical and idiosyncratic factors. Structural identification then allows decomposing the level of deficit into cyclical and structural components.

The methodology is the following. First we estimate a VAR model of the current account, the domestic GDP growth rate, the world GDP growth rate (a weighted average of GDP growth in the Euro area, United Kingdom, Canada and Japan) and real effective exchange rate. The structural shocks are identified using a Choleski decomposition, assuming that current account deficit reacts instantaneously to domestic and GDP growth, and with a lag to real exchange rate. Given this identification structure, we compute the time varying structural component of the current account deficit. This latter is defined as the path that the current account to GDP ratio is most likely to take if world growth, domestic growth and real exchange rate are constant and equal to their long run⁷ during the adjustment process. Thus we can interpret the difference between the observed and the “structural” path as the consequences of the deviation of domestic and world GDP growth from their long run average.

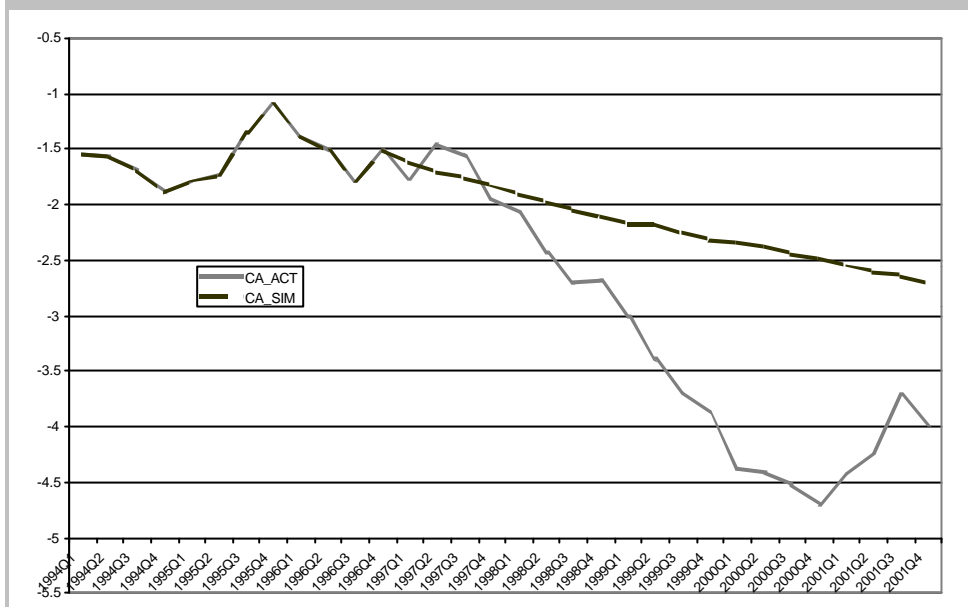
We estimate the four variables VAR over the 1980-2001 period using quarterly data. After imposing the identifying restrictions we computed the structural component of GDP starting from 1996. The results are displayed in Figure 54. According to this interpretation, the quick deepening of the deficit is almost entirely attributable to the huge asynchronisation in the business cycles between the US and the rest of the world. As a sensitivity test, we run the same model without constraining the real exchange rate to its long run average, obtaining very similar results. In Figure 5.5 we present this latter result.

The structural component of the external deficit has a downward trend, but it is much less pronounced than that observed in the actual figures. Concerning the last two years,

⁷ I.e. the 1980-2001 average.

the “structural” component of the current account deficit, is roughly 2 percentage point of GDP smaller than the actual value.

Figure 1.5: Observed and “Structural” current account deficit



5.4. Current account reversals

Leaving aside the consideration of current account sustainability, it can be nevertheless interesting to understand what happens when a reversal occurs.

Milesi-Ferretti and Razin (1997, 1999) study the determinants and consequences of sharp reductions in current account imbalances in low and middle-income countries. Their main finding is that current account reversals do not necessarily imply a currency crisis or a substantial fall in GDP growth afterwards.

Freund (2000) focuses on developed countries, studying twenty-five episodes of current account improvements occurred between 1980 and 1997. She finds that typically a current account reversal begins when deficit is about 5% of GDP. The most immediate result of such a reversal is a real currency depreciation ranging from 2 to 10% during the first year of the adjustment. Nominal depreciation is substantially greater than real depreciation, suggesting that current account adjustment involves a relatively high inflation. The depreciation of the currency normally occurs within two years of a current account reversal. Income growth normally falls below trend for the two years following the adjustment, due mainly to a sharp fall in investment. This evidence is fairly consistent with that obtained from large scale macro-econometric models, which predict that US current account change by 1% of GDP is associated with roughly a 10% real exchange rate change.

In a related study on the transfer problem, Milesi-Ferretti and Razin (2000) find that a negative net foreign asset position has a strong long run relation with a depreciated real exchange rate.

Obstfeld and Rogoff (2000a) develop a stylised version of a standard “new open macroeconomics model” (see Lane (2001) for a survey), to analyse the effect of a reversal in the current account position on the exchange rate. They show the important role of global market integration, which is however still on a low level.⁸ Two elements are worth stressing. First of all trade costs limit the share of tradable goods in GDP to roughly 35 percent in the US, as well as in most OECD countries, therefore a 4-5 percent deficit actually represents up to around 15 percent of tradable goods GDP. Secondly, the marked preference showed by investors towards domestic assets (the so-called “home bias puzzle”, see for example Lewis, 1999), would limit their willingness to accept US liabilities, should the external deficit widen further. The authors simulate the effect of the current account returning from a 4.4 percent of GDP deficit to a balanced position under the assumption that US monetary policy is particularly keen on price stability. The first scenario developed assumes full price flexibility and can be interpreted as a gradual and perfectly anticipated adjustment over a three-four year period. The reversal corresponds to approximately a 16% drop in traded goods consumption. Assuming unitary elasticity of substitution between tradable and non-tradable, full employment in the non-tradable sector requires its price to fall by 16% and therefore an increase in the relative price of tradable of the same size. If the Fed aims at CPI stabilisation and assuming that 75% of output is non-traded, this would imply a 12% rise in traded good prices and a 4% fall in non-traded ones. Being traded goods prices set in world markets, this amounts to a 12% nominal depreciation of the dollar. Introducing sticky prices, and therefore considering a shorter time period (say one-two years), and acknowledging the fact that on average exporters to the US price to market passing through only about one half of an exchange rate change to importer within a year, the picture changes quite drastically. CPI stabilisation and full employment in the non-tradable sector would then require a 24% nominal depreciation. Price stickiness would magnify the effects in case of the current account returning too quickly to balance. Supposing high short run price rigidity and that imports are one half of total tradable consumption, the maintenance of internal balance would require a depreciation of up to a 50%, quite an extreme value, given the repercussion that would have on US and global financial markets. Although very stripped down, the model has the merit of highlighting the main mechanisms at work during a current account reversal. Furthermore, it conveys the very important result that the effects on exchange rates are not at all negligible and depend mainly on the sudden elimination of the deficit, rather than its size.

The biggest limit of this analysis rests in its partial equilibrium nature, which sheds no light on the effects of a sudden US depreciation and a sizeable redistribution of capital flows on the world economy.

IMF (2001b) presents a detailed study of the sustainability of the US external deficit, and an investigation of the causes and consequences of a reversal. The analysis is conducted using the IMF MULTIMOD econometric model: the evaluation of current account sustainability employs the income elasticity approach. The medium term adjustment of the external balances would occur if income and output growth in the US and the other major economies converge. The transition would be facilitated by a real depreciation of the dollar, to be achieved by a slower rise in US traded good prices compared to those of the competitors. Additionally, some nominal depreciation would

⁸ Obstfeld and Rogoff (2000b) provide a deep and well-documented analysis of these phenomena, based on trade costs.

be required, whose magnitude would depend to a large extent on the expected returns on US assets. If we believe that the widening of the current account deficit was determined by the strong productivity improvement in the US vis-à-vis the other economies, a reversal in this trend could trigger a quick external adjustment. A weakening of US productivity would lower comparative rates of return, reduce capital flows and therefore the deficit: the speed of this process, and the accompanying US dollar fall would depend on the rapidity of these developments. A rapid catch up of the rest of the world productivity to US level would entail a real depreciation of up to 8% and a slowdown of GDP growth due to a substantial retrenchment of investment. The effect would be more pronounced if a US productivity growth slowdown occurs at the same time.

The concern that a current account adjustment would necessarily cause a large real depreciation of the US dollar is motivated by the fact that, over the years, income elasticity of US imports has always been substantially larger than that of exports. However, theoretical analysis (Krugman, 1989) and empirical evidence point out that in the long run the elasticity tends to converge toward each other, being related to (converging) trend growth in domestic and foreign GDP. Regression results confirm this trend for the US between 1970 and 2000. Therefore, according to the IMF study, current account sustainability, defined as a long term balance that could be maintained without a large real depreciation, would therefore be achieved within less than a decade. The external deficit would fluctuate between 0 and 2.5 percent of GDP, under the assumption of converging trend growth rates and provided that inflation remains low and fiscal policy meets the long-term needs of the social security while keeping the rest of the budget balanced.

We carried out a somehow different exercise with a modified version of the MARMOTTE⁹ multicountry model, which includes just the US, Japan and the Euro area as a whole. The basic question we tried to address is the following: is it possible to replicate the most important features of the US business cycle of the last recent years (namely, the investment boom, the deepening of the current account and the massive real appreciation of the US dollar) by means of simple shocks? The aim of the exercise is twofold. On the one side we seek to interpret the past by identifying the most important shocks. On the other side, we try to give some hints about the future developments of the current account and the real exchange rate. Especially we aim at assessing the likelihood of a reversal in the current account deficit.

Our hypothesis is that, starting from the second half of the 90s two kinds of shocks hit the US economy: a positive permanent productivity shock and a reduction in the risk premium on US assets.

The introduction of the IT technology led to a permanent increase in total factor productivity, whose magnitude was partly unexpected by agents. Insofar as agents had to revise upward their expectations on the productivity path over the first few years, this surprise phenomenon is modelled by a sequence of unexpected additive shocks to total factor productivity.¹⁰ Furthermore, to account for expectations of a sustained higher growth and profitability in the US economy compared to the Euro area and Japan, the

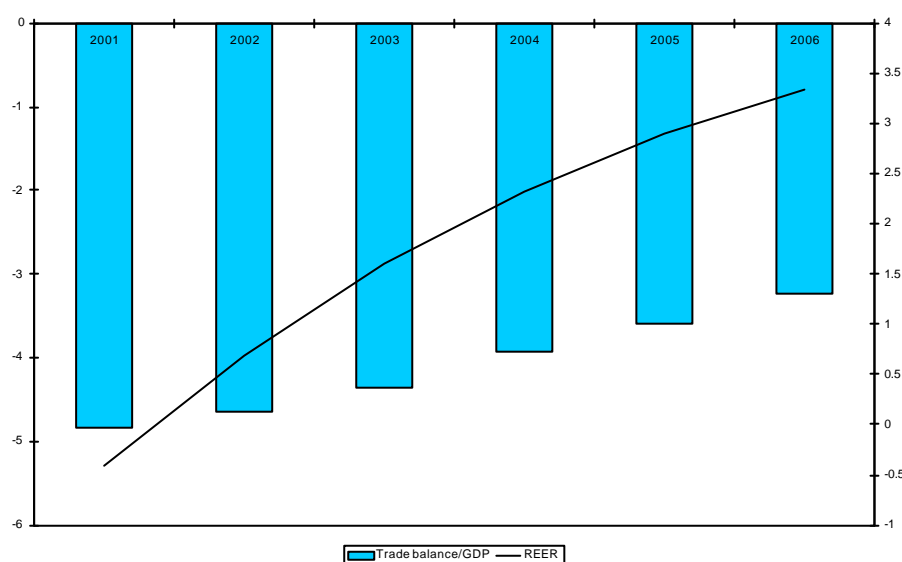
⁹ Its theoretical structure and basic properties are illustrated at large in CEPII-CEPREMAP (2001).

¹⁰ Especially, an unexpected permanent productivity shock is supposed to occur in the first year, increasing total factor productivity (TFP) by 1%. A second shock of the same nature and size, occurred in the second year, and so on for the following two years. At the end of the fourth year, TFP has permanently increased by 4%.

second shock has been calibrated as a significant reduction of the US risk premium. It was modelled as a temporary sequential reduction of the US risk premium over a period of three years, followed by a reversal at the end of the fourth year, which brought it back to the level prevailing at the end of the first year.

The combination of these two shocks proved to reproduce quite well the dynamics of the US macroeconomic variables. The positive productivity shock led to a huge increase of investment until the end of 2000 as production factors became relatively less expensive. Insofar as households expected a permanent increase in their level of income and wealth, they started to consume more. The rise in the domestic demand, reflected in a sustained GDP growth, boosted US imports and so deteriorated the US current account. This volume effect is furthermore amplified by a price effect, arising from the real appreciation of the dollar, which follows the nominal one. The depreciation of the euro and the yen is the direct result of the reduction of the risk premium on the US assets. This entails huge inflows of capital towards the US. Indeed, any US portfolio investment becomes more attractive by its relative higher return.

Figure 1.6: Effects on the US trade balance and real exchange rate



In 2001, the productivity growth stopped. Firms, having accumulated too much capital, revise downwards their investment plans. This moderates permanently GDP growth and thereby imports, which stop the deterioration of the trade balance afterwards.

From 2002 onwards, such a scenario foresees investment growing slowly due to past over-accumulation. The reversion of expectations about the risk of the US economy entails a sizeable nominal depreciation of the dollar. Even if the dollar depreciates in real terms, it remains appreciated with respect to its baseline value. The overall effect on the trade balance is a continuous, but slow reduction of the deficit.

The spillover on the Euro area GDP is significant during the first years of the shock (roughly until 2002), due to the increased demand stemming from the United States and from the pro competitive effects of the Euro's real depreciation. This also contributes to the improvement of the trade balance. These effects dampen over time. When the effects of the productivity shocks are over and the nominal appreciation of the US dollar

due to the inflows of capital ends, the euro experiences a marked real appreciation, with a negative impact on the trade balance and growth. Several studies on the relationship between exchange rate and trade have shown that the impact of exchange rate volatility on export varies a lot across industries and destination markets. For a very recent contribution see Péridy (2002) which studies G-7 exports, showing that exchange rate variability affect negatively crude export products, but may help manufactured exports.

Such a small spillover should not be surprising. As pointed out by IMF (2001b) the output correlations generated by trade linkages in econometric models alone are normally much weaker than those found in data.

Table 1.1: Spillover on the Euro area

	2000	2001	2002	2003	2004	2005	2006
Trade balance/GDP	0.246	0.823	0.760	0.644	0.497	0.341	0.190
GDP	0.328	0.143	0.081	0.014	-0.046	-0.095	-0.133
RER	4.836	-0.043	-1.074	-1.917	-2.581	-3.086	-3.452

Note : The bilateral real exchange rate of the euro against the dollar (RER) and the GDP projected path are percentage deviations from the baseline. The trade balance to GDP ratio is expressed in absolute deviation from the baseline.

Table 1.2: Exports extra Euro area as percentage of Total export and GDP

	Total export	GDP
Ireland	37	38.4
Belgium	26	20.8
Finland	44	21.2
Netherlands	21	14.2
Austria	39	19.5
Germany	44	14.7
Italy	45	13.7
France	39	11.3
Greece	57	14.3
Spain	30	9.2
Portugal	20	7
Luxembourg	16	22.9
Eurozone	37	14.1

Source, EUROSTAT, CEPII Calculations

Going beyond the models' the simulations, we can assess the effect of an abrupt fall in the value of the US dollar on the European countries considering their pattern of specialisation. The impact of depreciation on the external trade is the combined effect on exports and imports.

Export competitiveness depends essentially on the share of external trade in total GDP and on the sector specialisation of the exchanges. As Tables 5.2 and 5.3 show, these two variables differ widely across the Euro area countries. Extra Euro area trade represents 38.4% of Ireland's GDP, and only 7.0% of Portugal's. Concerning trade specialisation, we observe that, for example France and Germany's exports are mainly concentrated in the machinery and manufacturing sectors, whereas Ireland and Netherlands are more specialised in chemicals and electronics.

Table 1.3: Export openness

	EU-11	FR	GER	IT	IRE	SP	PORT	NL	B&L	FI	AU
Food, Beverages and Tobacco	14.5	33.3	10.6	21.7	25.6	9.4	13	42.1	17.5	20.6	11.9
Textile and textile products	33.6	39	56	52.5	15.9	14.3	15.9	23.2	28.9	52.6	40.9
Leather and Leather Products	32.2	43	51	48.4	20	21.9	10.7	15.3	9.1	49.2	21.8
Wood and Wood Products	12.6	12.8	9.4	43	7.6	8.8	13.1	13.5	8.1	23.6	14.9
Pulp, paper and Printing	10.8	9.8	15.8	10.6	7	7.9	7.7	17.2	9.7	24.3	29.2
Energy Products	4.4	2.7	2.7	5.3	0.8	17.2	6.8	12.3	8.7	23	7
Chemical products	38.5	41.9	52.1	51.5	68.1	21.7	16.5	69.5	64.4	74.3	75.4
Rubber	10.6	10.9	13.2	12.4	9.5	13.5	2.7	17.4	8.6	23.2	17.2
Non metallic Mineral Products	20.1	28.9	50.3	60.4	25.6	71.4	17.2	15.9	16.2	37.8	44.3
Basic metals and fabricated prc	30.6	35.9	41.8	44.6	27.9	19.2	16.7	45.8	41.9	46.4	45.9
Machinery and Equipement	44.4	44.3	71.5	53.9	55.1	27.1	16.1	60.8	50.8	76.3	39.8
Electrical and Optical Equipme	59.2	59.5	81.5	73.8	94.1	64.1	32.3	109.3	64.1	117.1	101.7
Transport Equipment	32.9	69.6	34.8	38.5	36.6	28.2	18.7	41.3	25.9	72	33.1

Source OECD, STAN Database

On the import side, the important variable is the rate of penetration, defined as the share of goods imported from outside the Euro area in total production. This obviously depends on openness and demand specialisation. Once again we find a lot of variability among Euro area countries (see tables 5.4 and 5.5). Moreover, as Table 1.8 in Chapter 1 shows, trade elasticities varies widely across sectors. Fouquin et al. (2001) have developed a measure of sector exchange rate elasticity, reported in Table 5.6¹¹. We use these measures to construct a country elasticity by weighting sector elasticities by the share of each sector in total trade, derived from the Eurostat statistics, assuming that outside the Euro area all the prices are fixed in dollars.¹² Moreover, multiplying this elasticity by the share of extra Euro area trade in GDP, we get the sensitivity of GDP to dollar fluctuations, assuming that prices outside the Euro area are denominated in dollar.

The overall effect on the Euro area is a loss of around 2.2 points, but we notice a remarkable heterogeneity across country. For example, Portugal, quite a closed economy, specialised in sector protected from external competition, the effect is less than 1 % whereas a very open economy such as Ireland would loose more than four and a half points. We can then rank the Euro area economies according to their sensitivity to US dollar fluctuations, as a result of their pattern of specialization and trade openness towards extra Euro area countries. Relatively close country specialized in sectors with weak extra Euro area trade such as Portugal won't be influenced much by swings in the Euro-dollar exchange rate. Conversely countries which are very open (like Ireland) or

¹¹ Using a somehow similar approach Ilzkowitz and Dierx (1999) identify the industrial sectors whose performance both in the European and in the world market is likely to be more influenced by the introduction of the euro. For example they show that sector already exposed to global competition, such as aerospace, will not be affected very much. On the contrary, sectors like transport equipment, where the level of intra community trade is high, the Single currency is likely to exert a strong pressure towards price harmonisation across countries.

¹² Let ε_i be country i 's average elasticity. It is computed as $\varepsilon_i = \sum_k \eta_k p_{ik}$ where η_k is the sectoral elasticity and p_{ik} is the share of sector k in country i 's extra Euro zone trade.

specialized in sectors highly exposed to global competition (Netherlands, for example) would suffer much more¹³.

Table 1.4: Imports extra Euro area as percentage of Total import and GDP

	Total import	GDP
Ireland	38	31.6
Belgium	31	23.1
Finland	38	13.4
Netherlands	48.9	30.4
Austria	31	15.4
Germany	45	14.2
Italy	43.2	12.4
France	35.3	9.6
Greece	44	13.9
Spain	33.6	10.9
Portugal	25	11.5
Luxembourg	17	17.4
Eurozone	39.8	14.3

Source, EUROSTAT, CEPII Calculations

Table 1.5: Import penetration

	EU-11	FR	GER	IT	IRE	SP	PORT	NL	B&L	FI	AU
Food, Beverages and Tobacco	7.7	8.2	8.3	6.5	6.3	9.3	7.4	25.9	38	20.4	4.6
Textile and textile products	43.2	51.5	74.4	41.6	26.2	20.7	8.4	62	46.8	50.1	42.9
Leather and Leather Products	30.8	35.4	44.9	53.6	24.1	16.2	11.4	36	30.6	37.4	20.9
Wood and Wood Products	10.9	11.6	17.6	16.1	14.8	2.8	1.8	30	14.7	8.8	11.6
Pulp, paper and Printing	5.7	6	8.9	9.2	6.4	3.6	3.2	13.6	8.9	1.8	11.8
Energy Products	4.3	4	2.8	6.8	4.7	7.8	5.3	22	3.4	25.3	9.8
Chemical products	22	23.6	27.2	33.5	51.9	17.2	17.3	53.1	42.3	32.1	35.7
Rubber	7.8	7.3	9.9	9.6	15.3	6.5	8.3	15.9	10.2	10.3	8.3
Non metallic Mineral Products	7.3	7.7	27	18.6	11.7	9.5	2.6	19	8.5	14.3	13.4
Basic metals and fabricated products	25.4	25.8	35.3	34.7	32.4	13.1	16.6	51	37.2	26.1	30.7
Machinery and Equipment	31.1	37.9	55.3	24.4	50.5	27.9	17.1	51.8	36.5	37.8	18.5
Electrical and Optical Equipment	64.1	60.1	102.8	52.2	136	66.3	43.6	125.6	59.2	79.1	68.7
Transport Equipment	17.9	30.4	24.9	18.6	78.6	19.4	19.7	52.5	40.5	57.9	37.7

Source OECD, STAN Database

¹³ Among the several simplifying assumptions made in this analysis one of the most relevant is the neglect of any reference to pass through. Several studies find that pricing to market behaviour, leading to incomplete exchange rate pass through, is a common practice. For example European Commission (1995), investigating the effects of the wide instability in European exchange rates during the first half of the 90s. It shows that in the manufacturing sector the strong depreciation of currencies such as the Italian lira and the Spanish peseta led to an increase in domestic currency prices while prices in ecus remained constants. Spanish and Italian exporters took advantage of the depreciation to increase their profit margins, as they did not pass into lower international prices the reduction in their production costs.

Table 1.6: Elasticities by sector

	Import Elasticity	Export Elasticity	GDP sensitivity to \$
Ireland	0.285	-0.178	VH
Belgium	0.177	-0.148	Very High
Finland	0.086	-0.129	High
Netherlands	0.227	-0.088	Very High
Austria	0.112	-0.149	High
Germany	0.105	-0.086	High
Italy	0.069	-0.115	High
France	0.064	-0.042	Low
Greece	0.072	-0.042	Low
Spain	0.057	-0.074	Low
Portugal	0.065	-0.029	Low
Luxembourg	0.163	-0.011	High
Eurozone	0.098	-0.118	High

5.5. Conclusions

Summing up what previous studies¹⁴ say and our contribution, we think that a sudden reversal of the US current account deficit followed by a sharp depreciation of the dollar is unlikely. Although the US current account deficit has reached very high levels, which should be considered worrying for other (especially developing) countries, a crisis is unlikely for the following reasons.

- 1) Average high growth rate: over the last two decades average GDP growth in the United States has been higher than in other industrialised countries. This should help sustainability in two ways. First of all, it should give more guarantees about the possibility of paying back the debt, assuming that such a concept is meaningful for the US. Secondly, excluding an abrupt change in international investors' mentality, this could preserve the reputation of the country as a safe place to invest, ensuring therefore the flow of foreign investment needed to finance the deficit.
- 2) Source of the deficit: according to the empirical literature and our VAR simulations, most of the deficit is due to differences in the business cycles with the rest of the world. This should be a transitory phenomenon, and therefore the part of the deficit should be reabsorbed in a less painful way. The structural part of the deficit, on the contrary, looks quite reasonable.
- 3) Deficit financing: Despite the composition, in which hot money prevails, it seems that investors regard the US as a place for quite long term investments. Therefore, a massive outflow of capital, like the one occurred in Asian countries in 1997 looks

¹⁴ In its last World Economic Outlook the IMF (IMF (2000), p. 65-81) analyses the causes and consequences of current account imbalances, focusing not only on the US but in general to high deficit and high surplus countries. Its main conclusion is that imbalances do matter and should urge governments to adopt prudent fiscal policy, aimed at reducing the deficit or create a small surplus in the medium run. At the same time efforts should be made to promote private savings, a good starting point could be fair reaching structural reform in accounting rules and enforcement procedures, aimed at restoring investors' confidence.

very unlikely, if any because it is not clear which market constitute nowadays an alternative to the US for international investors. However, if we believe to the implication of the model proposed by Ventura (2001) a stock market crash could bring the current account back to equilibrium. However such an event is by its nature unpredictable.

- 4) Role of the dollar in international transactions: currently there is no other currency with the status of reserve currency. Therefore, even in the event of a sudden reversal, it is very unlikely that it will crash, destabilising the world financial system.

However, these arguments are not at all the same as those invoked by the followers of the so-called “Lawson doctrine” (for a recent and well-documented review of this theory see European Commission (2000b)). According to this point of view, the current account is nothing but that the reflection of decentralized optimal decision by the private sector, and therefore the government should neither worry nor interfere in it. The current situation is the manifestation of a deep imbalance looming in the US economy, namely the mounting debt in the private sector. This debt could then trigger sometime a widespread cut in consumption and investment demand (the latter already visible), with the risk of the US exporting a recession with possibly deflation, whose by-product would be a return of the current account to equilibrium.

To analyse the repercussions on the Euro area countries of a possible reversal of the US current account deficit and an ensuing depreciation of the US dollar, two approaches have been used. The first one relies on a macro-econometric framework able to tackle issues of the international transmission of shocks. Simulations with the multi-country model MARMOTTE conclude to a weak impact on the GDP of the European countries, positive during 2002 and 2003 due to the temporary improvement of the trade balance, and slightly negative afterwards. Relative to a static trade framework resting on elasticities analysis, the simulated effects are generally quite smaller. This is the reason why we develop a second approach based on trade data. This analysis shows that a depreciation of the US dollar would have a much more sizeable impact. Moreover, the effects on single Euro area countries are fairly asymmetric, these effects being more important for small open countries.

References

- Calvo, G C.Reinhart (2000)" Fear of Floating" NBER working Paper 7993
- CEPII CEPREMAP (2001) "MARMOTTE a multinational model" *CEPII working Paper 15*
- Chinn, M., E.S. Prasad (2000) "Medium Term Determinants of Current Account in Industrial and Developing Countries: an Empirical Exploration NBER working Paper 7581
- Clarida, R and J.Prendergast (1999) Recent G3 Current Account Imbalances: How Important are Structural Factors? NBER Working Paper 6935
- Debelle, G, H. Faruqee (1996) "What Determines the Current Account? A Cross Sectional and Panel Approach" IMF Working Paper 96/58
- Economist, the (2002) *The O'Neill Doctrine, April 25th*.
- European Commission (1995) European Economy No 4.
- European Commission (2000a) Weekly Review of Financial Markets Developments No 36
- European Commission (2000b) Weekly Review of Financial Markets Developments No 37
- Freund, C (2000) *Current Account Adjustment in Industrialised Countries Board of Governors of the Federal Reserve System, International Finance Discussion Paper number 692 December*
- Fouquin, M, K, Sekkat, J.M. Mansour, N. Mulder and L. Nayman (2001) *Sector Sensitivity to Exchange Rate Fluctuations CEPII Working Paper No 11*
- Glick, R. and K. Rogoff (1995) "Global versus country-specific productivity shocks and the current account" *Journal of Monetary Economics 35 159-92*
- Goldstein, M. and M,S; Khan *Income and price effects in Foreign Trade*, in Handbook of International Economics volume II, North Holland Amsterdam
- Hooper, P. K. Johnson and J. Marquez (2000):*Trade Elasticities for the G7 Countries Princeton Studies in International Economics No87, August*
- International Monetary Fund (2000): *World Economic Outlook*, various issues
- International Monetary Fund (2001a): *World Economic Outlook*, October Issue
- International Monetary Fund (2001b): *United States Selected Issues; IMF country Report 01/149*
- International Monetary Fund (2002) *World Economic Outlook*, September

- Ilzkovitz, F. , A. Dierx (1999) “L’impact sectoriel de l’Euro” *Economie Internationale* No 80 53-74
- Kandil, M J. Greene (2002) “The Impact of Cyclical Factors on the US Balance of Payment” IMF working paper 02/45*
- Knight, M, F. Scacciavillani (1998) “Current Accounts: What is Their Relevance for Economic Policymaking?” *IMF working paper* 98/71
- Kraay, A. J. Ventura (2000) “Current Account in Creditor and Debtor Countries” *Quarterly Journal of Economics* XCV 1137-1166
- Kraay, A. J. Ventura (2002) “Current account in the Long and Short Run” *NBER Working Paper* 9030
- Krugman,P.(1989) “Differences in Income Elasticities and Trends in Real Exchange rates”, *European Economic Review* 33 p. 1031-1054.
- Lane P. (2001) *The new Open Macroeconomics: a survey. Journal of International Economics* August
- Lewis, K. (1999). *Trying to explain the Home Bias in Equity and Consumption Journal of Economic Literature* 37 June p. 571-608.
- McKinnon,R.I (2001) “ Perspectives on US Current Account Deficit” *Brookings papers on Economic Activity, August*
- Milesi-Ferreti, G. and, A,Razin (1996) “What Determines the Current Account ? A cross-sectionals and Panel Approach” *IMF Working Paper* 96/58
- Milesi-Ferreti, G. and , A,Razin (1997) *Sharp Reductions in Current Account Deficits: An Empirical analysis. IMF Working Paper* 97/168.
- _____and_____ (1999) Current Account Reversals and Currency Crises CEPR Discussion Paper 1921
- _____and_____ (2001) *External Wealth the trade Balance and the Real Exchange Rate* CEPR Discussion Paper 3153
- Obstfeld,M , and Rogoff,K. (1995) *The Intertemporal Approach to the Current Account, in Grossman,G ; and Rogoff,K Handbook of International Economics vol 4 North Holland.*
- _____and _____ (1996) *Foundations of International Macroeconomics, MIT Press*
- _____and _____ (2000a) *Perspectives on OECD Economic Integration : Implications for US current Account Adjustment paper presented at the Federal Reserve of Kansas City symposium*
- _____and _____ (2000b) The Six Major Puzzles in International Economics : is there a Common Explanation ?, NBER working Paper 7777.

Organisation for Economic Co-operation and Development (2001,2002) various issues

Péridy, N. “ Exchange Rate Volatility , Sectoral Trade and the Aggregation Bias “
mimeo, Univerisy of Nantes

Swan, T. (1963) “Longer-run Problems of the Balance of Payments” in “The Australian
Economy: A Volume of Readings” ed. by H.Arndt and M. Corden Chesire press

Ventura, J. (2001) “A portfolio view of the US Current Account Deficit “ *Brookings
Papers on Economic Activity August*