The Real Effects of EMU

Philip R. Lane*
IIIS,Trinity College Dublin and CEPR

21st December 2005

Abstract

We explore the impact of European monetary union (EMU) on the economies of the member countries. While the annual dispersion in inflation rates have not been much different to the variation across US regions, inflation differentials in the euro area have been much more persistent, such that cumulative intra-EMU real exchange rate movements have been quite substantial. EMU has indeed contributed to greater economic integration - however, economic linkages with the rest of the world have also been growing strongly, such that the relative importance of intra-EMU trade has not dramatically increased. In terms of future risks, a severe economic downturn or financial crisis in a member country will be the proving ground for the political viability of EMU.

*I thank Tony Annett, Eric Chaney, Patrick Honohan, Michael Klein, Jay Shambaugh and participants in a CEPR-ESRC seminar and the TCD Economics Lunch for useful comments and a wide group of colleagues for helpful advice. Part of this paper was written while I was an IRCHSS Government of Ireland Research Fellow. I thank the IRCHSS and the HEA-PRTLI grant to the IIIS for financial support.

1 Introduction

Prior to the launch of European Monetary Union (EMU) on January 1st 1999, there were two broad schools of thought in terms of how the individual member countries would be affected by adopting the euro.[1][2][3] On the one side, the primary concern was that the member countries were too diverse, such that a common monetary policy would be destabilising for at least some of the national economies. On the other side, the belief was that the single currency in itself would generate forces for greater economic integration which, in addition to providing direct welfare gains, would over time lead to the euro area endogenously meeting the criteria for an optimum currency area. This article reviews the evidence from the early years of EMU to investigate the performance of these hypotheses.

While it is certainly far too early to make any conclusive judgements about the long-term effects of EMU on the member countries, much can be learned from the initial years of this remarkable monetary experiment. At one level, there have been surprisingly persistent differences in national inflation rates under EMU, such that the common monetary policy has not suited all member countries at all times and the impact of currency union on the behavior of national business cycles (plus the appropriate national policy response) has been a key feature of the EMU debate. At the same time, there is convincing evidence that EMU has also contributed to greater cross-border trade in finance and goods, delivering efficiency gains from market integration. However, an important theme is that EMU is not the only force shaping the euro area. In particular, international integration with the rest of the world has also been increasing rapidly, such that it is essential not to view the euro area as a closed unit but rather understand the member countries have myriad and differential linkages with each other and trading partners from outside the euro area.

The structure of the rest of this article is as follows. In section 2, we first briefly review differences in the macroeconomic performance of the individual member countries since the creation of EMU and ask whether a single currency has acted to amplify or moderate the sources of heterogeneity. We next turn in section 3 to asking whether monetary union has influenced the degree of economic union among the member countries. Section 4 addresses the political impact of EMU, while section 5 considers the role

[1] While it may be technically correct to limit the acronym EMU to mean "economic and monetary union", I follow the widespread practice of employing it as an acronym for "European Monetary Union".

[2] Of course, there was also a major debate about how the European Central Bank should develop its monetary framework and a significant challenge in terms of making operational the concept of the euro area as a currency union (e.g. defining and collecting the required macroeconomic data at the aggregate euro area level such that the ECB could treat the euro area as a unified economic area).

[3] This article is not intended to be a comprehensive survey of the already voluminous literature on the real effects of EMU. The interested reader should consult the wide-ranging studies contained in HM Treasury (2003) and Baldwin et al (2003) and the papers commissioned for the 2005 EMU conference organized by the European Central Bank (http://www.ecb.int/events/conferences/html/emu.en.html).

of national fiscal policies inside a monetary union. Some final remarks are offered in section 6.

2 Does One Size Fit All?

A sufficient degree of monetary convergence was required to join EMU. Under the 1992 Maastricht Treaty, membership was conditional on an inflation rate no higher than 1.5 percentage points and a nominal long-term interest rate no more than 2 percentage points above the three best-performing member states. In addition, in recognition of the dangers posed by fiscal instability for monetary policy, this was to be re-inforced with a budget deficit ceiling of 3 percent and public debt no greater than 60 percent of GDP. While the fiscal criteria were not strictly achieved by all countries (highly-indebted Belgium and Italy were permitted to join), eleven countries had met the Maastricht Criteria by 1997.[4]

Figure 1 shows the dramatic reduction in inflation differentials during 1992-1998. Ironically, in view of the monetary convergence in the run-up to currency union, Figure 1 also shows that the initial years of EMU have seen a marked dispersion in national inflation rates across the euro area. The peak year for dispersion was 2000 in which inflation ranged from 1.5 percent in Germany to 5.6 percent in Ireland. As is shown in Table 1, these two countries marked the extremes of the inflation distribution over 1999-2004, with Germany averaging an annual inflation rate of 1.4 percent and Ireland 3.8 percent. Table 1 also highlights that differences in inflation rates have been substantially larger in the services sector than in the goods sector, which places the focus on variation in the relative price of nontradables as the source of divergent inflation patterns.

As is shown in Table 2, it is true that the dispersion of annual inflation rates under EMU has been reasonably similar to that for US regions. However, Table 2 also shows that there has been a substantial difference in the persistence of inflation differentials. Over the 1999-2004 period, the range of cumulative inflation across EMU member countries was 16.5 percent, whereas the range for US regions was only 8.7 percent.

The divergence in inflation rates reflects a number of factors.[5] Differences in core macroeconomic fundamentals justify some of the shifts in bilateral real exchange rates among member countries (in a monetary union, changes in bilateral real exchange rates can take place only through inflation differentials since nominal exchange rates are fixed by definition). There is heterogeneity across member countries in such deep fundamentals as initial levels of output per capita, demography and the pattern of industrial specialisation but also in regard to structural policies in relation to factor and product markets. These structural differences imply non-uniform trend productivity growth rates and also imply asymmetric

[4] Greece was further behind in meeting the criteria and only joined EMU in 2001.

[5] For more detailed analysis, see Honohan and Lane (2003, 2004), Angeloni and Ehrmann (2004) and Altissimo et al (2005).

degrees of exposure to global shocks in particular industries (e.g. Asian import penetration in the textiles and electronics sectors; shifts in oil and other commodity prices). [6]

However, beyond these quasi-exogenous factors, it is also true that EMU itself has been a source of macroeconomic divergence. First, entry into EMU was a much bigger structural shock for peripheral member countries than for the core membership - in particular, long-term interest rates in the former group had been relatively high until the convergence in nominal rates under the EMU process kicked in. While Table 3 shows that all member countries have enjoyed lower real interest rates under EMU, the decline relative to the pre-EMU period was much greater for the periphery. Of course, the improved long-term credit environment represents one of the primary benefits from EMU membership for these countries. However, it also generated rapid growth in lending and local housing booms in the favoured countries, with the sharp increase in demand contributing to inflationary pressures.

Second, EMU acts as an amplification mechanism for asymmetric shocks. A common nominal interest rate implies that persistent differences in national inflation rates translate into differences in real interest rates across member countries: countries with relatively higher medium-term inflation enjoy lower real interest rates than those with below-average inflation, stimulating demand, credit growth and housing markets in the former group.[7] Over time, there is a offsetting corrective mechanism since the bilateral real appreciation experienced by the higher-inflation countries leads to a loss of competitiveness vis-a-vis the lower-inflation group, such that the initial boom is inevitably followed by a period of retrenchment.[8]

Third, the common external euro exchange rate was a source of asymmetric shocks for the member countries, in view of their differential trade and financial linkages with the rest of the world. While the rapid depreciation of the euro against the dollar and sterling during 1999-2001 was relatively unimportant for those member countries that primarily trade within the euro area, it represented an significant expansionary shock for other countries with a higher level of involvement in global trade.[9] In turn, the subsequent euro appreciation during 2002-2004 reversed this effect - for instance, despite a booming domestic sector, Irish inflation fell markedly in the wake of the stronger euro (Honohan and Lane 2004).

[6] Even if such structural policies may be endogeous to the monetary regime (we return to this question in section 4), the inherited dispersion in the extent of reform at the inception of EMU is arguably an important source of variation in national productivity growth rates.

[7] While it is true that what matters for the real interest rate is the expected inflation rate, the persistence of national inflation rates documented in Tables 1 and 2 provide the link between actual and expected inflation rates. See Honohan and Leddin (2005) and Lopez de Salido et al (2005) for models of national business cycles under EMU.

[8] Indeed, Germany's disappointing growth performance during the early years of EMU can be partly attributed to an initially-overvalued real exchange rate. The Netherlands provides an example of an intra-EMU boom-bust cycle, with a credit boom and high inflation in 1999-2001 followed by a contraction in economic activity that has reversed some of the real appreciation against partner countries.

[9] Angeloni and Ehrmann (2004) make the interesting point that those member countries more open to external trade have a greater sensitivity to ECB policy actions, since an interest rate cut that depreciates the euro has a more powerful impact on these countries than on those that are insulated from the external value of the euro.

Figure 2 displays the cross-sectional medium-term Phillips Curve for the EMU member countries. In line with the procyclical impact of EMU in the propagation of shocks, it is not surprising that there is a clear positive relation between relative output growth and relative inflation (the correlation is 0.62). However, Figure 2 also highlights that some slow-growing countries have also experienced significant inflation. Among the larger member countries, Italy and Germany provide a striking contrast - while not growing any faster than Germany over 1999-2004, Italy's consumer price level increased by a cumulative 6.8 percent more than the German level (the differential is even greater in terms of unit labour costs, which have increased by 17 percent relative to Germany). In similar vein, among the faster-growing countries, Spain and Finland grew at similar rates over this period but the former appreciated by 9 percent against the latter.

Another perspective on inflation divergence is provided in Table 4, which shows how national price levels have evolved relative to each country's trading partners. The table shows the changes in trade-weighted real exchange rate vis-a-vis both trading partners within the euro area and external trading partners over 1999-2004, with the total change a weighted sum of the two series. At one level, the message from the table is that inflation differentials within the euro area are not the whole story regarding the evolution of competitiveness for the member countries: the external value of the euro has also been quantitatively important in driving effective exchange rates for a number of member countries. This highlights that EMU has not eliminated the problems posed by nominal exchange rate volatility. (The table also confirms the variable sensitivity of the member countries to shifts in the euro exchange rate.) To the extent that some proportion of these shifts in real exchange rates (whether driven by external factors or domestic cost shocks) imply unsustainable levels of wage growth in some member countries, it poses an adjustment problem since the traditional solution to over-valuation (i.e. nominal depreciation of the national currency) is no longer available.

It is important to emphasize that the fact that EMU has some destabilizing features for the member countries does not mean that currency union has led to a net increase in macroeconomic instability. It is widely agreed that the ECB has been successful in anchoring medium-term area-wide inflation expectations at around 2 percent - at least for some countries, the attainment of such stability outside the EMU framework may have been a more costly process.[10] In addition, even if asymmetric shocks have posed an adjustment problem, the ECB might have been done a better job in responding to the significant common component in the business cycles of the member countries than would have resulted from non-coordinated monetary policies.[11]

[10] Especially for the smaller member countries, there is limited value in drawing inferences about the "no EMU" counter-factual from the experience of those European countries that have not joined EMU, since the external monetary environment for these countries is so heavily conditioned by the very existence of the euro area.

[11] Giannone and Reichlin (2005) document the properties of business cycles for the member countries, with global and European factors accounting for a high proportion of output variance.

Moreover, if EMU had not been formed, the traditional tensions between exchange rate stability and the attainment of domestic nominal targets may have generated destabilizing speculation in at least some of the member countries. In the absence of EMU, the faster-growing member countries might have been subject to speculative capital flows banking on currency appreciation; conversely, the slower-growing member countries may have exposed to traditional currency-crisis dynamics, by which poor fundamentals increase the probability that these currencies will depreciate. These considerations are especially relevant for the smaller member countries in view of the importance of the exchange rate in determining the monetary environment for highly-open economies.

Finally, the impact of currency union on the macroeconomic cycles of the member countries is only one criterion by which EMU should be evaluated. In the next section, we investigate whether EMU is succeeding in promoting economic integration among the member countries. In turn, if a deeper level of economic integration is achieved over time, this should increase the suitability of a common monetary policy for all the member countries.

3 Is Monetary Union Fostering Economic Union?

Even if the common monetary policy has not suited all member countries at all times during the early years of EMU, the single currency project may have yielded benefits at the microeconomic level by promoting the integration of product and factor markets. In turn, if a deeper level of economic integration among the member countries is achieved over time, this should enable the monetary union to operate more smoothly. First, if the member countries share a common business cycle, then the sacrifice of independent national monetary policies is less expensive.[12] Second, to the extent that cyclical asymmetries do exist, a number of macroeconomic adjustment mechanisms may compensate for the absence of nominal exchange rate movements within the euro area.

In this section, we first probe whether EMU has promoted financial integration among the member countries. Next, we ask whether the single currency has increased product trade across the euro area. We then turn to the impact of EMU on labor mobility and the structural reform of labor and product markets.

3.1 Financial Integration under EMU

The creation of more liquid and deeper financial markets possibly offer the most straightforward micro-economics gains from EMU. Beyond the direct gains in terms of microeconomic efficiency and growth,

[12] Although economic integration may engender some forces that increase asymmetries across countries, the available empirical evidence suggest that the net impact is to increase the cyclical comovements across countries (Frankel and Rose 1998). See also the discussion in De Grauwe and Mongelli (2005).

greater financial integration also facilitates a more cohesive currency union in a number of ways. First, the capacity to borrow and lend overseas enables individual member countries to smooth consumption in the face of temporary shocks to domestic income. Second, the ability to diversify financial risks reduces the exposure of domestic wealth to domestic shocks.

3.1.1 Financial Markets

Indeed, the single currency has had a visible impact in the re-organisation of European financial markets.[13] The most radical change is the swift integration of the euro-area bond market after the introduction of the single currency: yield differentials across member countries fell sharply, the volume of private bond issues grew rapidly and, save for the important exceptions of the clearing and settlement systems, the market microstructure converged to a common area-wide system. Moreover, the level of competition among financial intermediaries for underwriting and trading activities increased markedly, leading to a reduction in transactions costs, increased market access for higher-risk issuers and greater financial innovation (Pagano and von Thadden 2004).

The scale of the euro-denominated corporate bond market has grown rapidly: Figure 3 shows that the outstanding stock of securities issued by corporates in the euro area has grown from 32.2 percent of GDP at the end of 1998 to 74.5 percent of GDP by June 2005, reflecting a sharp increase in issuing activity (quarterly gross issues have averaged 15.2 percent of GDP since the start of EMU, nearly double the 8.2 percent average during 1991-1998).

Moreover, spreads across government bond yields have narrowed to very low levels: for instance, the end-June 2005 spread on 10-year sovereign bonds was just 30 basis points. While this yield convergence in part reflects a convergence in fundamentals and the elimination of liquidity premia associated with the domestic-currency debts of the smaller member countries, it also reflects the fact that investors regard the bonds issued by member countries as very close substitutes.[14]

Similarly, Baele et al. (2004) find a high degree of integration in the pricing of corporate bonds across the euro area, with country factors trivially small relative to the sectoral and credit-risk characteristics of

[13] See Baele at al (2004) for a general review of the progress in unifying the financial markets of the euro area.

[14] Indeed, there is a body of opinion that spreads have become too narrow and do not adequately reflect differences in debt levels and other risk characteristics across the member countries - one explanation is that investors believe that the ECB will bail out any member government that gets into trouble, despite the statutory prohibition on such interventions. A complementary interpretation is that ECB in effect subsidizes the bonds issued by less-creditworthy member governments by treating the debt of each member government as equivalent in the conduct of its open-market operations (Buiter and Sibert 2005). However, the ECB has recently announced that it will only accept bonds with at least a single A- rating from one or more of the main rating agencies as collateral in its Repos and other collateralised lending operations. This means that a deterioration in national public finances could lead to a member country's sovereign debt excluded as acceptable collateral.

issuers. On the buy side, these authors find extensive evidence of a switch in orientation, with area-wide bond funds rapidly gaining market share relative to nationally-focused funds; Pagano and von Thadden (2004) document that cross-border purchasers account for a much increased proportion of the investor base, especially for the smaller member counries. While less spectacular, there is also considerable evidence that many equity investors now treat the euro area as a single entity. Baele et al (2004) report that share of non-domestic equity in the portfolios of euro area investment funds increased from about 40 percent in 1995 to 70 percent in 2003. Moreover, funds with European-wide investment strategies increased market share from 18 percent in 1997 to 29 percent in 2003.

Table 5 shows for each member country the proportion of its portfolio of cross-border securities holdings that is allocated to its EMU partners. In regard to debt securities, there has been a sharp rise in the EMU-orientation of cross-border portfolios for most countries (Italy, Ireland and Finland provide the most striking cases). While less spectacular, Table 5 also shows that there has also been a widespread increase in the weighting of fellow EMU member countries in cross-border equity portfolios. Lane and Milesi-Ferretti (2005a) and Lane (2005) find that there is a 'euro area bias' in cross-border equity and bond holdings: controlling for other fundamentals, there is substantially more cross-border asset trade between members of the euro area than among other pairings (the central estimates of the euro effect is that it raises bilateral holdings between member countries by 62 percent for equities and 97 percent for bonds). Table 5 also displays the value of the cross-border portfolios of the member countries as a ratio to GDP. In line with the acceleration of the financial globalization process around the world in recent years, the value of the international portfolios of EMU member countries have grown strongly since the late 1990s (Lane and Milesi-Ferretti 2005b).

There is also some evidence that the introduction of the euro has enhanced foreign direct investment between member countries. Employing data over 1982-2002, De Sousa and Lochard (2005) estimate that the euro has raised intra-EMU FDI flows by 62 percent and FDI stock positions by 17 percent. This is consistent with the view that the euro has reduced trade costs, with trade-complementary FDI activity increasing in order to exploit improved trade opportunities within the euro area. Moreover, Barr et al. (2003) find suggestive evidence that EMU has also reduced the share of total inward FDI flows into Europe that is allocated to the EU countries that remained outside EMU, with the interpretation that the intra-European exchange rate stability offered by the euro area is proving to be attractive for export-platform multinational activity.

Finally, in terms of the banking sector, EMU has facilitated a rapid increase in inter-bank lending between EMU member countries and, supported by the rising securitisation of asset-backed loans, a narrowing in interest rate differentials on mortgage products. However, the evidence is that retail banking remains quite segmented across the euro area, with significant dispersion in retail interest rates and few cross-border transactions (Baele et al 2004). Since the barriers to banking integration at the retail level

are real in nature, it is not too surprising that the introduction of the single currency has done little to improve financial integration along this dimension.[15]

3.1.2 Macroeconomic Implications

From a macroeconomic perspective, it is important to assess whether the financial integration we have observed substantially improves cross-border consumption smoothing and risk diversification.[16]

Along one dimension, EMU has plausibly allowed some member countries to run larger external imbalances than was previously feasible.[17] As is shown in Table 6, the relatively-poorer member countries such as Greece, Portugal and Spain have experienced substantially larger current account deficits under EMU. These countries have run current account deficits that have increased by an average 3.5 percent of GDP between 1995-1998 and 1999-2004, with an average increase in the stock of net external liabilities of 36.4 percent of GDP between 1998 and 2004. Prior to EMU, investors would typically have required larger country risk premia to fund such deficits and the risk of a speculative attack on a debtor's currency would have increased - however, these countries are now largely insulated from such pressures.

In part, the increased ability of these countries to attract external capital reflects the extension of the home bias of euro area investors, such that claims on other euro area members are increasingly viewed as good substitutes for claims on domestic counterparties. Spiegel (2004) vividly illustrates this point in the case of Portugal - he finds that EMU has tripled lending to Portugal by banks in the rest of the euro area, with the EMU share of Portugeuse external borrowing increasing from 37.5 percent to 85.6 percent after the creation of the monetary union; this shift in the investor base highlights the importance of a common currency in credit portfolios.

Of course, financial integration can deliver macroeconomic benefits even if the level of net borrowing/lending by member countries were low, since the gains to international diversification are related to the scale of gross cross-border asset trade. However, despite the recent growth in cross-border asset trade, the scale of cross-border risk sharing through financial markets remains limited. For instance, suppose that France experienced an idiosyncratic domestic downturn that also produced a 10 percent negative rate of return differential between French equities and equities in the rest of the euro area. Since France's

[15] The European banking sector has seen much cross-border M&A activity in recent years but these transactions have largely not been between EMU member counrtries (e.g. major deals have taken place between Spain and the UK; across Scandinavia; and the entry by Austrian and other banks into the new EU member states).

[16] Indeed, it is worth entering the caveat that the elimination of individual national currencies may actually have reduced the scope for diversification since currency union has meant that the relative returns on the nominal bonds issued by the member countries can no longer vary in line with shifts in bilateral nominal exchange rates. See Neumeyer (1998) on this point.

[17] Blanchard and Giavazzi (2002) document the widening of current account imbalances among EMU member countries and highlight the systematic pattern by which the poorer economies have responded to EMU by running larger current account deficits.

equity liabilities to other EMU investors are about 10 percent of GDP, this 10 percent return differential maps into a net wealth gain to France of 1 percent of GDP. Assuming a 5 percent propensity to consume out of wealth, this would boost French consumption by a paltry 0.05 percent.[18] Even this example is unrealistic: Baele et al (2004) report that stock returns in the euro area are increasingly dominated by European, global and sectoral factors, such that national stockmarkets do not provide straightforward exposure to national GDP risks. Furthermore, on the bonds side, there is little diversification to be obtained by holding the bonds of other EMU member countries, in view of the zero currency risk and the very minor default risk.

Moreover, while the increase in cross-holdings among the member countries should increase risk sharing and thereby improve the functioning of the currency union (even if the quantitative magnitudes are not yet very large), a potential source of divergent wealth dynamics relates to heterogeneity in the structure of the international portfolios held by the member countries. Lane and Milesi-Ferretti (2004, 2005a) and Lane (2005) show that factors such as historical colonial ties, language and trade linkages influence international portfolio allocations and these characteristics significantly varry across member countries. Indeed, the tight financial linkages between the UK and the US has been cited as one factor behind the UK's reluctance to join EMU, since its capital income relies much more heavily on the US than is the case for the aggregate euro area (HM Treasury 2003).

It is also important to appreciate that the degree to which international financial integration can hedge against domestic macroeconomic risks is limited for the same reasons that domestic financial markets only offer partial protection against shocks to domestic labour income and other non-diversifiable components of wealth. Moreover, an important component of aggregate wealth - housing assets - are largely held by domestic households and differential trends in housing prices across member countries are an important source of divergent wealth dynamics that may have dominated any pro-convergence impact of capital market integration.[19] Figure 4 shows the growth in housing prices over 1997-2004 for the individual member countries. While Greece, Ireland and Spain each experienced cumulative price growth over 100 percent, housing values were stagnant in Austria and Germany at the other extreme. In light of this wealth divergence, it is not too surprising that consumption growth rates across the member countries have been heavily influenced by national factors.

Despite these divergent patterns in the early years of EMU, it is surely a mistake to extrapolate these patterns into the future. The shifts in relative housing prices and relative consumption are in part a once-off adjustment to the new financial environment that has disproportionately benefited the peripheral and

[18] If the 10 percent differential also applied to returns outside the euro area, the aggregate net wealth effect would be 2.9 percent and the consumption boost would be 0.15 percent of GDP.

[19] Cross-border purchases of holiday homes and buy-to-let investment properties have mushroomed in recent years, so even the housing sector has been undergoing some degree of financial integration. (However, this is not particularly an EMU phenomenon but rather is taking place across Europe.)

lower-income member countries. In addition, the process of cross-border financial integration remains quite incomplete, with the inherited exposures to domestic assets remaining important - over time, the extent of home bias (at least for marketed financial assets) should further decline. Subject to the qualifications discussed earlier, the contribution of financial integration to cross-border risk sharing may prove to be stronger in the future than it has been in the early years of EMU.

3.2 Evidence on Trade Integration

The pro-trade effect of a currency union was trumpeted in policy circles as one of the main benefits from a single currency. It was argued that the elimination of exchange rate uncertainty and associated frictions would boost trade among member countries. Beyond the direct welfare gains of facilitating more trade, it was hoped that greater trade integration would promote real convergence and also place arbitrage pressure on cross-border price differentials. In this subsection, we ask whether EMU has indeed led to greater trade integration among the euro area members.

3.2.1 Growth in the Volume of Trade

We first review the evidence in relation to the effect of EMU on the volume of trade among member countries. By examining a very large sample of industrial and developing countries, Rose (2000) famously found that a currency union boosted bilateral trade by more than 300 percent; subsequent refinements still leave the estimated effect above 50 percent (Rose 2004). However, the relevance of these estimates to the EMU case has been much debated, since the currency unions in the Rose sample mostly involved very small, poor and remote countries.

Micco et al (2003) provided the first comprehensive study of the effects of EMU on trade. Using homogeneous samples (just members of the European Union and, in an expanded specification, a sample of 22 advanced economies), these authors find that, controlling for a host of other variables, EMU has increased trade among member countries by 8-16 percent. While this is small relative to the original Rose estimates, it is economically significant for a group of countries that already had strong bilateral trade linkages and a high degree of institutional integration through membership of the European Union. Moreover, Rose's work had also established that the long-run impact of currency unions substantially exceeded the short-term gains, such that this figure plausibly sets a lower bound for the long-term cumulative impact of EMU on intra-area trade volumes. Baldwin (2005) provides a wide-ranging review of the subsequent empirical work and concludes that a boost in trade of 5-15 percent is a robust estimate.[20]

[20] Gomes et al (2004) and Berger and Nitsch (2005) make the point that the trend increase in trade volumes among EMU member countries has been stronger than for other EU countries for many years, reflecting a greater commitment to integration among those countries that also signed up to the single currency. However, even if this is the case, this does not rule out the introduction of the euro having a positive impact on trade volumes, with these countries forming the monetary

An intriguing feature of the Micco et al study is that these authors found no evidence of trade diversion - trade between EMU member countries and other industrial nations was also boosted by the introduction of the euro. This result suggests that the currency union has acted to reduce trade costs between the euro area and the rest of the world and accords with recent developments in the theory and empirics of international trade that emphasize fixed costs in entering external markets, such that a discrete reduction in trading costs can induce a substantial trade response by increasing the proportion of firms that export, in addition to increasing the export volumes of firms that already trade - that is, the extensive margin of trade expands in addition to the intensive margin (Melitz 2003, Baldwin 2005). This is reinforced by the evidence concerning the sectoral composition of the increase in trade: Baldwin et al (2005) find that EMU had the largest impact on trade for those industries characterized by increasing returns and imperfect competition, with trade in homogeneous products relatively less affected.

Tables 7-9 provide a wider perspective on the evolution of trade for the EMU member countries. Table 7 shows that international trade has increased in importance for most member countries since the mid-1990s. However, Table 8 shows that the relative share of intra-EMU trade has not markedly changed over this period (and has even declined for some countries). While the introduction of the euro may have boosted trade among the member countries, it also promoted trade with non-members and other factors have also served to increase the scale of external trade (e.g. falling communications costs, an expansion in export-platform FDI, export-orientated growth strategies in China and elsewhere).[21]

Since EMU has not much increased the relative importance of intra-union trade, this weakens the argument that the trade channel endogenously increases the cohesiveness of the euro area as an optimum currency area. Indeed, as is shown in Table 9, a noteworthy feature is that there is substantial heterogeneity across the member countries in terms of their extra-EMU trade patterns. To the extent that the importance of these external trade linkages has increased in recent years, the scope for asymmetric external shocks across the euro area has also increased.

3.2.2 Convergence in Prices

It was hoped that a single currency would promote convergence in prices across the euro area by improving trade linkages and increasing the tranparency of price differentials that could be arbitraged away: the prediction was that we should expect to see less price dispersion, at least for tradable goods, across the members of the euro area.

For the period 1990-2003, Engel and Rogers (2004) study comparative price data for 139 products across 18 cities in the euro area (plus 7 cities from outside the euro area) from the proprietory Economist

union precisely as a mechanism to ensure further trade integration.

[21] Tables 7-9 refer to merchandise trade. However, the more limited OECD data on the geography of services trade paint a similar picture - the share of intra-EMU trade in services did not markedly increase during 1999-2002.

Intelligence Unit survey . In fact, these authors find that price dispersion has not decreased post-EMU; rather, it seems that there was a substantial reduction in price differentials in the early 1990s, associated with the 1992 EU Single Market initiative, but with no further narrowing associated with EMU.

Allington et al (2005) employ national-level Eurostat price indices for 115 tradable product categories for the set of EU countries. While the dispersion of national consumer price levels changed little for the EMU member countries post-1999, these authors show that dispersion in many product categories significantly declined in comparison to the degree of dispersion among the non-EMU member countries. Moreover, in line with intuition, the decline in relative dispersion was strongest for the most-tradable product categories (e.g. electrical goods). Another finding from this study is that the decline in dispersion among the EMU member countries has been larger for the peripheral countries than for those countries that historically maintained stable exchange rates against the deutschemark. This suggests that the elimination of exchange rate risk has indeed been an active mechanism by which EMU promotes cross-border arbitrage.

Although it may be the case that the forces limiting price dispersion have been stronger among EMU member countries than among other EU countries, the degree of price convergence within the euro area has been disappointing (Figure 5). Table 10 shows the results from price level convergence regressions for various sectors, using PPP data. For the 1995-1998 pre-EMU period, there was evidence of convergence across all sectors, even if the speed of convergence was predictably higher for consumer durables and capital goods than for the non-durables and services sectors.[22] Consistent with the Engel and Rogers evidence, there is much less evidence of convergence for the post-EMU 1998-2004 period, although it is still statistically significant for capital goods and consumer services.[23] More generally, the apparent lack of price convergence under EMU may just largely reflect by the divergent inflation rates discussed in section 2 - since the retail prices of even tradable goods incorporate a significant non-tradeable component that relates to distribution and retailing costs, consumer prices may diverge even while price dispersion narrows for the underlying "purely tradeable" components. However, Baldwin (2005) provides another way to reconcile the increase in the volume of trade with the lack of price convergence - in line with the extensive margin hypothesis, if trade growth is mostly driven by an increase in the number of varieties being sold across borders, there is less pressure on price gaps for specific goods.

[22] The EUROSTAT PPP data only begin in 1995.

[23] While the latter category is commonly viewed as being largely nontradeable, this sector has become much more tradable in recent years, with liberalisation and the widespread adoption of new communications technologies. Moreover, price convergence in this sector may have to much to do with greater similarity in technologies and domestic market reforms. For these reasons, it is not at all clear whether EMU per se had much to do with price convergence in this sector.

3.3 Cross-Border Labor Mobility

It is well known that both intra-national and cross-border labor mobility is much lower in Europe than in the US: language differences and other cultural barriers, together with non-coordinated pension and entitlement systems, are major barriers to an integrated labour market. While it is unlikely that migration decisions are much affected by the creation of a currency union, the resilience of the currency union in coping with asymmetric shocks would be improved by an increase in labor mobility.

Table 11 shows that net migration flows have been increasing in recent years (albeit from a low base). Moreover, there is a clear correlation between net migration rates and output growth rates, with fast-growing countries such as Ireland and Spain experiencing unprecedented immigration. In addition, the May 2004 entry of the group of Central and Eastern European countries into the EU has improved the prospects for labour mobility, in view of the sizeable wage differentials between the old and new members of the EU: Boeri and Brücker (2005) estimate that the potential for East-West migration to grease the wheels of the European labor market is significant, especially if immigration policies are coordinated in order to maximize the free flow of labor throughout the EU.

3.4 Structural Reform in Labour and Product Markets

The loss of an independent exchange rate policy is less costly, the more flexible are labour markets. In the same vein, the more liberalised are product markets, the more efficiently will industries adjust to shocks. For these reasons, it was hoped that EMU would accelerate the pace of structural reform in the member countries by raising the costs of excessive rigidity.

With respect to the labor market, theory is ambiguous on whether a currency union promotes wage flexibility. Since national wage growth has little impact on ECB interest rates (especially for the smaller member countries), a traditional source of wage restraint has been removed (the threat that wage push shocks would be offset by higher interest rates). However, this has to be counter-balanced against the increased harm from excessive labor costs under EMU, which can no longer be eliminated through currency depreciation. Calmfors (2001) highlights that the greater nominal wage flexibility that may be desirable under EMU is best promoted by social pacts that enable a high degree of national coordination in wage setting, in view of the fact that the microfoundations for nominal wage stickiness plausibly are rooted in coordination failures in highly-decentralised wage setting environments. However, Calmfors is pessimistic that the social pact model is a stable institutional arrangement over the longer term: the forces driving decentralised wage setting (globalisation, declining union membership, the flattening of corporate structures) are likely to prove dominant. Indeed, the greater wage flexibility that has been observed in some industries in recent years seems to be largely a response to increased capital mobility and the outsourcing threat rather than having much to do with EMU.

The more challenging external environment has also led to increased demands for protectionism in both labor and product markets. While the Schroder government initiated a series of mild reforms, the recent German election sent a clear signal that the electorate was resistant to more radical proposals for market liberalisation; the momentum for reform has also largely stalled in France and Italy. Similarly, the proposed EU Services Directive that aims to promote competition by creating a single EU-wide market in services has met with strong resistance from key member states. More broadly, Duval and Elmeskov (2005) review the available statistical evidence and find that the momentum of the reform process has slowed down in the euro area. Importantly, Angeloni et al (2005) find that EMU has had little impact on pricing dynamics, indicating that there has not been any radical change in the extent of price rigidities.

While the slow pace of structural reform has much to do with deeply-entrenched political obstacles, EMU may be partly responsible for the slow pact of structural reform.[24] With an independent currency, a country that undertakes structural reform will enjoy lower interest rates, since the monetary authority will accomodate an increase in the potential output level of the economy; under EMU, the ECB targets area-wide conditions and so only partially responds to reforms in individual member countries. In view of the myriad political obstacles to greater coordination of structural reform efforts (the ECB would respond to an improvement in area-wide conditions), this means that the short-term incentive to undertake reforms has diminished.[25]

4 The Role of National Fiscal Policy inside a Monetary Union

The conduct of national fiscal policies has always been viewed as centrally important in determining the success of EMU. At one level, a major focus has been on the need for sound fiscal positions as an underpinning for the ECB to achieve its primary objective of price stability. At another, a common monetary policy means that national fiscal policies are the major tool by which governments can achieve macroeconomic stability in the event of asymmetric shocks.[26]

As is shown in Table 12, national fiscal positions significantly improved during the 1990s, with the

[24] See Saint-Paul (2004) and Duval and Elmeskov (2005) for elaborations of this argument.

[25] The European Union's Lisbon Strategy (agreed in 2000) has sought to accelerate structural reform through greater policy coordination but has achieved little. See Alesina and Perotti (2004) for an account of the limits to policy coordination in the European Union.

[26] There are two other dimensions of fiscal policy that are relevant to EMU. First, the lack of coordination of national fiscal policies means that the aggregate fiscal response to a macroeconomic shock may be suboptimal. Second, the euro area lacks a federal fiscal system such that cross-border fiscal insurance does not play a role in adjusting to asymmetric shocks. Both of these features sharply differentiate the euro area from the United States. However, the current extent of political integration in the euro area means that neither greater fiscal coordination nor a US-style federal fiscal system is on the policy horizon.

Maastricht criteria motivating fiscal adjustment among the countries seeking to join EMU.[27] In order to ensure that this momentum towards fiscal discipline would continue under EMU, the Stability and Growth Pact (SGP) was introduced in 1998 in order to ensure that national fiscal policies would target medium-term fiscal balance and avoid excessive deficits, as defined by a deficit limit of 3 percent of GDP.[28] The SGP operates through multilateral surveillance that is intended to prevent departures from sound fiscal policy and a penalty mechanism that obliges a member country to undertake corrective policies if it is deemed to be running an "excessive deficit," with the threat of financial sanctions for non-compliance. While there has been much coverage of the failure of the SGP to rein in growing deficits in France and Germany, the available evidence does suggest that is has been helpful in providing an external anchor for fiscal discipline in the smaller member countries (Annett 2005). However, in terms of political acceptability, it is also clear that the SGP is an inadequate substitute for domestic institutional arrangements that can deliver medium-term fiscal sustainability without the involvement of external authorities (Wyplosz 2005).

In terms of the contribution of fiscal policy to macroeconomic stabilization, the evidence suggests that fiscal policy in the member states became more countercyclical during the 1990s (Gali and Perotti 2003).[29] To a large extent, this is the natural counterpart to the improvement in medium-term fiscal discipline - a lower debt level and a commitment to medium-term stability makes it easier to temporarily increase deficits during downturns. Indeed, there was a countercyclical loosening of fiscal policy across the euro area in response to the 2001 economic slowdown. However, this fiscal expansion caused problems for the SGP, since the good times during 1999-2000 were not used to accumulate surpluses - except for Finland, all member countries ran procyclical expansionary fiscal policies during this period of relatively strong economic growth (Annett 2005).[30] As a consequence of not achieving fiscal surplus or balance during the upswing, the post-2001 countercyclical fiscal expansion caused some countries (most notably France and Germany) to breach the 3 percent deficit limit.[31] Uncertainty about the willingness of

[27] The 1990s saw a general improvement in fiscal positions in most advanced economies, such that the importance of the Maastricht treaty in driving fiscal reform is open to debate - in the absence of the treaty, European countries may have achieved fiscal adjustment through other mechanisms.

[28] The SGP did make allowances for a larger deficit in the case of a severe economic downturn (a fall in real GDP of at least 2 percent, with a decline greater than 0.75 percent possibly qualifying depending on supporting evidence). However, downturns of this severity are exceptionally rare.

[29] From another angle, destabilizing national fiscal policies have historically been a major source of cyclical divergence across countries (Darvas et al 2005). For this reason, the coherence of a monetary union at the least requires that fiscal policy is itself not a source of asymmetric shocks. Ideally, of course, it is desirable that fiscal policy goes further and actually dampens inefficient fluctuations in output.

[30] An additional factor during this period was the decline in interest rates upon entry to EMU was a fiscal windfall for several member countries by sharply reducing debt servicing costs. Although in part this enabled reductions in debt levels and taxation, it primarily translated into growth in non-interest expenditures.

[31] The original SGP was suspended in November 2003 when the ECOFIN council of the EU's finance and economics

countries to accumulate sufficiently large surpluses during boom periods means that the jury is still out on whether national fiscal policy will prove to be an effective stabilization tool under EMU.

There are currently myriad proposals to improve the operation of fiscal policy over the cycle, which typically involve designing a domestic policymaking process that minimizes the political bias towards fiscal procyclicality (Calmfors 2005, Wyplosz 2005). In addition, the depoliticization of fiscal stabilization policies may also allow scope for designing stabilizing fiscal interventions in the event of large asymmetric shocks (Swedish Government Commission on Stabilisation Policy in the EMU 2002). For instance, a temporary reduction in payroll taxes could accelerate recovery from a recesssion by in effect engineering a real depreciation through a reduction in domestic labour costs. (If such interventions were just left to politicians, the danger is that such discretion would be abused for electoral purposes.)

5 The Political Viability of EMU

There is little doubt that a primary motivation for EMU was to foster further political integration in Europe (Wyplosz 1997). Beyond the symbolic value of sharing a common currency, it was believed that the economic integration spurred by currency union would sufficiently raise the degree of interdependence to spur a deepening of political cooperation. Moreover, it was perceived that the beggar-thy-neighbor impact of periodic adjustment through nominal devaluations had contributed to political disharmony (Eichengreen 1996).

However, it is also possible to make the case that, by engendering increased macroeconomic instability at the national level, premature or inappropriate monetary integration may reduce political solidarity among the member countries (Feldstein 1997). To some extent, the demand by some Italian politicians in 2005 that Italy should exit EMU and re-introduce an independent currency as a way to respond to its loss of competitiveness is a vindication of this viewpoint. However, the costs of leaving EMU are so high in terms of the risk premium that would attach to the new currency of any renegade that entry into EMU must be interpreted as a virtually irreversible act.

Moreover, the available Eurobarometer survey evidence suggests that EMU enjoys a reasonable level of popular support. As is shown in Table 13, a majority of the euro-area population (albeit a slender one) believes the introduction of the euro has been beneficial. Moreover, EMU has made 19 percent "feel more European," which is the reaction desired by the political fathers of EMU that viewed it as a vehicle to promote political integration. Remarkably, these positive results coexist with the widespread popular belief that EMU has been responsible for an increase in prices and failed to reduce price dispersion across

ministers declined to accept the European Commission's recommendation that France and Germany be subjected to enhanced surveillance under the SGP's "excessive deficit procedure." A revised version of the SGP was agreed in 2005 that allows for considerably more flexibility in determining the conditions under which a budget deficit is excessive.

the member countries (columns (3)-(4) in Table 13).

However, the recent rejection of the EU Constitutional Treaty in referendums in France and the Netherlands has demonstrated the current lack of popular support for deeper political integration at the EU level. While the anti-integration mood has little to do with EMU, the lack of impetus towards greater political integration may yet prove to be a serious challenge to the political durability of EMU. For instance, consider the scenario in which a severe slump or a banking collapse in a member country engenders a national debt crisis, with an increase in risk premia and potential spillover effects on area-wide financial markets. The capacity of the euro area to respond to such a financial crisis is at yet untested. If it is unthinkable to permit the breakup of EMU, a crisis episode may prove to be the catalyst for greater political integration. For instance, an emergency fiscal transfer to a member country in crisis may subsequently lead to a consensus that more effective restrictions on national fiscal policies are required in order to minimize the risk of any future crisis and/or to formalize the conditions under which such emergency transfers may be paid in the future.[32]

6 Final Remarks

EMU is a remarkable monetary experiment and its initial years have thrown up an array of fascinating evidence. On the debit side, we have shown how EMU has acted to amplify cyclical divergences across the member countries: however, this is partly attributable to the once-off adjustment to the new monetary environment and these forces may prove to be weaker in the future. That said, the entry of the new EU member states into EMU in the coming years means that macroeconomic divergence within the euro area is likely to remain a major challenge for national policymakers. On the credit side, there is convincing evidence that EMU has spurred trade and financial integration among the member countries, generating direct welfare gains.

However, the euro area is still some distance from the definition of an optimum currency area: market-based risk sharing arrangements are likely not an adequate substitute for a US-style federal fiscal transfer system; although increasing, labor mobility remains low; structural rigidities still permeate product and labor markets; and the likelihood that national fiscal policies will contribute much to stabilization remains unproven. Moreover, there is little sign that political integration among the member countries will increase any time soon. For these reasons, despite the highly successful launch of EMU, it remains

[32] An emergency fiscal transfer could also take the form of a subsidized loan from the ECB, which would in effect be financed by reduced seigniorage revenues for the other member countries. If the national financial crisis threatened the stability of area-wide financial markets, the ECB would also be compelled to relax its monetary stance. In the event of a banking crisis, pressure would also grow for the transfer of financial supervision responsibilities to a European-wide regulatory authority.

an open question whether national economies will prove to be sufficiently flexible to enable smooth adjustment in response to a major asymmetric shock or the occurrence of a financial crisis.

References

Alesina, Alberto and Roberto Perotti (2004), "The European Union: A Politically Incorrect View," Journal of Economic Perspectives 18(4), 27-48.

Allington, Nigel F.B., Paul A. Kattuman and Florian A. Waldmann (2005), "One Market, One Money, One Price? Price Dispersion in the European Union," International Journal of Central Banking 1, 73-116.

Altissimo, Filippo, Pierpaolo Benigno and Diego Rodriguez Palenzuela (2005), "Long-Run Determinants of Inflation Differentials in a Monetary Union," NBER Working Paper No. 11473.

Angeloni, Ignazio and Michael Ehrmann (2004), "Euro Area Inflation Differentials," European Central Bank Working Paper No. 388.

Angeloni, Ignazio, Luc Aucremanne and Matteo Ciccarelli (2005), "Price Setting and Inflation Persistence," paper presented to the 47th Economic Policy Panel, London.

Angeloni, Ignazio, Michael Flad and Francesco Paolo Mongelli (2005), "Economic and Monetary Integration of New Member States - Helping to Chart the Route," ECB Occasional Paper No. 35.

Annett, Anthony (2005), "Enforcement and the Stability and Growth Pact: How Fiscal Policy Did and Didn't Change under Europe's Fiscal Framework," mimeo, International Monetary Fund.

Baele, Lieven, Annalisa Ferrando, Peter Hördahl, Elizaveta Krylova and Cyril Monnet (2004), "Measuring Financial Integration in the Euro Area," ECB Occasional Paper No.12.

Baldwin, Richard E. (2005), "The Euro's Trade Effects," mimeo, Graduate Institute for International Studies.

Baldwin, Richard E., Guiseppe Bertola and Paul Seabright (eds) (2003), EMU: Assessing the Impact of the Euro, Economic Policy 37, special issue.

Baldwin, Richard E., Frauke Skudelny and Daria Taglioni (2005), "Trade Effects of the Euro: Evidence from Sectoral Data," ECB Working Paper No. 446.

Barr, David, Francis Breedon and David Miles (2003), "Life on the Outside: Economic Conditions and Prospects outside Euroland," Economic Policy 37, 281-321.

Berger, Helge and Volker Nitsch (2005), "Zooming Out: The Trade Effect of the Euro in Historical Perspective," CESifo Working Paper No. 1435.

Blanchard, Olivier and Francesco Giavazzi (2002), "Current Account Deficits in the Euro Area. The End of the Feldstein Horioka Puzzle?," Brookings Papers on Economic Activity 2, 147-209.

Boeri, Tito and Herbert Brücker (2005), "Why Are Europeans So Tough on Migrants?," Economic Policy 44, 629-704.

Calmfors, Lars (2001), "Wages and Wage-Bargaining Institutions in the EMU – A Survey of the Issues," Empirica 28, 325-351.

Calmfor, Lars (2005), "What Remains of the Stability Pact and What Next?," Swedish Institute for European Policy Studies Report 2005:8.

Darvas, Zsolt, Andrew Rose and György Szapáry (2005), "Fiscal Divergence and Business Cycle Synchronization: Irresponsibility is Idiosyncratic," NBER Working Paper No.11580.

De Sousa, Jose and Julie Lochard (2005), "Does the Single Currency Affect FDI?," mimeo, University of Paris 1.

Duval, Romain and Jorgen Elmeskov (2005), "The Effects of EMU on Structural Reforms in Labour and Product Markets," OECD Economics Department Working Paper No. 438.

Eichengreen, Barry (199X), "A More Perfect Union: The Logic of Economic Integration," Princeton Essays in International Finance No. 198, International Finance Section, Princeton University.

Engel, Charles and John H. Rogers (2004), "European Market Integration After the Euro," Economic Policy 19, July 2004, 347-384.

Feldstein, Martin (1997), "The Political Economy of the European Economic and Monetary Union: Political Sources of an Economic Liability," Journal of Economic Perspectives 11, 23-42.

Frankel, Jeffrey and Andrew K. Rose (1998), "The Endogeneity of the Optimum Currency Area Criteria," Economic Journal.

Giannone, Domenico and Lucrezia Reichlin (2005), "Trends and Cycles in the Euro Area: How Much Heterogeneity and Should We Worry About It?," mimeo, ECARES and European Central Bank.

Honohan, Patrick and Philip R. Lane (2003), "Divergent Inflation Rates Under EMU," Economic Policy 37, 359-394.

Honohan, Patrick and Philip R. Lane (2004), "Exchange Rates and Inflation Under EMU: An Update," Economic Policy Web Essay.

Honohan, Patrick and Anthony Leddin (2005), "Ireland in EMU: More Shocks, Less Insulation?," IIIS Discussion Paper No.94.

Lane, Philip R. (2005), "Global Bond Holdings and the Euro Area," European Central Bank Discussion Paper No. 553.

Lane, Philip R. and Gian Maria Milesi-Ferretti (2004), "International Investment Patterns," IIIS Discussion Paper No.24.

Lane, Philip R. and Gian Maria Milesi-Ferretti (2005a), "The International Equity Holdings of Euro Area Investors," IIIS Discussion Paper No. 102.

Lane, Philip R. and Gian Maria Milesi-Ferretti (2005b), "The External Wealth of Nations Mark II: New Estimates of Foreign Assets and Liabilities for Industrial and Developing Countries," IIIS Discussion Paper No. XXX.

Lopez de Salido, David, Fernando Restoy and Javier Valles (2005), "Inflation Differentials in EMU: The Spanish Case," Banco d'Espana Working Paper No. 0514.

Melitz, Marc (2003), "The Impact of Trade on Intra-Industry Reallocations and Aggregate Industry Productivity", Econometrica 71, 1695-1725.

Micco, Alejandro, Ernesto Stein and Guillermo Ordonez (2003), "The Currency Union Effect on Trade: Early Evidence from EMU," Economic Policy 37, 315-336.

Neumeyer, Pablo Andres (1998), "Currencies and the Allocation of Risk: The Welfare Effects of a Monetary Union," American Economic Review 88, 246-259.

Pagano, Marco and Ernst-Ludwig Von Thadden (2004), "The European Bond Market under EMU," Oxford Review of Economic Policy 20, 531-554.

Rose, Andrew (2000), "One Money, One Market: Estimating the Effect of Common Currencies on Trade," Economic Policy 30, 9-45.

Rose, Andrew and TD Stanley (2005), "A Meta-Analysis of the Effect of Common Currencies on International Trade," Journal of Economic Surveys 19(3), 347-366.

Saint-Paul, Gilles (2004), "Why are European Countries Diverging in Their Unemployment Experience?," Journal of Economic Perspectives 18(4), 49-68.

Spiegel, Mark (2004), "Monetary and Financial Integration: Evidence from Portuguese Borrowing Patterns," Federal Reserve Bank of San Francisco Working Paper No. 2004-07.

Swedish Government Commission on Stabilisation Policy in the EMU (2002), "Stabilisation Policy in the Monetary Union - A Summary of the Swedish Government Official Report 2002:16," Stockholm: Fritzes.

HM Treasury (2003), EMU Study, London.

Wyplosz, Charles (1997), "EMU: Why and How It Might Happen," Journal of Economic Perspectives 11(4), 3-22.

Wyplosz, Charles (2005), "European Monetary Union: The Dark Sides of a Major Success," paper presented to the 47th Economic Policy Panel, London.

Table 1: Average Annual Inflation Rates, 1999-2004

	All	Goods	Services
Euro Area	2.0	1.8	2.3
Belgium	1.9	1.7	2.1
Germany	1.4	1.3	1.4
Greece	3.2	2.9	3.8
Spain	3.0	2.7	3.8
France	1.8	1.7	1.9
Ireland	3.8	2.6	5.5
Italy	2.4	2.1	2.8
Luxembourg	2.5	2.4	2.7
Netherlands	2.8	2.4	3.4
Austria	1.6	1.1	2.2
Portugal	3.1	2.4	4.4
Finland	1.7	1.1	2.7
St.Dev	0.8	0.6	1.2
Range	2.4	1.7	4.1

Note: HICP inflation rates. Source: Author's calculations based on Eurostat data.

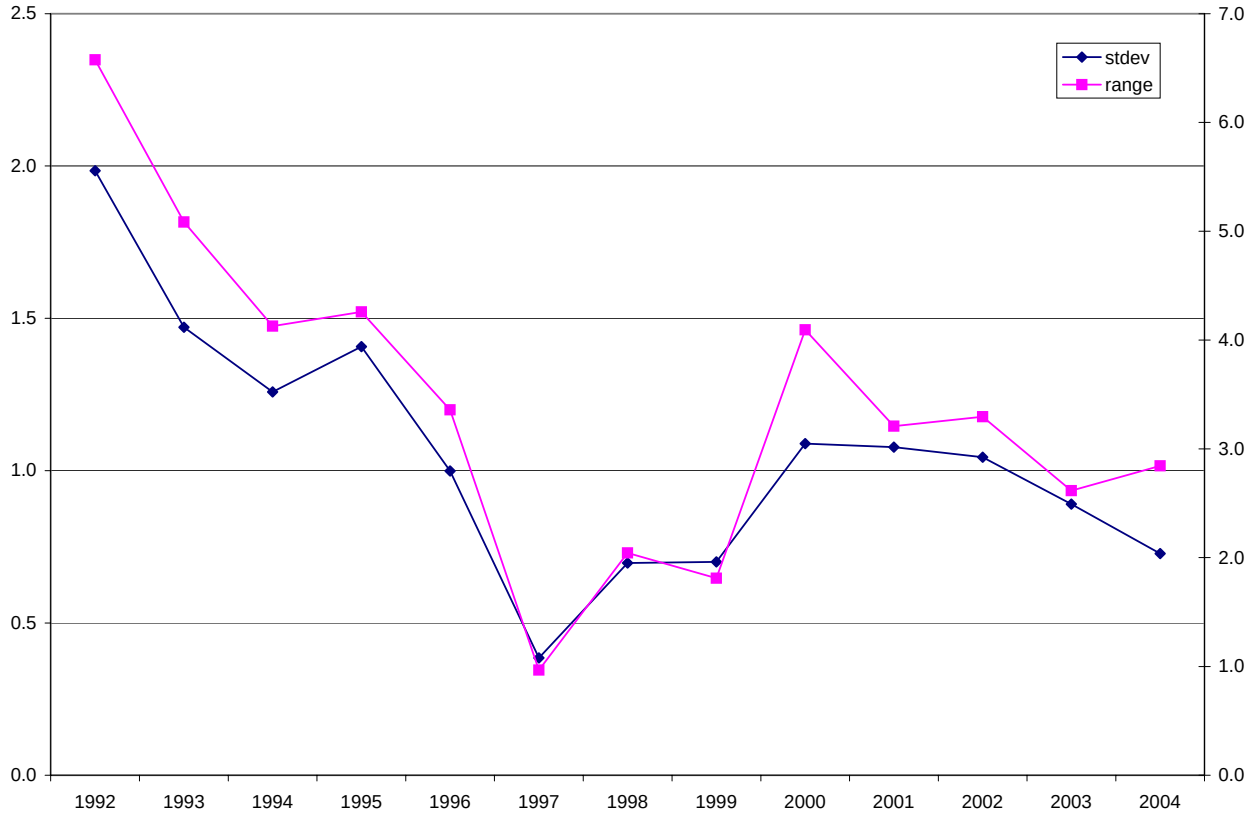

Figure 1: Dispersion of Inflation Rates, 1992-2004. Standard deviation on left scale; Range on right scale. Source: Author's calculations based on CPI data from the IMF's IFS database.

Table 2: Distribution of Inflation Rates: Euro Area vs US

	Euro Area	US Regions
STDEV		
1999	0.73	0.76
2000	1.01	0.50
2001	1.07	0.79
2002	1.14	0.82
2003	0.95	0.69
2004	0.84	0.98
1999-2004	5.21	2.40
RANGE		
1999-2004	16.53	8.37

Note: Inflation rates are based on HICP data for the Euro Area and CPI data for US regions. Source: Author's calculations based on data from Eurostat and Bureau of Labor Statistics.

Table 3: Real Interest Rates, Pre- and Post-EMU

	1993-1998	1999-2004	DIFF
Austria	2.5	1.2	-1.2
Belgium	3.1	1.2	-1.9
France	3.9	1.4	-2.4
Germany	2.5	1.7	-0.8
Italy	4.9	0.8	-4.1
Luxembourg	3.1	0.9	-2.2
Netherlands	2.1	0.7	-1.4
Finland	3.7	1.6	-2.1
Greece	7.4	1.0	-6.4
Ireland	4.5	-0.6	-5.1
Portugal	4.7	0.2	-4.5
Spain	4.3	0.0	-4.3

Note: Average annual ex-post short-term real interest rates. Source: Author's calculations based on short-term interest rate data from OECD and CPI data from IMF's IFS database.

Table 4: Evolution of National Competitiveness, 1999-2004

	Total	Intra-Euro	Extra-Euro
Germany	-1.3	-4.9	3.3
Italy	5.6	2.5	11.1
France	2.2	-1.7	8.7
Belgium	2.7	-1.1	9.4
Netherlands	8.6	4.6	14.6
Spain	9.9	6.7	17.7
Austria	-0.8	-0.6	2.9
Portugal	7.2	4.5	16.8
Ireland	16.9	10.8	21.1
Finland	-0.6	-2.1	2.3
Greece	4.4	2.9	7.9
Luxembourg	7.2	4.5	15.9

Note: Changes in National Competitiveness, 1999-2004. Source: Author's calculations, based on ECB data.

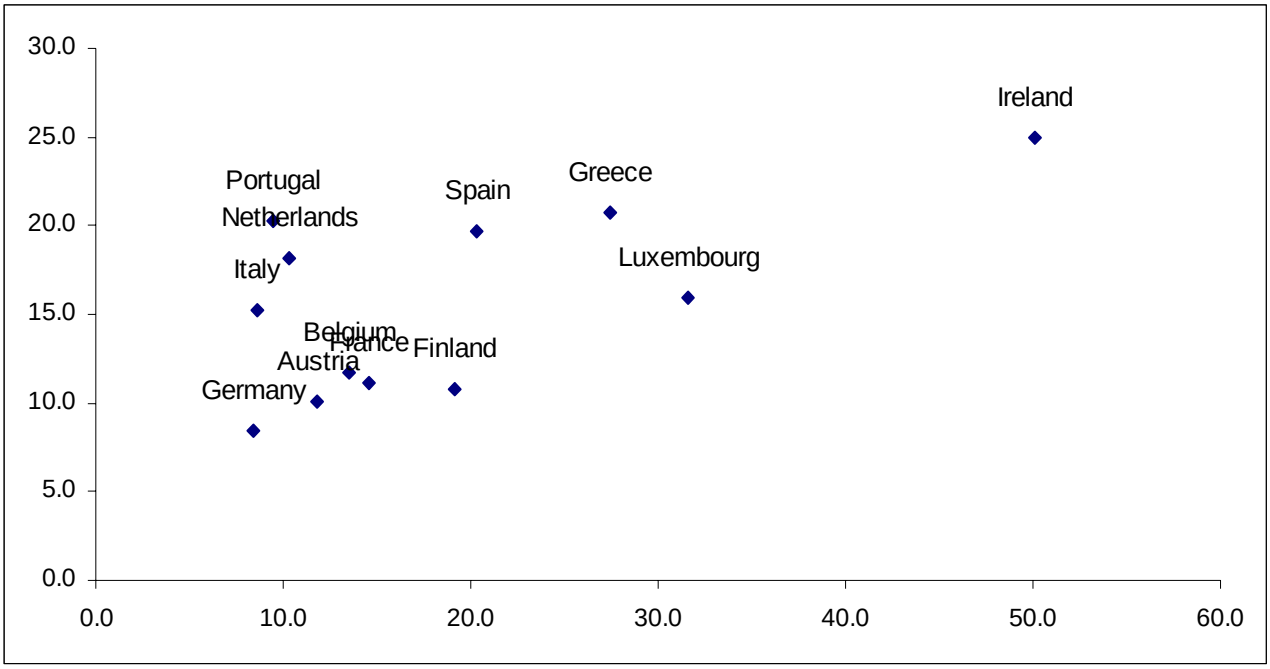

Figure 2: Cumulative Output and Inflation, 1999-2004. Source: Author's calculations based on Eurostat and OECD data.

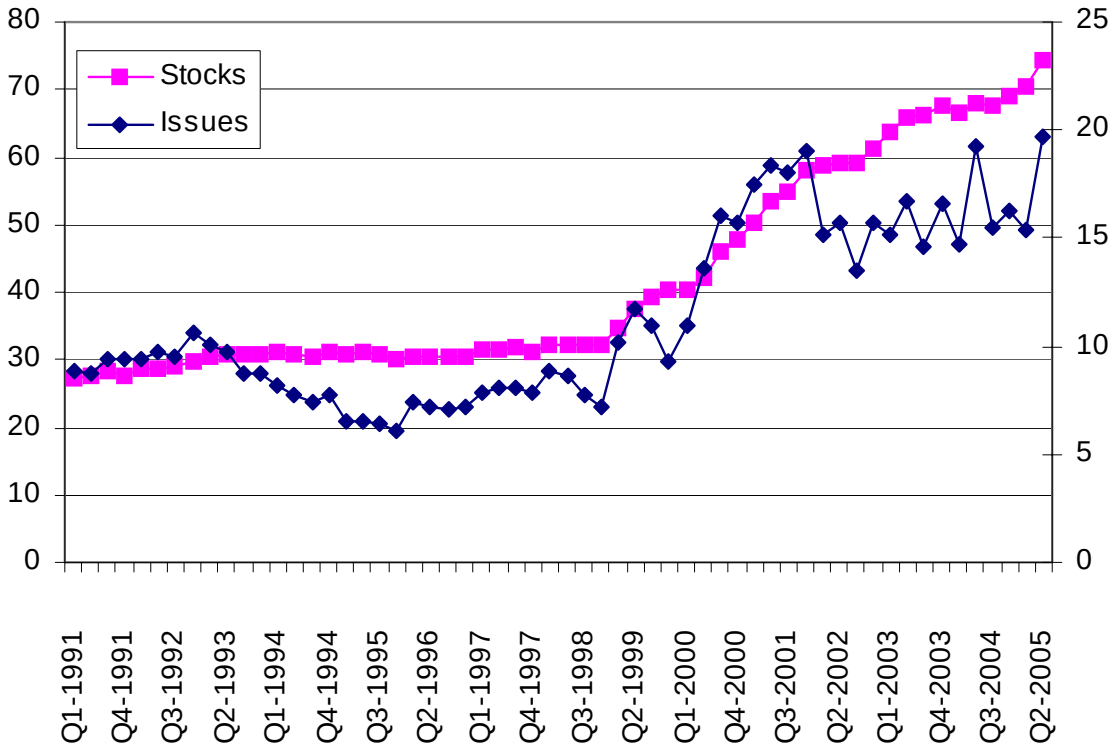

Figure 3: Corporate Securities: Outstanding Stock and New Issues, Euro Area. Expressed as a ratio to GDP. Source: Author's calculations based on ECB data.

Table 5: International Portfolio Holdings and EMU

	Portfolio Share					
	Total		Equity		Bonds	
	1997	2003	1997	2003	1997	2003
Austria	47.5	65.1	50.2	54.8	46.7	68.1
Belgium	67.0	79.8	84.1	79.0	59.8	80.9
Finland	29.9	60.9	34.9	35.9	28.7	75.6
France	43.2	64.3	39.3	55.8	45.2	68.5
Germany	52.4	59.8	55.2	57.2	48.9	61.8
Greece	n.a.	40.5	n.a.	35.1	n.a.	42.1
Ireland	31.6	35.0	13.9	20.1	42.6	52.0
Italy	31.1	64.4	55.6	70.7	19.7	59.6
Luxembourg	n.a.	49.6	n.a.	32.4	n.a.	60.9
Netherlands	44.5	47.2	22.7	21.1	68.5	66.4
Portugal	45.2	64.4	54.0	66.7	43.2	60.8
Spain	36.2	63.2	45.8	62.8	27.6	64.2
	Ratio to GDP					
	1997	2003	1997	2003	1997	2003
Austria	11.7	53.2	2.8	9.5	8.9	43.7
Belgium	44.3	108.6	22.2	36.6	22.1	72.0
Finland	2.8	40.3	0.9	8.1	1.9	32.3
France	9.4	50.1	2.8	10.7	6.6	39.3
Germany	41.8	55.8	20.1	23.6	21.7	32.2
Greece	n.a.	7.9	n.a.	0.8	n.a.	7.1
Ireland	37.7	190.4	6.3	28.5	31.4	161.9
Italy	6.9	34.6	3.6	15.9	3.3	18.7
Luxembourg	n.a.	2447.3	n.a.	575.8	n.a.	1871.4
Netherlands	28.6	72.0	7.6	13.4	21.0	58.6
Portugal	8.2	42.7	2.4	5.2	5.8	37.5
Spain	3.0	32.6	1.8	6.2	1.2	26.3

Note: Total is total cross-border portfolio holdings; Equity is cross-border portfolio equity holdings; Bonds is cross-border portfolio long-term bond holdings. Source: Author's calculations based on IMF's Coordinated Portfolio Investment Survey (CPIS) database.

Table 6: External Positions of EMU Member Countries

	Current Account		Net Foreign Assets	
	1995-1998	1999-2004	1998	2004
Austria	-2.4	-1.4	-21.5	-17.4
Belgium	4.4	4.4	38.6	36.7
France	1.8	1.2	7.4	5.3
Germany	-0.7	0.9	0.1	8.5
Italy	2.5	-0.6	-11.4	-18.8
Luxembourg	11.2	9.7	n.a.	115.1
Netherlands	5.3	2.7	-40.9	-6.6
Finland	4.8	6.1	-77.5	-12.6
Greece	-3.3	-6.8	-22.7	-73.6
Ireland	2.2	-0.8	29.4	-19.7
Portugal	-4.5	-8.2	-28.6	-69.7
Spain	0.0	-3.1	-32.6	-49.1

Note: Current account and net foreign assets expressed as ratios to GDP. Source: Lane and Milesi-Ferretti (2005b) dataset.

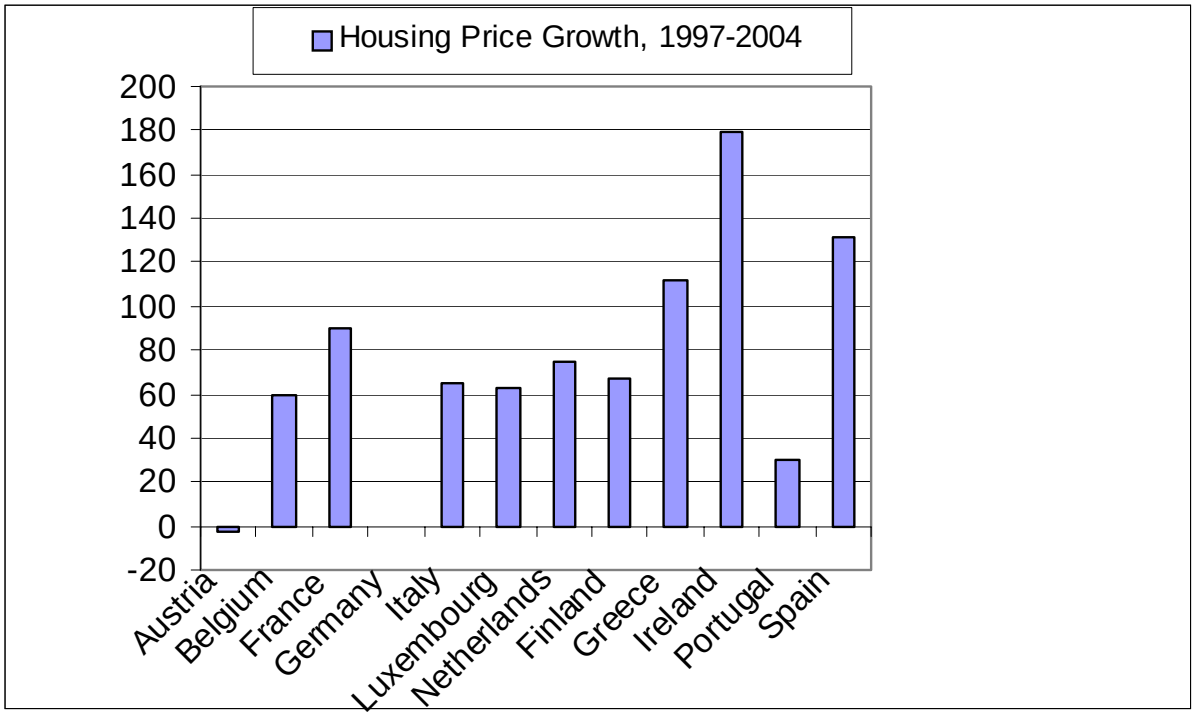

Figure 4: Appreciation in House Prices, 1997-2004. Sources: The Economist; Statistics Finland; Central Bank of Luxembourg; Austrian Central Bank; Bank of Portugal.

Table 7: Trade/GDP Ratios

	1995	1998	2001	2004
	1995	1998	2001	2004
Austria	52.6	60.6	76.5	82.1
Bel/Lux	113.6	133.5	157.6	165.4
Finland	52.2	56.7	62.6	60.6
France	36.5	40.9	49.3	45.6
Germany	38.8	46.8	57.3	60.0
Greece	31.4	32.3	32.3	33.3
Ireland	113.7	124.7	130.1	89.8
Italy	40.0	38.3	43.4	41.9
Netherlands	80.8	83.3	114.5	117.4
Portugal	52.7	54.4	56.3	53.8
Spain	35.5	40.4	43.0	43.1

Note: Trade (exports plus imports) as a ratio to GDP. Source: Author's calculations based on trade data from IMF's Direction of Trade Statistics database and GDP data from the World Bank's World Development Indicators database.

Table 8: Trade Share with EMU Partners

	1995	1998	2001	2004
Austria	63.8	61.9	59.6	59.8
Bel/Lux	63.4	60.2	59.5	61.0
Finland	33.9	34.6	32.8	33.5
France	51.7	50.6	52.1	53.7
Germany	44.6	43.7	42.6	42.2
Greece	58.5	53.7	43.4	46.8
Ireland	33.1	33.4	30.1	35.5
Italy	50.9	49.9	47.3	47.4
Netherlands	57.2	52.8	52.8	52.6
Porugal	65.7	67.4	67.2	68.2
Spain	58.5	59.0	56.9	57.5

Note: Share of total trade (exports plus imports) conducted with EMU partners. Source: Author's calculations based on IMF's Direction of Trade Statistics database.

Table 9: Composition of External Trade

	Non-EMU	Other Europe	North America	Asia	Rest of World
Austria	40.2	24.6	4.5	4.8	6.3
Bel/Lux	39.0	14.3	6.3	7.8	10.6
Finland	66.5	32.5	5.7	9.6	18.7
France	46.3	17.4	6.5	7.8	14.6
Germany	57.8	26.3	8.6	12.0	10.9
Greece	53.2	16.8	5.0	11.0	20.4
Ireland	64.5	30.9	18.0	10.3	5.3
Italy	52.6	19.3	6.4	9.0	17.9
Netherlands	47.4	17.6	6.4	12.6	10.8
Portugal	31.8	11.9	4.2	3.9	11.8
Spain	42.5	14.2	3.8	7.3	17.1

Note: Share of total trade (exports plus imports) conducted with extra-EMU partners. Source: Author's calculations based on trade data from IMF's Direction of Trade Statistics database and GDP data from the World Bank's World Development Indicators database.

Table 10: Price Level Convergence?

	1995-1998	1998-2003
Total Goods	-0.38 (3.97)***	-0.18 (1.53)
Non-durable Goods	-0.19 (2.79)**	0.04 (.32)
Durable Goods	-0.7 (5.33)***	-0.31 (1.69)
Capital Goods	-0.52 (4.21)***	-0.5 (2.5)**
Consumer Services	-0.21 (3.39)***	-0.16 (3.4)***

Note: PPP data. Source: Eurostat PPP database.

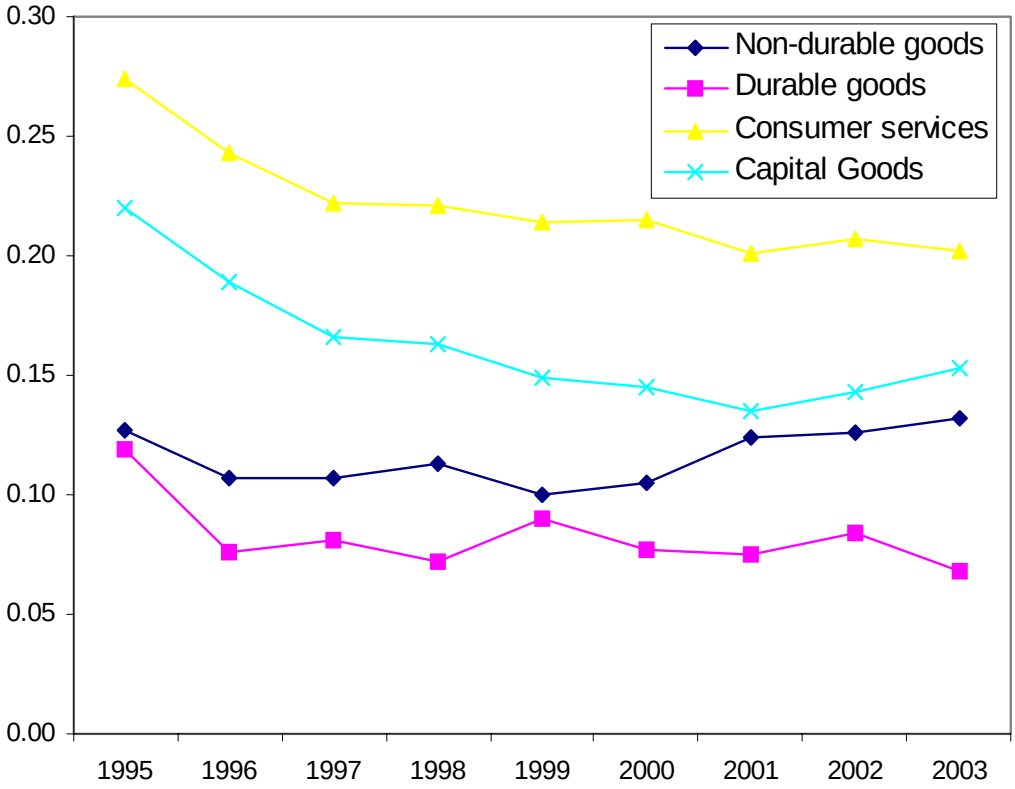

Figure 5: Price Convergence, 1995-2004. Source: Author's calculations based on Eurostat data.

Table 11: Net Immigration, 1995-2004

	1995	1998	2001	2004
Austria	0.03	0.11	0.54	0.76
Bel/Lux	0.06	0.14	0.36	0.34
Germany	0.49	0.06	0.33	0.10
Spain	0.15	0.37	1.05	1.48
Finland	0.08	0.09	0.12	0.13
France	-0.03	-0.01	0.10	0.18
Greece	0.73	0.51	0.34	0.32
Ireland	0.17	0.44	1.00	1.15
Italy	0.06	0.11	0.08	0.97
Netherlands	0.10	0.28	0.35	-0.06
Portugal	0.22	0.32	0.63	0.46

Note: Net immigration as a ratio to total population. Source: Eurostat and World Development Indicators.

Table 12: Fiscal Balances

	Budget Surplus			Structural Balance			Debt-GDP Ratio		
	1992	1998	2004	1992	1998	2004	1992	1998	2004
Austria	-1.9	-2.3	-1	-2.3	-3.0	-0.8	55.8	64.2	64.3
Belgium	-8	-0.7	0	-7.8	-0.1	0.5	132.2	119.6	95.7
Finland	-5.6	1.5	2.1	1.7	2.1	1.7	40.5	48.6	45.1
France	-4.2	-2.7	-3.6	-4.5	-2.1	-3.1	39.6	59.5	65.1
Germany	-2.5	-2.2	-3.7	-3.3	-1.7	-2.6	42.9	60.9	66.4
Greece	-11.1	-2.5	-6.6	-12.0	-1.9	-6.7	87.8	105.8	109.3
Ireland	-3	2.4	1.4	-2.2	2.1	1.5	92.5	53.8	29.8
Italy	-10.7	-2.8	-3.2	-10.0	-2.8	-3.0	108.1	116.7	106.5
Netherlands	-4.2	-0.8	-2.1	-5.4	-2.5	-0.3	77.9	66.8	53.1
Portugal	-6	-2.6	-3	-5.7	-4.0	-1.5	54.4	55	59.4
Spain		-3	-0.1	-4.1	-2.5	0.1	46.8	64.6	46.9

Note: Budget surplus is the ratio of general government fiscal balance to GDP; Structural balance is the cyclically-adjusted fiscal surplus as a ratio to GDP; Debt-GDP ratio refers to the gross debt of the general government. Source: OECD Economic Outlook database.

Table 13: Popular Opinion on the Euro

	(1) Euro Beneficial?	(2) Reduced Price Differences?	(3) Feel More European?	(4) Raised Prices?
Austria	53	29	20	93
Belgium	69	37	23	87
Finland	72	40	17	87
France	66	35	19	98
Germany	41	26	12	91
Greece	51	36	16	98
Ireland	74	40	34	92
Italy	50	32	28	97
Luxembourg	77	31	19	86
Netherlands	39	28	13	96
Portugal	55	29	23	93
Spain	62	28	19	98
EURO-12	53	31	19	95

Note: Data are drawn from the European Commission's Eurobarometer survey.