

The Real Effects of European Monetary Union

Philip R. Lane

European monetary union only began in 1999, so it is far too early to make any conclusive judgments about its long-term effects on the economies of member countries. Nonetheless, much can be learned from the initial years of this remarkable monetary experiment.

This paper will first review some differences in the macroeconomic performance of the individual member countries since the creation of the euro in 1999 and ask whether a single currency has acted to amplify or moderate the sources of heterogeneity. There have been surprisingly persistent differences in national inflation rates within the euro area, 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 debate over European monetary union.

The next section asks how European monetary union has influenced the degree of economic union among the member countries. The monetary union has contributed to greater cross-border trade in finance and goods, delivering efficiency gains from market integration. Over a sustained period of time, a more integrated European economy will also become better-suited to a single currency.

We then turn to considering the role of national fiscal policies when countries have formed a monetary union. Finally, balancing these issues and concerns, we turn to the ongoing political viability of the European monetary union. This article is not intended to be a comprehensive survey of the already voluminous literature on the real effects of European monetary union. The reader in delving deeper should begin with the wide-ranging studies contained in HM Treasury (2003), the

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work of Baldwin, Bertola, and Seabright (2003), and the papers commissioned for the 2005 conference on European monetary union organized by the European Central Bank, which are available at (<http://www.ecb.int/events/conferences/html/emu.en.html>).

Does One Size Fit All?

To ensure a sufficient degree of monetary convergence among member countries, the 1992 Maastricht Treaty required that a country could join the euro area only if it had an inflation rate no higher than 1.5 percentage points above the three best-performing member states 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, these rules were reinforced with further rules that annual budget deficits could be no more than 3 percent of GDP and accumulated public debt no greater than 60 percent of GDP.

Under political pressure from these rules, inflation differentials across the twelve countries of the euro area diminished substantially. In the early 1990s, the range between high and low rates of inflation across European countries was 10 percentage points or more; by 1999, the range from the highest to lowest inflation rate had dropped to between 2–4 percent. 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, allowing the European monetary union to be launched in 1999. Greece was further behind in meeting the criteria and only joined the monetary union in 2001.

After this reduction in inflation differentials before the launching of euro, a surprising feature of the initial years of the monetary union has been that inflation differentials across the member countries have been relatively wide. For example, inflation across the euro area in 2000 ranged from 1.5 percent in Germany to 5.6 percent in Ireland. Table 1 shows that 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. Since services are typically less tradable than goods, the variation in the relative price of nontradables has been the main source of divergent inflation patterns. While inflation divergence across the regions of the United States at any given time over the last five years (or so) has been quite similar to the divergence across the countries of the euro area, inflation differentials across Europe have seemed more persistent, leading to significant cumulative movements in relative price levels.

In a monetary union, changes in bilateral real exchange rates can now take place only through inflation differentials, since nominal exchange rates are fixed by definition. Countries across the euro area differ in many ways: for example, in their levels of per capita output, demography, industrial specialization, and struc-

Table 1
Average Annual Inflation Rates, 1999–2004

	<i>All</i>	<i>Goods</i>	<i>Services</i>
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
Standard deviation	0.8	0.6	1.2
Range	2.4	1.7	4.1

Source: Author's calculations based on Eurostat data.

Note: Harmonised Index of Consumer Prices (HICP) inflation rates.

tural policies related to factor and capital markets. These differences suggest that countries across the euro area will vary in their trend rates of productivity growth and in the extent of their exposure to global shocks in particular industries. For instance, these countries may vary in their exposure to import penetration by Asian producers in textiles and electronics or in their exposure to shifts in oil and other commodity prices. Heterogeneity in economic starting points, in trends, and in the extent to which countries are affected by shocks means that a good proportion of the observed inflation differentials can be attributed to equilibrating forces.

However, the euro has not just caused macroeconomic differences to manifest themselves in new ways (for example, through different domestic inflation rates rather than through nominal exchange adjustments across the euro area). The euro has also been a source of macroeconomic divergence, for several reasons.

First, entry into the euro was a much bigger structural shock for “peripheral” member countries such as Greece, Ireland, Portugal, and Spain than for “core” member countries like Germany and France. In particular, while all euro member countries have enjoyed lower real interest rates under monetary union, the relative decline was much greater for the countries on the periphery. Of course, the improved long-term credit environment represents one of the primary benefits from euro membership for these countries. However, it also generated rapid growth in lending and local housing booms in the favored countries, with the sharp increase in demand contributing to inflationary pressures.

Second, membership in a monetary union can amplify the asymmetric impact of certain 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.¹ Over time, there is an offsetting corrective mechanism as the higher-inflation countries experience higher labor and other costs, leading to a loss of competitiveness vis-a-vis the lower-inflation group in the currency union. Indeed, Germany's disappointing growth performance during the early years of the euro can be partly attributed to an initially overvalued real exchange rate. The Netherlands has lived through a boom–bust cycle since the euro started, with a credit boom and high inflation in 1999–2001 followed by a contraction in economic activity that has reversed some of the country's real appreciation against partner countries.

Third, joining the euro area implied a common external exchange rate with the rest of the world outside the monetary union, which has been a source of asymmetric shocks for the member countries, in view of their differential trade and financial linkages with the rest of the world. Thus, 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, but it represented a significant expansionary shock for countries with a higher level of involvement in global trade. Member countries more open to external trade have a greater sensitivity to policy actions of the European Central Bank, since an interest rate cut that depreciates the foreign exchange value of the euro has a more powerful impact on these countries than on those that are insulated from the external value of the euro (Angeloni and Ehrmann, 2004). 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).

Table 2 presents some useful perspective on the degree of inflation divergence across the European monetary union and the extent to which countries are affected in their trade outside the euro area. The columns of the table show changes in the trade-weighted real exchange rate for each country vis-a-vis its trading partners from 1999–2004. The first column shows the overall change; the second column shows the change for each country for trade within the euro area; and the third column shows the change for each country for trade outside the euro area. (The entries do not sum across the rows because the countries are weighted by their actual trading partners, which vary for each country.)

The table confirms a number of themes from this discussion and suggests some other themes. First, 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

¹ Honohan and Lane (2003) provide a more detailed account of this mechanism. While it is true that what matters for the real interest rate is the expected inflation rate, national inflation rates tend to persist over time, as documented in Tables 1, creating a link between actual inflation rates and expected inflation rates. See Honohan and Leddin (2005) and Lopez de Salido, Restoy, and Valles (2005) for models of national business cycles under European monetary union.

Table 2

The Evolution of National Competitiveness, 1999–2004*(as measured by changes in relative price levels over the period)*

	<i>Total</i>	<i>Intra-euro</i>	<i>Extra-euro</i>
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

Source: Author's calculations, based on European Central Bank data.

exchange rates for a number of member countries. Second, the euro has not eliminated the problems posed by nominal exchange rate volatility. Third, the member countries of the euro area clearly have differing sensitivities to shifts in the euro exchange rate. Finally, the figures suggest that some portion of the real-exchange-rate changes (whether driven by external factors or domestic cost shocks) may reflect unsustainable levels of wages in some member countries, and this will pose an adjustment problem, as the traditional solution to over-valuation (a nominal depreciation of the national currency) is no longer available.

Of course, the destabilizing features of European monetary union for the member countries do not mean that currency union has led to a net increase in macroeconomic instability. The European Central Bank has been successful in anchoring medium-term inflation expectations across the euro area at an annual rate around 2 percent. At least for some countries, the attainment of such stability outside the euro framework may have been a more costly process. In addition, even if asymmetric shocks have posed an adjustment problem, overall monetary stability has probably improved to the extent that the conduct of monetary policy under the ECB in response to the significant common shocks experienced by the member countries has been superior to what would have prevailed under noncoordinated monetary policies.

Moreover, if Europe had not formed a monetary union, the traditional tensions between exchange rate stability and the attainment of domestic price stability would almost certainly have generated destabilizing speculation in foreign exchange markets in at least some of the member countries. With the size and speed of modern foreign exchange markets and the tendency that foreign exchange markets have to overshoot, exchange rate volatility would surely have been much greater in the absence of the monetary union. 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 short-term macroeconomic performance of the member countries is only one criterion by which European monetary union should be evaluated. After all, the concern raised here about how a common currency can have differential impacts across a large geographic area and how it can exaggerate pre-existing differences across such an area will apply to any single currency that operates over a large area; it applies to the U.S. dollar. The fact that real exchange rates vary across the regions of the United States does not overshadow the great benefits the U.S. economy receives from having its vast internal economy operating under a single currency. Similarly, the great hope for the euro was that it would promote economic integration among the member countries. If such integration generates efficiency gains that permanently raise output levels (or perhaps even raise the long-term growth rate), this change should swamp the costs arising from any plausible increase in cyclical volatility. Moreover, if a deeper level of economic integration is achieved over time, a common monetary policy for all the member countries will become more appropriate. Indeed, while monetary integration may engender some forces that increase asymmetries across countries, the available empirical evidence suggests that the net impact is to increase the cyclical comovements across countries (Frankel and Rose, 1998; De Grauwe and Mongelli, 2005).

Is European Monetary Union Fostering Economic Union?

Advocates of the single currency project hoped and expected that it would promote the integration of product and factor markets across Europe. In turn, if a deeper level of economic integration among the member countries is achieved over time, this process should enable the monetary union to operate more smoothly. This section considers the impact of European monetary union on financial integration, product trade, and labor mobility across the member countries and then explores the impact of the euro on the structural reform of labor and product markets.

Financial Integration under European Monetary Union

The most straightforward gains from joining the euro area may arise from the creation of deeper and more liquid financial markets. The single currency has reorganized and unified financial markets across the euro areas (Baele, Ferrando, Hördahl, Krylova, and Monnet, 2004).

The most immediate step toward financial unification was the swift integration of the euro-area bond market after the introduction of the single currency: yield differentials across member countries fell sharply and the volume of private bond issues grew rapidly. Moreover, the level of competition among financial intermediaries for underwriting and trading activities increased markedly, leading to a

reduction in transactions costs, improved market access for higher-risk issuers, and greater financial innovation (Pagano and von Thadden, 2004).

As one example, the outstanding stock of securities issued by corporations in the euro area hovered at around 30 percent of euro-area GDP from 1991 to 1998, but following the start of the euro in 1999 it rose to 74.5 percent of GDP by June 2005 (based on data from the European Central Bank). The issuance of such securities has risen sharply: quarterly gross issues have averaged 15.2 percent of euro-area GDP since the start of European monetary union in 1999, nearly double the 8.2 percent average during 1991–98.

Moreover, spreads across government bond yields have narrowed to very low levels: for instance, the end-June 2005 spread on ten-year sovereign bonds was just 30 basis points (that is, 0.3 percentage points) across the euro area. Similarly, Baele, Ferrando, Hördahl, Krylova, and Monnet (2004) find a high degree of integration in the pricing of corporate bonds across the euro area; that is, the pricing of corporate bonds depends almost completely on the sectoral and credit-risk characteristics of issuers, with country factors playing only a trivially small role. These authors also find that area-wide bond funds are 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 countries. Many equity investors now seem to treat the euro area as a single entity. Baele, Ferrando, Hördahl, Krylova, and Monnet (2004) report that shares of nondomestic 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 3 shows for each member country the proportion of its portfolio of cross-border security holdings allocated to its euro-zone partners. In fact, Lane and Milesi-Ferretti (2005) and Lane (2006) find that there is a “euro 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 are that it raises bilateral holdings between member countries by 62 percent for equities and 97 percent for bonds.) Table 5, later in this paper, 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 euro member countries has grown strongly since the late 1990s (Lane and Milesi-Ferretti, 2006).

The euro has also enhanced foreign direct investment between member countries. Employing data over 1982–2002, De Sousa and Lochard (2005) estimate that the euro has raised flows of foreign direct investment within the euro area by 62 percent and of foreign direct investment in terms of stock positions by 17 percent. Moreover, Barr, Breedon, and Miles (2003) find suggestive evidence that the euro has caused a greater share of the flows of foreign direct investment into Europe to go to the countries in the euro area, as opposed to the European Union countries that have remained outside the euro. Their interpretation is that the

Table 3

Proportion of Each Country's International Portfolio Holdings Allocated to Euro-zone Partners

	<i>Portfolio share</i>					
	<i>Total</i>		<i>Equity</i>		<i>Bonds</i>	
	<i>1997</i>	<i>2003</i>	<i>1997</i>	<i>2003</i>	<i>1997</i>	<i>2003</i>
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

	<i>Ratio to GDP</i>					
	<i>Total</i>		<i>Equity</i>		<i>Bonds</i>	
	<i>1997</i>	<i>2003</i>	<i>1997</i>	<i>2003</i>	<i>1997</i>	<i>2003</i>
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

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

intra-European exchange rate stability offered by the euro area is proving attractive for multinational firms planning to produce in one European country and then to export across the rest of Europe.

Yet another sign of financial integration is that several relatively poorer countries of the euro area such as Greece, Portugal, and Spain have experienced substantially larger current account deficits since the enactment of monetary union. For example, these countries have run current account deficits that have increased by an average 3.5 percentage points of GDP between 1995–98 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 European monetary union, 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 effect, claims on other euro-area members are increasingly viewed as good substitutes for claims on domestic parties (Spiegel, 2004).

Finally, in terms of the banking sector, European monetary union has facilitated a rapid increase in interbank lending between member countries and, supported by the rising securitization of asset-backed loans, a narrowing in interest rate differentials on mortgage products. However, retail banking remains quite segmented across the euro area, with significant dispersion in retail interest rates and few cross-border transactions (Baele, Ferrando, Hördahl, Krylova, and Monnet, 2004).²

In summary, significant financial integration has clearly occurred across the euro area, bringing with it substantial gains in terms of lower risk premiums and improved allocation of financial capital. But from a macroeconomic point of view, the financial integration across the euro area has so far had only a very mild impact on cross-border consumption smoothing and risk diversification, for several reasons.

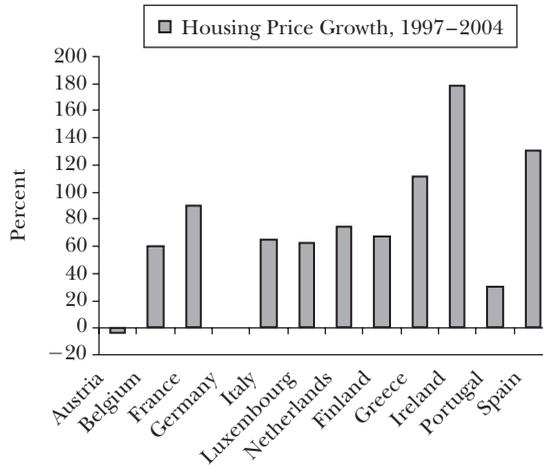
First, as is evident from Table 3, financial integration across the euro area has not happened evenly across countries. In particular, member countries vary greatly in their degree of integration with global financial markets and have quite different geographical patterns in their cross-border portfolios. The level of investment in particular destinations is influenced by factors such as historical colonial ties, language, and trade linkages, and these characteristics significantly vary across member countries (Lane and Milesi-Ferretti, 2004, 2005; Lane, 2006). Indeed, the tight financial linkages between the United Kingdom and the United States have been cited as one factor behind the United Kingdom's reluctance to join the European monetary union, since the United States is a much more important source of capital income for the United Kingdom than for the euro area (HM Treasury, 2003).

Second, hedging against domestic macroeconomic risks is difficult. Domestic financial markets offer only partial protection against shocks to domestic labor income and other nondiversifiable components of wealth, and for the same reasons, international financial integration only has a limited impact.

Third, in one way, the single currency has actually reduced the scope for risk-sharing across countries: the disappearance of individual national currencies means 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

² The European banking sector has seen much cross-border merger and acquisition activity in recent years, but these transactions have largely not been between countries within the European monetary union: for example, major deals have taken place between Spain and the United Kingdom, and across Scandinavia; and Austrian and other banks have entered the new European Union member states.

Figure 1

Appreciation in House Prices, 1997–2004

Sources: *The Economist*; Statistics Finland; Central Bank of Luxembourg; Austrian Central Bank; and the Bank of Portugal.

(Neumeier, 1998), and this eliminates one form in which risk-sharing might occur across borders.

Finally, most wealth remains domestically held. In particular, housing assets are an important component of aggregate wealth, and differential trends in housing prices across member countries in recent years may have dominated any impact of capital market integration on consumption patterns. As is shown in Figure 1, Greece, Ireland, and Spain each experienced cumulative price growth over 100 percent over 1997–2004 while, at the other extreme, housing values were stagnant in Austria and Germany. However these divergent growth rates in part have represented a catch-up effect in house price levels, such that this source of asymmetry may be attenuated in the future.

Up to this point, Europe's new financial integration has disproportionately benefited the peripheral and lower-income member countries. Both government and private sectors in these countries have experienced much lower interest rates, and their economies have benefited from new inflows of foreign investment capital. However, the process of cross-border financial integration remains quite incomplete, and, subject to the qualifications discussed earlier, the extent of cross-border risk sharing may be stronger in the future than it has been during these early years of monetary union.

Evidence on Trade Integration

The effect of a currency union on encouraging trade was trumpeted as one of the main benefits that would come from the euro. 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 pressure on cross-border price differentials.

At about the time the euro was enacted, Rose (2000) famously found, using a broad sample of industrial and developing countries, that a currency union boosted bilateral trade by more than 300 percent; subsequent refinements in the estimation process still leave the estimated effect above 50 percent (Rose and Stanley, 2005). However, the relevance of those estimates to the euro case has been much debated, since the currency unions in the Rose sample mostly involved very small, poor, and remote countries.

Micco, Stein, and Ordonez (2003) provided the first comprehensive study of the effects of European monetary union on trade. Studying mainly 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, the euro increased trade among member countries by 8–16 percent. This increase 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 (2000) had also established that the long-run impact of currency unions substantially exceeded the short-term gains, so the Micco, Stein, and Ordonez estimate could be viewed as a plausible lower bound for the long-term cumulative impact of the euro on intra-area trade volumes. Baldwin (2006) 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. Berger and Nitsch (2005) make the point that the increase in trade volumes among euro member countries had been stronger than for other European Union (EU) countries for many years, reflecting a greater commitment to integration among the EU countries signing up for the single currency. This certainly does not rule out a scenario in which the introduction of the euro positively impacts trade volumes, with the euro zone countries forming the monetary union precisely as a mechanism to ensure further trade integration.

An intriguing feature of the Micco, Stein, and Ordonez (2003) study is that these authors found no evidence of trade diversion: that is, trade between euro member countries and other industrial nations was also boosted by the introduction of the euro. This result suggests that the currency union reduced trade costs between the euro area and the rest of the world. It 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 (Melitz, 2003; Baldwin, 2006). This finding is reinforced by the evidence concerning the sectoral composition of the increase in trade: Baldwin, Skudelny, and Taglioni (2005) find that the euro had the largest impact on trade for those industries characterized by increasing returns and imperfect competition, with trade in homogeneous products relatively less affected.

However, while the introduction of the euro may have served to boost trade,

both between European monetary union members and with the rest of the world, other factors have also increased international trade in recent years, including falling communications costs, an expansion in foreign direct investment aimed at building a facility for exports, and the increase in trade with China and elsewhere. Table 4 shows that international trade has increased in importance relative to GDP for most euro member countries since the mid-1990s. However, Table 5 shows that the relative share of trade within the euro area has not markedly changed over this period, and has even declined for some countries. (These tables refer to merchandise trade. However, the more limited OECD data on the geography of services trade paint a similar picture: the share of trade in services within the member countries of the euro area did not markedly increase during 1999–2002.)

The fact that European monetary union has not increased the relative importance of intra-union trade that much, somewhat weakens the argument that the trade channel endogenously increases the cohesiveness of the euro area as an optimum currency area. Indeed, to the extent that the importance of external trade linkages outside the euro area has increased in recent years, the scope for asymmetric external shocks across the euro area has also increased.

Another hope was that the single European currency would promote convergence in prices across the euro area by improving trade linkages and increasing the transparency of price differentials that could be arbitrated away. Again, the evidence that such a convergence has occurred is modest.

For the period 1990–2003, Engel and Rogers (2004) study comparative price data from the proprietary Economist Intelligence Unit database for 139 products across 18 cities in the euro area and seven cities from outside the euro area. These authors find that price dispersion has not decreased after the introduction of the euro. Rather, it seems that price differentials fell substantially in the early 1990s in the aftermath of the 1992 European Union “single market” initiative, but the introduction of the euro brought no further narrowing.

Allington, Kattuman, and Waldmann (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 euro member countries post-1999, these authors show that dispersion in many product categories significantly declined in comparison to the degree of dispersion among the member countries that had not joined the monetary union. Moreover, in line with intuition, the decline in relative dispersion was strongest for the most-tradable product categories (like electrical goods). Another finding from this study is that the decline in dispersion among the euro member countries has been larger for the peripheral countries than for those countries that historically maintained stable exchange rates against the German *deutschmark*. This finding suggests that the elimination of exchange rate risk has indeed been an active mechanism by which the euro promotes cross-border arbitrage.

Overall, the degree of price convergence within the euro area has been modest, as shown in Figure 2. For the 1995–1998 pre-euro period, there was evidence of convergence across sectors. But, consistent with the Engel and Rogers evidence, there is much less evidence of convergence for the 1998–2004 period

Table 4
Trade/GDP Ratios

	1995	1998	2001	2004
Austria	52.6	60.6	76.5	82.1
Belgium/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

Source: Author's calculations based on trade data from the International Monetary Fund's Direction of Trade Statistics database and GDP data from the World Bank's World Development Indicators database.

Note: Trade (exports plus imports) as a ratio to GDP.

Table 5
Trade Share with Euro-area Partners

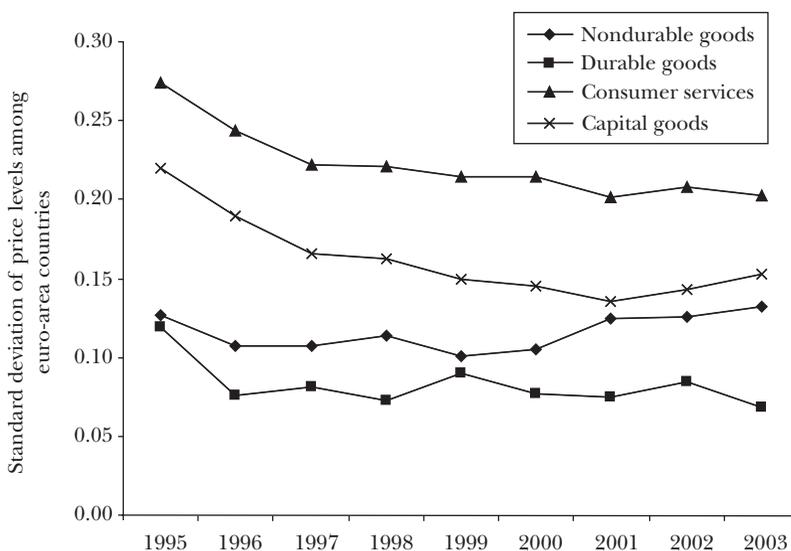
	1995	1998	2001	2004
Austria	63.8	61.9	59.6	59.8
Belgium/Lux	63.4	60.2	59.5	61.0
Finland	33.9	34.6	32.8	33.5
France	51.7	50.6	52.1	53.7
Germany	44.6	43.7	42.6	42.2
Greece	58.5	53.7	43.4	46.8
Ireland	33.1	33.4	30.1	35.5
Italy	50.9	49.9	47.3	47.4
Netherlands	57.2	52.8	52.8	52.6
Portugal	65.7	67.4	67.2	68.2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

Source: Author's calculations based on the International Monetary Fund's Direction of Trade Statistics database.

Note: Share of total trade (exports plus imports) conducted with euro-area partners.

after the euro was introduced, although it is still statistically significant for capital goods and consumer services. Even consumer services showed price convergence, suggesting that this sector has become much more tradable in recent years with the widespread adoption of new communications technologies. Moreover, price convergence in the services sector may have much to do with greater similarity in technologies and domestic market reforms. Taking these factors together, it is not at all clear that the euro has produced much price convergence. This apparent lack of price convergence under the euro may largely reflect the divergent inflation rates discussed earlier. Baldwin (2006) provides another way to reconcile the

Figure 2

Price Convergence, 1995–2004

Source: Author's calculations based on Eurostat data.

increase in the volume of trade with the lack of price convergence: 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.

Cross-Border Labor Mobility

The loss of an independent exchange rate policy is less costly, the more flexible are labor and product markets. Flexible markets allow an economy to adjust to economic shocks. If markets are inflexible, and the exchange rate cannot adjust, then unemployment and excess capacity can result. For these reasons, it was hoped that European monetary union would encourage flexible markets and accelerate the pace of structural reform in the member countries by raising the costs of excessive rigidity.

Both intranational and cross-border labor mobility are much lower in Europe than in the United States: language differences and other cultural barriers, together with noncoordinated pension and entitlement systems, are major barriers to an integrated labor market. While it is unlikely that migration decisions are much affected by the creation of a currency union, the resilience of the currency union would be improved by an increase in labor mobility. Europe has seen some modest increases in labor mobility in the last few years. The share of immigrants has increased in many European countries, although the absolute levels remain very low. In addition, the May 2004 entry of the group of countries from central and eastern Europe into the European Union—and probably eventually into the euro area as well—has improved the prospects for labor mobility, in view of the sizeable wage differentials involved (Boeri and Brücker, 2005).

It is unclear whether monetary union has promoted greater wage flexibility

(Calmfors, 2001). There is a strong tradition of national-level wage bargaining in many European countries, so the debate has focused on the impact of the euro on such collective pay agreements. Since national wage growth has little impact on interest rates that are now determined by the European Central Bank (especially for the smaller member countries), a traditional threat that wage push shocks would be offset by higher interest rates has now been removed, which might tend to encourage wage increases. However, national wage-setters must also take into account an increased risk of a loss of competitiveness from excessive labor costs under the euro, now that high labor costs can no longer be adjusted across the board through currency depreciation. While greater wage flexibility has been observed in some European industries in recent years, this change seems to be largely a response to increased capital mobility and the outsourcing threat rather than having much to do with the euro.

The challenge of increased global competition has also led to increased demands for protectionism in both labor and product markets. For instance, the proposed European Union Services Directive that aims to promote competition by creating a single European-wide market in services has met with strong resistance from key member states. 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. Angeloni, Aucremanne, and Ciccarelli (2005) find that the euro 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, the euro may also be partly responsible (Saint-Paul, 2004; Duval and Elmeskov, 2005). With an independent currency, a country that undertakes structural reform will enjoy lower interest rates, since the monetary authority will accommodate an increase in the potential output level of the economy. However, with a single European currency, the European Central Bank targets area-wide conditions and so only partially responds to reforms in individual member countries. As a result, the short-term incentive for any individual country to undertake reforms has diminished. The European Union's Lisbon Strategy (agreed in 2000) has sought to accelerate structural reform through greater policy coordination but has achieved little. Alesina and Perotti (2004) discuss the limits to policy coordination in the European Union.

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 the European monetary union. One major focus has been on the need for sound government fiscal positions as an underpinning for the European Central Bank to achieve its primary objective of price stability. Another focus has been that with a common monetary policy, national fiscal policies become the major tool by which governments can dampen fluctuations in output.

The record on sound government fiscal positions looked encouraging in the 1990s. In the lead-up to the euro during the 1990s, national budget deficits generally improved during the 1990s. As noted earlier, the Maastricht Treaty of 1992 imposed a

rule that countries seeking to join the monetary union were required to follow fiscal guidelines requiring that annual deficits be less than 3 percent of GDP and the ratio of government debt to GDP would not exceed 60 percent. However, the 1990s saw a general improvement in fiscal positions in most advanced economies. As a result, the importance of the Maastricht Treaty in driving fiscal reform is open to debate.

To ensure that this momentum toward fiscal discipline would continue once the euro came into being, the Stability and Growth Pact was introduced in 1998 to continue to place limits on annual budget deficits and accumulated debt. The Stability and Growth Pact 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—but downturns of this severity are exceptionally rare. Under the Pact, a member country is obliged to undertake corrective policies if it is deemed to be running an “excessive deficit,” with the threat of financial sanctions for noncompliance. While there has been much coverage of the failure of the Stability and Growth Pact to rein in growing deficits in France and Germany, the evidence does suggest that it has been helpful in providing an external anchor for fiscal discipline in the smaller member countries (Annett, 2006). However, the Stability and Growth Pact cannot act as a substitute for domestic institutional arrangements that can deliver medium-term fiscal sustainability (Wyplosz, 2006).

Destabilizing national fiscal policies have historically been a major source of cyclical divergence across countries (Darvas, Rose, and Szapáry, 2005). The evidence suggests that fiscal policy in the member states became more countercyclical during the 1990s (Gali and Perotti, 2003). The challenge of countercyclical fiscal policy, of course, is to accumulate surpluses or least minimize additional debt in good economic years, and this commitment to medium-term fiscal discipline then makes it easier to increase deficits temporarily 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 Stability and Growth Pact, since Europe had failed to accumulate surpluses during the good economic times of 1999–2000; except for Finland, all member countries ran procyclical expansionary fiscal policies during this period of relatively strong economic growth (Annett, 2006). An additional factor during this period was that the decline in interest rates upon entry to the euro area provided a fiscal windfall for several member countries by sharply reducing debt servicing costs. These lower costs primarily translated into growth in noninterest expenditures. 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 of GDP limit on annual deficits.

The original Stability and Growth Pact was suspended in November 2003 when the council of the European Union’s finance and economics ministers declined to accept the recommendation of the European Commission that France and Germany be subjected to enhanced surveillance under the “excessive deficit procedure.” A revised version of the Stability and Growth Pact agreed upon in 2005 allows for considerably more flexibility in determining the conditions under which a budget deficit is excessive. Uncertainty about the willingness of countries to accu-

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 within the countries of the monetary union.

There are currently myriad proposals to improve the operation of fiscal policy over the cycle, which typically involve designing a domestic policy-making process that minimizes the political bias towards fiscal procyclicality (Calmfors, 2005; Wyplosz, 2006). 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 recession by, in effect, engineering a real depreciation through a reduction in domestic labor costs. By delegating this type of fiscal intervention to a panel of independent experts, the risk that such discretion could be abused for electoral purposes would be minimized.

Two other dimensions of fiscal policy are relevant to European Monetary Union. 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, so that that fiscal insurance across national borders 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 U.S.-style federal fiscal system is on the policy horizon.

The Political Viability of the Euro

The euro represents a remarkable monetary experiment. On the debit side, the euro so far probably has acted to amplify cyclical divergences across the member countries: however, this effect is partly attributable to the once-off adjustment to the new monetary environment and these forces may prove weaker in the future. That said, as new countries adopt the euro in the coming years, macroeconomic divergence within the euro area is likely to remain a major challenge for national policymakers. On the credit side, currency union has spurred trade and financial integration among the member countries, generating direct welfare gains which may well prove to be the dominant factor in assessing the long-term net impact of the euro.

But the ultimate viability of the euro will be determined by politics. After all, a primary motivation for European monetary union 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, the beggar-thy-neighbor impact of periodic adjustment through nominal devaluations had contributed to political disharmony (Eichengreen, 1996).

However, the rejection in 2005 of the European Union 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 the euro, the lack of impetus towards

Table 6

Popular Opinion on the Euro*(percentages answering "yes")*

	<i>Euro beneficial?</i>	<i>Has it reduced price differences?</i>	<i>Made you feel more European?</i>	<i>Raised prices?</i>
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.

greater political integration may yet prove to be a serious challenge to the political durability of the euro.

For example, to the extent that the euro engenders increased macroeconomic instability at the national level, premature or inappropriate monetary integration may reduce political solidarity among the member countries (Feldstein, 1997). This viewpoint is vindicated somewhat by the demands of some Italian politicians in 2005 that Italy exit the euro and reintroduce an independent currency as a way to respond to the country's loss of competitiveness.

As another example, 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 as yet untested. Perhaps emergency fiscal transfers would be made to a member country in crisis, which, in turn, might lead to more effective restrictions on national fiscal policies as a way of formalizing the conditions under which emergency transfers might be paid in the future. An emergency fiscal transfer could also take the form of a subsidized loan from the European Central Bank. If the national financial crisis threatened the stability of area-wide financial markets, the ECB might be compelled to set aside its inflation target for a time. In the event of a banking crisis, pressure would also grow for the transfer of financial supervision responsibilities to a European-wide regulatory authority.

The reservoir of public support for the euro is real, but apparently shallow. Survey evidence suggests that the euro enjoys a reasonable, if slender, level of popular support, as is shown in Table 6. A narrow majority in the euro area believe the introduction of the euro has been beneficial in a general sense. But remarkably, healthy majorities also believe that the euro has been responsible for an increase in prices and has failed to reduce price dispersion across the member countries. Only

19 percent say that the euro has made them “feel more European,” which is the reaction desired by the key political fathers of the monetary union.

For these reasons, despite the highly successful launch of the European monetary union, it remains an open question how Europe’s institutional structures will evolve along with the monetary union if macroeconomic instability and financial distress occur in the future. Moreover, even if the monetary union should come under stress, individual countries are unlikely to leave the currency, because any country that left the euro and started its own currency anew would face a substantial risk premium. Thus, adoption of the euro should be interpreted as a decision which is reversible only at a very high cost.

■ *I am thankful for the useful comments and helpful suggestions offered by the editors; Tony Annett, Eric Chaney, Patrick Honohan, Michael Klein, Jay Shambaugh, and Frank Smets; participants at the AEA 2006 conference, a CEPR-ERSC workshop, and seminars at Maynooth and Trinity College Dublin; and a wide group of colleagues. Part of this paper was written while I was a Government of Ireland research fellow. I thank the Irish Research Council for the Humanities and Social Sciences and the Higher Education Authority Programme for Research in Third-Level Institutions for financial support.*

References

- Alesina, Alberto and Roberto Perotti.** 2004. “The European Union: A Politically Incorrect View.” *Journal of Economic Perspectives*. 18:4, pp. 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*. 1:3, pp. 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, Luc Aucremanne, and Matteo Ciccarelli.** 2005. “Price Setting and Inflation Persistence.” Paper presented to the 47th Economic Policy Panel, London.
- Angeloni, Ignazio and Michael Ehrmann.** 2004. “Euro Area Inflation Differentials.” European Central Bank [ECB] Working Paper No. 388.
- Angeloni, Ignazio, Michael Flad, and Francesco Paolo Mongelli.** 2005. “Economic and Monetary Integration of New Member States—Helping to Chart the Route.” European Central Bank [ECB] Occasional Paper No. 35.
- Annett, Anthony.** 2006. “Enforcement and the Stability and Growth Pact: How Fiscal Policy Did and Didn’t Change under Europe’s Fiscal Framework.” IMF Working Paper No. 06/116.
- 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.** 2006. *In or Out: Does It Matter? An Evidence-Based Analysis of the Euro’s Trade Effects.* Centre for Economic Policy Research. London.
- Baldwin, Richard E., Guiseppe Bertola, and Paul Seabright, eds.** 2003. *EMU: Assessing the Impact of the Euro.* Special issue of the journal *Economic Policy*. Oxford, U.K: Blackwell Publishing.
- 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,” in *EMU: Assessing the Impact of the Euro.* Baldwin, Richard E., Guiseppe Bertola, and Paul Seabright, eds. Oxford, U.K: Blackwell Publishing, pp. 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*. 2002:2, pp. 147–209.

Boeri, Tito and Herbert Brücker. 2005. "Why Are Europeans So Tough on Migrants?" *Economic Policy*. October, 20:44, pp. 629–704.

Calmfors, Lars. 2001. "Wages and Wage-Bargaining Institutions in the EMU—A Survey of the Issues." *Empirica*. 28:4, pp. 325–351.

Calmfors, 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 Grauwe, Paul and Francesco P. Mongelli. 2005. "Endogeneities of Optimum Currency Areas: What Brings Countries Sharing a Single Currency Closer Together?" ECB [European Central Bank] Working Paper No. 468, April.

De Sousa, Jose and Julie Lochard. 2005. "Does the Single Currency Affect FDI?" Unpublished paper, 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. 1996. "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*. July, 19:39, pp. 347–84.

Feldstein, Martin. 1997. "The Political Economy of the European Economic and Monetary Union: Political Sources of an Economic Liability." *Journal of Economic Perspectives*. 11:4, pp. 23–42.

Frankel, Jeffrey and Andrew K. Rose. 1998. "The Endogeneity of the Optimum Currency Area Criteria." *The Economic Journal*. 108:449, pp. 1009–1025.

Gali, Jordi and Roberto Perotti. 2003. "Fiscal Policy and Monetary Integration in Europe." *Economic Policy*. October, 18:37, pp. 533–72.

Honohan, Patrick and Philip R. Lane. 2003. "Divergent Inflation Rates Under EMU." *Economic Policy*. October, 18:37, pp. 357–94.

Honohan, Patrick and Philip R. Lane. 2004. "Exchange Rates and Inflation Under EMU: An Update." *Economic Policy* web essay, July.

Honohan, Patrick and Anthony Leddin. 2005. "Ireland in EMU: More Shocks, Less Insulation?" IIS [Institute for International Integration Studies] Discussion Paper No. 94.

Lane, Philip R. 2006. "Global Bond Holdings and the Euro Area." *International Journal of Central Banking*. 2:2, pp.1–23.

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

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

Lane, Philip R. and Gian Maria Milesi-Ferretti. 2006. "The External Wealth of Nations Mark II: New Estimates of Foreign Assets and Liabilities for Industrial and Developing Countries." IIS Discussion Paper No. 126.

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

Melitz, Marc. 2003. "The Impact of Trade on Intra-Industry Reallocations and Aggregate Industry Productivity." *Econometrica*. 71:6, pp. 1695–1725.

Micco, Alejandro, Ernesto Stein, and Guillermo Ordóñez. 2003. "The Currency Union Effect on Trade: Early Evidence from EMU." *Economic Policy*. October, 18:37, pp. 315–36.

Neumeyer, Pablo Andres. 1998. "Currencies and the Allocation of Risk: The Welfare Effects of a Monetary Union." *American Economic Review*. 88:1, pp. 246–59.

Pagano, Marco and Ernst-Ludwig von Thadden. 2004. "The European Bond Market under EMU." *Oxford Review of Economic Policy*. 20:4, pp. 531–554.

Rose, Andrew. 2000. "One Money, One Market: Estimating the Effect of Common Currencies on Trade." *Economic Policy*. April, 15:30, pp. 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, pp. 347–66.

Saint-Paul, Gilles. 2004. "Why are European Countries Diverging in Their Unemployment Experience?" *Journal of Economic Perspectives*. 18:4, pp. 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, pp. 3–22.

Wyplosz, Charles. 2006. "European Monetary Union: The Dark Sides of a Major Success." *Economic Policy*. April, 21:46, pp. 207–261.