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Abstract

We assess the impact of the euro on financial integration. We document how the single currency has re-shaped financial markets and international investment patterns. We address the macroeconomic implications of enhanced financial integration, with a particular focus on the shift in net capital flows and the extent of international risk sharing. Finally, we outline the challenges posed by increased financial integration for the ECB and other European policymakers.

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1 Introduction

The financial system provides the central link between the issuers of currency and the real economy. Accordingly, an evaluation of the response of the financial system to the introduction of the euro is centrally important in assessing the economic impact of monetary union. To this end, this paper seeks to provide an overview of the financial impact of the euro, with a particular focus on the macroeconomic implications of enhanced financial integration.

To the extent that the euro has contributed to financial integration, this plays a dual role in the economics of monetary union. First, the efficiency gains from financial development contributes positively to the net welfare gains that accrue from the formation of the monetary union. Second, to the extent that financial integration improves the macroeconomic coherence of the monetary union, it endogenously helps the euro area to fulfill the criteria for an optimal currency area. In what follows, we consider both aspects of the inter-relation between monetary union and financial integration.

It is important to appreciate that it is not straightforward to establish the impact of the euro on financial integration. In particular, the last decade has also been a period in which the pace of global financial integration has accelerated, such that the impact of the euro cannot be considered in isolation. Moreover, there has been considerable progress in promoting financial integration across the European Union, not just within the euro area. Finally, within countries, there have been policy moves to attack historic barriers to regional financial integration. In each of these cases, the introduction of the euro has been a central motivating factor in driving reform. However, at the same time, it would be excessive to attribute the full impact of these innovations to the euro. For instance, the improvements in telecommunications technology have been an important driving force behind international financial integration, while non-euro member countries (most notably, the United Kingdom) have also been key actors in the promotion of a single market in financial services across the European Union.

Beyond the direct impact of monetary union on financial systems, it is important to assess how financial integration has affected macroeconomic behaviour in the euro area. At the aggregate level, enhanced financial development may have boosted the level of area-wide potential output, in view of the well-established connection between financial development and economic growth. In addition, financial development may also contribute to a lower level of macroeconomic volatility, through a range of mechanisms. To the extent that the euro has fostered enhanced global financial integration, it may also have increased the interdependence between the euro area economy and the rest of the world. From the perspective of an individual member country, monetary union may have altered the economics of net capital flows, the relation between domestic activity and domestic asset prices and the scope for international risk sharing.

Finally, the structural economic changes associated with the transformation of the financial system has posed challenges for the European Central Bank and other European policymakers. In relation to the execution of monetary policy, the transmission mechanism has been altered by financial integration. Moreover, as has been vividly illustrated by the

events of the last year, European and global financial integration also poses challenges in terms of the management of financial turmoil and the maintenance of financial stability.

The structure of the rest of the paper is as follows. Section 2 lays out a conceptual framework for thinking about the impact of monetary union on financial integration. We turn to the empirical evidence on the extent of financial integration in Section 3. The macroeconomic impact of financial integration is analysed in Section 4, while Section 5 discusses the outstanding policy issues and offers some concluding remarks.

2 One Money, One Financial System

As was widely discussed in the ex-ante debate on monetary union, the replacement of independent, national currencies by a common, single currency was expected to re-shape financial markets, financial institutions and the behaviour of investors and asset creators.

Most directly, a single currency should promote deeper and more liquid markets for monetary assets. Portes and Rey (1998) emphasise the network characteristic of financial markets - a greater take-up of a currency improves liquidity and thereby increases the attractiveness of that currency for financial transactions, which in turn increases usage of that currency and further propels a virtuous circle of greater liquidity and declining transactions costs. Furthermore, the creation of deep and liquid markets also makes a monetary union a more attractive destination for external investors. In similar fashion, it makes the single currency a potentially attractive vehicle currency for international asset trade even between buyers and sellers that are not resident in the monetary union, permitting a further expansion in the size and scope of financial markets (Papaioannou and Portes 2008a, 2008b). In turn, the scaling up of financial markets increases the payoff to financial innovation and asset creation (Martin and Rey 2001). A wider range of financial products can be supported by a larger-scale financial system and the incentive to capitalise off-market income streams is enhanced.

Another useful framework is provided by Coeurdacier and Martin (2007) who propose that the adoption of a single currency combines aspects of preferential and unilateral financial liberalisations. In particular, within the monetary union, a single currency reduces transactions costs but also increases the elasticity of substitution between assets issued by member countries. Accordingly, the net effect is ambiguous: a decline in transaction costs should increase cross-border holdings, while the increase in the elasticity of substitution reduces the scope for diversification. For non-members, the creation of a monetary union reduces the transaction cost of investing in the monetary union, relative to the cost of transacting in multiple legacy currencies.

Moreover, by eliminating intra-area exchange rate risk, monetary union may also promote integration in equity-type markets and in foreign direct investment. Especially for the smaller, peripheral member countries, the interest rate environment of a monetary union should be more stable relative to a small, open economy that may be vulnerable to the vicissitudes of international capital flows and the episodic risk of currency crises. In addition, the currency markets of small economies may suffer from illiquidity, resulting in

higher average interest rates relative to more liquid markets.

For investors, the expanded menu of assets and the impact of a single currency on the matrix of returns will plausibly reduce the degree of home bias. At one level, the elimination of exchange rate risk and the decline in intra-area transaction costs should promote cross-border investment within the monetary union. However, there will also be an increased incentive to invest in destinations outside the monetary union, in view of the limited scope for diversification within a monetary union.

The creation of a monetary union will also alter the organisational structure of the financial system. For banks, monetary union increases the range of potential counterparties in a unified inter-bank market, while also creating a new regime in terms of access to the resources of the monetary authority. While potentially raising the level of competition within the monetary union, there is also an incentive for entry by externally-resident banks that may have a competitive advantage in realising the opportunities provided by a larger market. Financial integration should also expand the menu of financial options for non-banks. At least for larger firms, a deeper and more liquid bond market enables these firms to reduce reliance on bank finance by having the option to issue corporate bonds. For all firms, increased competition in the banking sector should reduce the cost of capital and improve the quality of financial services.

Monetary union will also affect both sides of the balance sheet of households. By reducing home bias, households should be able to hold a more diversified portfolio of assets, with a greater proportion taken by cross-border holdings. On the liability side, all else equal, we may expect to see an increase in the gross indebtedness of households to the extent that the removal of liquidity premia in interest rates, more intense competition between banks and greater direct or indirect access to cross-border funds relaxes credit constraints. Finally, monetary union also affects the financial environment of national governments, since a deeper area-wide bond market reduces risk premia and improves opportunities to issue debt in home currency.

In the next section, we turn to a quantitative assessment of the degree to which EMU indeed delivered on the promise of greater financial integration.

3 The Impact of EMU on Financial Integration

In this section, we provide an overview of the evidence concerning the impact of EMU on the financial integration of the euro area. Since the extent of financial integration may be expected to vary across the different sectors of the European financial system, we organise the analysis into a sector-by-sector tour of the evidence.

3.1 Debt Markets

Between 1999 and 2007, Figure 1 shows that the unsecured money market was highly integrated, with the creation of the euro leading to a near-complete convergence in key indicators such as the overnight lending rate. Similarly, the rates on longer-maturity inter-

bank unsecured lending also rapidly converged across the euro area. Differences in national legal systems in the treatment of collateral remain a barrier to full integration in the secured money markets but Table 1 shows that the share of cross-border counterparties in the secured markets has largely converged with the share in the unsecured markets (European Central Bank 2008a). In turn, the integration of swaps and future markets is significantly higher than the cash-based markets, reflecting the greater concentration in the derivatives markets among larger, more sophisticated institutions. However, the short-term securities markets are the least-integrated component of the money markets: a basic obstacle to a unified short-term securities market has been the diversity in norms and definitions in the design of short-term securities contracts.¹

However, as documented by Cassola et al (2008), the 2007/2008 turmoil has led to increased segmentation in the euro area money market. Asymmetric information problems have been a central feature of the malfunctioning of the money markets. This has led to a two-tier market structure, with the larger banks possessing the highest credit standing active in the cross-border money markets whereas smaller banks are confined to trading with domestic counter-parties. The segmentation is reflected in pricing data, with interest rates on cross-border inter-bank lending lower than on domestic inter-bank lending. As the money markets return to more normal conditions, we may expect the degree of segmentation to decline even if it does not fully return to pre-turmoil levels.

As with the money markets, the level of general integration in the longer-term debt securities markets has been impressive. For sovereign debt, spreads across member governments are small relative to pre-EMU patterns and can be related to differences in liquidity properties and credit risk. Although spreads are reasonably low in the government bond market, the efficiency and liquidity of that market is constrained by differences in the issuance practices of the member countries (Dunne et al 2006, European Commission 2008). For corporate debt, spreads can be related to sectoral and firm-level characteristics, with no important role for country-level factors (Baele et al 2004).² In relation to liquidity, Biais et al (2006) show that the liquidity of euro-denominated bonds is superior to Sterling- or dollar-denominated bonds, which can be attributed to an open and competitive area-wide market in which a large number of banks offer dealership services to a wide array of prospective buyers. Moreover, these authors find that bid-ask spreads on euro-denominated corporate bonds increase with maturity and default risk and decrease with trade size.

The deeper market has in turn stimulated a remarkable increase in the scale of bond issuance by corporations. Figure 2 shows a steep increase in the volume of securities

¹To this end, the Short-Term European Paper (STEP) initiative has been launched by the Financial Markets Association (ACI) and the European Banking Federation (EBF) and is heavily backed by the Eurosystem. The STEP Market Convention grants the STEP label to securities that meet its criteria for information disclosure, documentation, settlement and statistical information and STEP-labelled securities have gained in popularity over the last two years; the outstanding stock of STEP-labelled securities stood at €342 billion by August 2008.

²The current financial crisis shows that the bonds issued by banks represent an important exception, in view of the role of national governments in resolving solvency and liquidity problems in relation to the liabilities of banks.

issued by non-MFI corporations, with the timing clearly associated with the beginning of EMU. As is emphasised by Pagano and von Thadden (2004), the growth in the volume of corporate bond issues can be in part attributed to the euro, in relation to the contribution of the single currency to the increase in competition among underwriters, which led to a substantial reduction in issuance costs and improved access for smaller and higher-risk firms. That bonds from across the euro area are viewed as increasingly close substitutes is evident from the composition of cross-border bond portfolios. Figure 3 shows that the share of bond issues held by investors in other euro areas has grown from 10 percent in 1997 to nearly 60 percent in 2006.

The development of the bond market has benefited from the growing international role of the euro. Many non-resident entities have issued euro-denominated securities, adding to the depth and liquidity of the euro market. Table 2 shows the share of the euro in the total international debt securities outstanding for a selection of major non-EMU economies at the end of 2007 relative to the share of the euro's legacy currencies in total debt outstanding at the end of 1997. The increase in the share of the euro has been quite striking for most of the countries in Table 2. Bobba et al (2007) confirm this pattern in an econometric study of the determinants of currency choice in the denomination of international securities and find that the euro gained market share relative to the legacy currencies upon the formation of EMU.

At the aggregate level, Lane (2006b) investigates whether the pattern of cross-border bond investment has been influenced by the introduction of the euro. Following the specification developed by Lane and Milesi-Ferretti (2008a), the pattern of bilateral bond positions is modeled as

$$\log(B_{ij}) = \alpha_i + \alpha_j + \beta EMU_{ij} + \sigma Z_{ij} + \varepsilon_{ij} \quad (1)$$

where B_{ij} is the stock of country j 's bonds held by country i , (α_i, α_j) control for source- and host-country fixed effects and EMU_{ij} is a 0-1 dummy that takes the value 1 if both i and j are members of the euro area and 0 otherwise. The set of control variables Z_{ij} include a host of bilateral characteristics such as EU membership, bilateral exchange rate volatility, bilateral trade, distance and other gravity-type variables that are plausibly correlated with joint EMU membership. Even controlling for these factors, this study finds that common membership of the euro area doubles the level of pairwise cross-border bond holdings relative to other country pairs in a levels specification for the year 2004 and by (85,125) percent in a first-differences specification that examines changes in portfolios between 1997 and 2004. In an extension of this approach, Pels (2008) estimates repeated cross-sections for each year 2001 through 2006 and finds that the estimated β is quite stable across these years, with the interpretation that the adjustment of bond portfolios to the creation of the euro was essentially complete by 2001.

Coeurdacier and Martin (2007) explore a slightly-altered specification

$$\log(B_{ij}) = \alpha_i + \beta_1 EMU_{ij} + \beta_2 EMU_j + \sigma_1 Z_{ij} + \sigma_2 Z_j + \varepsilon_{ij} \quad (2)$$

where the host-country fixed effects (the α_j vector) are dropped and a host of country- j

characteristics are included. In particular, these authors include the 0-1 dummy EMU_j which takes the value 1 if the destination country is a member of the euro area and 0 otherwise. While the exclusion of host-country fixed effects runs the risk of conflating an EMU effect with other general characteristics of euro area countries, this alternative specification has the virtue of enabling an estimation of the impact of the euro on the bond portfolios of non-member countries. Indeed, these authors find that both β_1 and β_2 are significantly positive: while EMU has the greatest positive impact on the level of bond holdings between two members of the euro area, it also raises the level of euro area bond holdings by non-member countries. As postulated by Coeurdacier and Martin, a reasonable interpretation is that EMU works as a combination of a preferential financial liberalization (being disproportionately beneficial to the members of the monetary union) and a unilateral financial liberalization (increasing the attractiveness of euro area assets to all investors, regardless of origin).

3.2 Portfolio Equity

To the extent that a single currency reduces transaction costs and ameliorates risk, it is also possible that EMU may facilitate the integration of equity markets. Regarding risk, it is not so clear that nominal exchange rate uncertainty should be a major factor in the determination of optimal equity portfolios, in view of the low covariance between exchange rate movements and the excess return on home equity versus foreign equity, relative to the variance of excess returns (Adler and Dumas 1983, Van Wincoop and Warnock 2007). However, there may be regulatory and institutional factors that increase the importance of the currency regime for equity decisions. For instance, many investment funds operate under guidelines that limit the extent of foreign-currency risk that may be taken on. Moreover, even if the covariance between the exchange rate and equity return differentials is low during normal periods, it is plausible that this covariance increases during periods of sharp economic dislocation, such that a long-term investor that seeks to limit exposure to catastrophic events may have a preference for domestic-currency holdings.

At the aggregate level, Lane and Milesi-Ferretti (2007a) find that common membership of the euro area substantially increases the level of pairwise cross-border portfolio equity holdings by about 67 percent, even controlling for a host of other determinants of bilateral investment positions. A similar result for equities is also obtained by Coeurdacier and Martin (2007), who also find evidence that the level of equity investment by non-members into the euro area has also increased. Related evidence is provided by De Santis and Gerard (2006) who compute the shift in portfolio weights between 1997 and 2001 and find a substantial euro effect, especially for those countries with very limited levels of cross-border exposure in the pre-EMU period. Similar to her results for bond holdings, Pels (2008) finds that the estimated effect is stable across the years 2001 through 2006. Again, the interpretation is that the adjustment of equity portfolios to the euro was essentially complete by 2001.

The euro has also altered the dynamic structure of equity returns. Financial globalisation has led to an increasing role for a global factor in determining national equity returns.

Baele and Inghelbrecht (2008) show that the introduction of the euro has increased the role of the global factor in determining European equity returns - in effect, the single currency has facilitated the globalisation of the investor base for European equity returns. Baele and Inghelbrecht (2008) also show that the volatility of the country-specific element in equity returns has declined. In related fashion, Fratzscher and Stracca (2008) show that the response of national equity indices to national shocks (such as electoral surprises or major disasters) has declined for members of the euro area. The muted response of national equity returns can be related to the elimination of a major historical source of return volatility — that is, country-specific monetary innovations — and the absorptive capacity of an international investor base in coping with idiosyncratic shocks. Rather, market sentiment is now largely determined at a European level, with a lesser role for national factors.

3.3 Foreign Direct Investment

Direct investment represents a key channel for cross-border financial integration, through cross-border mergers and acquisitions and greenfield investments. Moreover, once a direct investment is established, all subsequent financial transactions between parent and affiliate (whether equity or debt) are classified as direct investment. In principle, this category also includes cross-border investments in residential and commercial property, which anecdotal evidence suggests has grown strongly in recent years. Finally, in examining the geographical distribution of FDI, it is important to bear in mind the prevalence of ‘transshipment’ FDI flows in which financial centres are intensively used as locations for holding companies, corporate headquarters and special purpose entities for reasons of organisational and tax efficiency (Taylor 2007).

Several studies have found a significantly positive euro effect in the determinants of the bilateral pattern of FDI. Petroulas (2007) studies FDI flows over 1992-2001 in a gravity-type framework and finds that common membership of the euro area raises bilateral flows by 16 percent. In addition, FDI from member countries to non-members is boosted by 11 percent and from non-members to members by 8 percent. He finds that the effect is strongest for FDI flows between two members of the euro area but there is also evidence of an increase in FDI into the euro area from non-members. De Sousa and Lochard (2006) study the impact of EMU on the geographical distribution of FDI stocks over 1982-2004 and estimate that the euro has increased FDI stocks between member countries by 26 percent.

Aviat et al (2008) emphasise the contribution of the euro to the expansion in M&A activity is confined to the manufacturing sector, while these authors do not find a significant euro effect for M&A in the services sector. As argued by the authors, this may be related to the greater progress in achieving a single market in goods than in services, demonstrating the complementarity between trade integration and financial integration. In a model in which first-time cross-border direct investment involves a sunk cost, Russ (2007) shows theoretically and, using bank-level data, empirically that exchange rate volatility deters FDI. Baldwin et al (2008) highlight that the Russ results apply in particular to the introduction of the euro: the positive effect of the single currency on cross-border M&A is primarily due to novice firms undertaking cross-border investment for the first time, rather than an

expansion in the scale of investment by existing multinational corporations. An expansion along the extensive margin of investment parallels the role of the extensive margin in trade dynamics, since much of the boost provided by the euro to trade takes the form of new firms exporting and an expansion in the range of export destinations.

3.4 Banking

The retail banking market remains quite fragmented, with non-trivial differences in lending and deposit rates for households and firms across the euro area.³ Figure 4 shows the cross-sectional standard deviation in interest rates to small businesses and households over 2002-2007, with the spreads showing relatively little convergence. Moreover, ECB data show that the extent of cross-border lending to non-bank entities is quite small, constituting only 5 percent of total loans to non-banks. While this share has grown from an average of about 3 percent in the early years of EMU, the rate of increase is very slow. At one level, this fragmentation is not too surprising, in view of the importance of local information in assessing small-business and consumer loans and differences in national legal systems in the enforcement of repayment and foreclosure procedures. In relation to retail payments, ongoing high charges for cross-border payments have limited the tangible benefits of a single currency for bank customers. However, the 2008 launch of the Single Euro Payments Area (SEPA) should help in providing a low-cost unified payments system that does not discriminate between intra-national and cross-national payments within the euro area.

Even if retail banking remains fragmented, the banking sector has been a central driver of financial integration, through cross-border inter-bank loans and deposits and the area-wide market in which banks are major cross-border purchasers of securities issued by other banks. The scale of cross-border inter-bank lending and borrowing within the euro area far exceeds the levels vis-a-vis nonbanks. This has transformed the balance sheets of banks in the euro area. Cross-border interbank loans between euro area banks have grown from 15.5 percent percent of total inter-bank loans in 1997 to 23.5 percent in 2008, while the holdings by euro area banks of the debt securities issued by banks in other euro area countries grew from a 12.1 percent share in 1997 to 31.3 percent in 2008. The expansion of cross-border activity has also included other EU countries, with the shares of inter-bank loans and debt securities between the euro area and the rest of the EU growing from 10.3 percent and 1.4 percent respectively in 1997 to 18.6 percent and 11 percent in 2008.

In terms of econometric studies, Blank and Buch (2007) estimate a gravity model for cross-border bank assets and liabilities. These authors find a significantly positive euro effect on the distribution of bank assets, with a weaker estimate obtained for bank liabilities.⁴ Spiegel (2008a) shows that the sources of external financing for Portuguese and Greek banks radically shifted with the advent of EMU, with these banks traditionally re-

³The *EU Banking Structures* report (European Central Bank, 2008b) provides comprehensive data on the European banking system.

⁴Coeurdacier and Martin (2007) also find that a positive euro effect on bilateral bank lending among the member countries, in addition to increased lending by banks from outside the euro area to entities in the member countries.

liant on dollar debt but now able to raise funds from counterparts elsewhere in the euro area. More generally, Spiegel (2008b) shows that the relative increase in bilateral bank claims involving euro area members can be attributed to three different channels: (a) a “borrower” effect, by which EMU membership increases creditworthiness such that EMU members increase borrowing from all sources; (b) a “creditor” effect that increases the attractiveness of a member country’s banks as financial intermediaries, with EMU members increasing lending to all destinations; and (c) a “pairwise” effect such that joint membership of EMU increases the quality of intermediation when both lender and borrower are in the monetary union, such that the increase in cross-border bank transactions is focused on pairs of countries that are both members of EMU. He finds that the pairwise effect is the dominant factor in the data. Moreover, there is some evidence of an interaction effect, by which the pairwise effect is strongest for those country pairs that also have high levels of bilateral trade, such that the single currency reinforces bilateral links in which information flows are high.

Some of the benefits of financial integration may be obtained through foreign direct investment in the banking sector, with large banks exploiting scale economies by operating in multiple national markets. Goldberg (2007) and De Blas and Russ (2008) provide evidence that FDI in the financial sector reduces lending rates through an increase in competition and an improvement in cost efficiencies. Indeed, the relative importance of large international banks has grown in recent years. As reported by the European Commission (2008) and the European Central Bank (2007), there are 46 EU banking groups (out of a total of 8,000 banks) that hold 68 percent of total EU banking assets. Of these, 16 major banks hold at least 25 percent of their assets in other EU countries and are present in at least 25 percent of other EU countries. These major banks have been important drivers of enhanced financial integration at the EU level.

However, consistent with the evidence provided by Aviat et al (2008), there is no evidence of a euro effect in cross-border merger and acquisitions in the banking sector. Rather, cross-border banking consolidation can be explained by regional factors and global strategies followed by some of the largest banking groups. This also lines up with the data reported by the European Central Bank (2008b) which show that cross-border mergers and acquisitions that involve euro area banks are evenly split between intra-union and extra-union deals. This study also finds that the propensity to engage in cross-border deals is increasing in the ownership share of foreign institutional investors, such that there is an interesting complementarity between portfolio integration and integration in the banking sector. Looking to the future, cross-border consolidation in the European banking sector is likely to be a key agent of credit market integration. Accordingly, understanding the barriers to such consolidation is a major research priority.

3.5 Trade in Financial Services

In an integrated financial system, we may expect an increase in the cross-border provision of financial services. Table 5 shows the export and import data for financial services in 1998 and 2006. For most countries, Table 5 shows that trade in financial services has

remained quite stable as a share of GDP, with the major exception of the rise of Ireland as an international financial centre. Consistent with the evidence for the banking sector, the generally low level of financial trade reflects the lack of progress in promoting services trade in Europe.

3.6 Summary on Financial Integration

The evidence reviewed in this section shows that EMU has been associated with a substantial increase in cross-border financial integration across the euro area, with both price-based and volume-based measures pointing in this direction. In turn, greater financial integration has stimulated financial development across the euro area, through the lowering of transactions costs and the expansion in the volumes of financial assets.

That said, it is also clear that the process of financial integration is far from complete, with a range of real frictions and institutional factors slowing down the rate of progress especially in relation to banking. Moreover, the current financial crisis has led to some degree of national segmentation of financial systems. In part, the re-emergence of country-specific factors reflects differential exposures to country-specific macroeconomic vulnerabilities. However, the dominant source of this segmentation surely relates to cross-country differences in the design of government intervention in the financial sector in response to the international financial crisis, including some asymmetries in the treatment of domestic-versus foreign-owned financial institutions. We return to the design of the financial stability framework in Section 5. In the next section, we turn to the analysis of the macroeconomic impact of financial integration.

4 Macroeconomic Impact

In analysing the macroeconomic impact of financial integration, three major issues arise. First, we may expect financial integration to contribute to the financial development of euro area countries. Second, financial integration has the potential to improve cross-border risk sharing. Third, financial integration may ease barriers to net capital flows, leading to increased dispersion in current account balances and net foreign asset positions. In this section, we investigate each of these three predictions.

4.1 Financial Development

An extensive literature has shown that financial development boosts income levels (see Levine 2005 for a comprehensive survey of this literature, while Guiso et al 2004, Papaioannou 2007 and Jappelli and Pagano 2008 provide European-focused reviews of the links between financial development and growth). In particular, the evidence from aggregate and micro-level studies is that financial development boosts total factor productivity among the advanced economies, while it additionally promotes growth through lowering

the cost of capital in emerging and developing economies.⁵ Accordingly, if cross-border financial integration positively contributes to financial development, there is the potential for a substantial long-term economic payoff via the benefits conferred by greater financial development.

Financial integration may promote financial development through several mechanisms. Deeper and more liquid financial markets should lower the cost of capital through the improved risk diversification opportunities for investors and a decline in transactions costs through greater volumes and greater specialisation in the provision of financial services. Moreover, the expansion of financial markets improves the financing choices faced by firms, with a greater proportion no longer solely reliant on bank-based funding. In addition, the evidence shows that greater financial development improves the inter-sectoral allocation of capital, with faster-growing sectors receiving more investment funding (Hartmann et al 2007). The greater scope for risk diversification also facilitates the funding of riskier projects which may offer the scope for higher long-term returns, as in the analysis of Obstfeld (1994).

The impact of financial integration on the banking sector is critically important. Again, the scope for a more diversified loan book should improve the funding opportunities of riskier and smaller firms. On the funding side, the potential depositor base is expanded, while the development of integrated inter-bank and securities markets provides additional channels of funding for banks. Financial integration should also increase the level of competition in national banking systems. In addition to the positive contribution to contestability provided by cross-border lending (both directly for larger firms and indirectly via the improved access to funding for smaller banks), the expansion of the most efficient banks through cross-border FDI (whether through the formation of new entities or via mergers and acquisitions) offers the scope for reduced costs and lower lending rates.

In summary, through the transformation of financial markets and banking systems in the direction of greater openness, financial integration should improve the allocation of capital, leading to improved productivity and innovation. Moreover, as is emphasised by Guiso et al (2004), the potential benefits should be greatest for those member countries that entered monetary union with relatively under-developed financial systems and those sectors most reliant on external finance. However, the member countries with advanced financial systems should also benefit by permitting domestic financial firms to succeed in the newly-expanded markets created by financial integration.

In terms of evidence, the literature primarily relies on longer-term studies of the relation between financial development and economic performance, while maintaining the assumption that financial integration promotes financial development. As pointed out by Jappelli and Pagano (2008), it is difficult to capture the full impact of financial integration and financial development, since financial integration may promote financial development by either allowing the domestic financial system to expand or by allowing domestic firms

⁵There are many mechanisms by which financial development may promote productivity growth and there is an extensive literature that investigates each channel. For instance, Hartmann et al (2007) emphasise the role of financial development in facilitating the reallocation of capital to faster-growing industries and find evidence in support of that channel.

and households to bypass domestic intermediaries in favour of external partners.

However, there are several studies that have specifically examined the impact of the euro on different dimensions of financial integration. Papaioannou and Portes (2008b) estimate a difference-in-difference model of the impact of the euro on the growth rates of a set of financial development indicators. These authors find that the ratio of liquid liabilities to GDP and narrow and broad measures of private sector credit grew significantly more quickly for member countries relative to non-members after the formation of EMU. Moreover, these authors show that the medium-term impact has been stronger than the short-term impact, such that the major gains in terms of financial development took a few years to materialise. In terms of convergence of financial systems across the euro area, Jappelli and Pagano (2008) note that bond market capitalisation has converged across the euro area but there is less evidence that the euro has contributed to convergence in equity market capitalisation or the ratio of private credit to GDP.

Bris et al (2007) show that EMU has boosted corporate valuations for firms in the euro area. In particular, these authors show that Tobin's Q increased by an average of 9 percent over 1998-2004 for firms in the euro area relative to other firms. Moreover, the effect was strongest for firms from "weak currency" countries (that is, those member countries that devalued during the 1992-1993 currency crisis), with Tobin's Q increasing by 15.3 percent for this group. Their results also show that the effect was relatively stronger for firms whose stock returns were historically negatively correlated with the exchange rate. In terms of the underlying components, the increase in Tobin's Q can be attributed in part to a reduction in the risk-free rate (due to a more credible monetary environment), a reduction in market risk premia (due to the elimination of bilateral currency risk within the euro area and improved risk sharing due to the expansion of the investor base) and an increase in expected cash flows (for instance, due to expanded trade opportunities).

In turn, there is evidence that firms have responded by increasing the level of investment. Using industry-level data, Dvorak (2006) shows that the introduction of the euro boosted the level of investment in member countries relative to non-members over 1998 to 2003. Moreover, in line with a priori expectations, Dvorak finds that the effect is strongest for those sectors most dependent on external finance and resident in the least financially-developed member countries.

Finally, the literature on financial development in emerging market economies and developing countries has emphasised that episodes of major financial liberalisation frequently involve a crisis phase in which excess debt levels lead to banking and currency crises. The evidence of Ranciere et al (2008) is that liberalisation still raises long-term growth even accounting for such "bumpiness". In similar fashion, the current financial crisis may be in part attributed to the radical shift in the financial environment associated with the major increase in financial integration over the last decade. Of course, it remains too early to tell whether this crisis will overshadow the putative long-term gains from increased financial development in Europe. Relative to the country experience in other episodes, a major difference is that debt liabilities are predominantly denominated in euro, such that the banking crisis is not being accompanied by a currency crisis.

4.2 International Risk Sharing

A key hope is that financial integration improves the extent of cross-border risk sharing. In principle, international risk diversification can serve as an alternative stabilisation mechanism, since domestic wealth and consumption may be insulated from domestic production and asset shocks. Moreover, if consumption dynamics are similar across the euro area, the coherence of a single monetary policy is improved. Increased risk sharing may also improve the long-run growth rate of the economy, since expanded hedging opportunities should encourage entrepreneurs to pursue riskier projects that may offer higher payoffs (Obstfeld 1994).

Holding other factors constant, the increase in cross-border investment positions should have increased risk sharing within the euro area. At the microeconomic level, it is surely the case that the personal financial portfolios and pension fund assets of households are more internationally diversified than in the pre-EMU era.⁶ For the corporate sector, the increase in foreign direct investment means that earnings are more geographically diversified. For banks, cross-border assets now constitute a greater fraction of total assets. Moreover, the increase in financial development also increases the scope for risk sharing. A greater share of wealth is now tradable, due to the capitalisation of income streams that is facilitated by financial development. Accordingly, the capacity of individuals to share risks within borders and across borders is positively related to the extent of financial development.

It is difficult to empirically measure the macroeconomic extent of risk sharing, especially in the context of less than ten years of data for the euro area. Under certain conditions, the correlation in consumption growth rates provides an indicator of international risk sharing.⁷ Figure 5 plots the cross-country standard deviation of consumption growth across the Euro 12 group of countries. While the dispersion in consumption growth rates is certainly lower in the post-1999 period relative to the 1970s, it is difficult to discern any clear shift in the pattern relative to the 1980s and 1990s, despite the massive increase in cross-border financial integration over the last decade.

Of course, there is a limit to what can be learned from simple unconditional correlations. A popular approach has been to investigate the conditional dependence of domestic consumption on domestic output fluctuations. In an endowment economy under financial autarky, consumption is perfectly correlated with domestic output. International risk sharing provides one mechanism that can break the link between domestic consumption and domestic output and an active line of research measures the covariance between domestic consumption and domestic output as a rough proxy of the extent of international risk sharing. More precisely, this approach typically runs a regression of the form

$$\Delta \log c_{it} - \Delta \log c_t = \alpha + \beta_t (\Delta \log GDP_{it} - \Delta \log GDP_t) + \varepsilon_{it} \quad (3)$$

where c_{it} is country i 's level of consumption in year t and c_t is the aggregate level of

⁶See Jappelli and Pistaferri (2008) for an analysis of the impact of the euro on the portfolios of Italian households.

⁷Note on Backus-Smith condition.

consumption for the group of countries in the sample and β_t measures the average comovement of the idiosyncratic component of consumption with the idiosyncratic component of GDP growth. Accordingly, the degree of consumption insurance is measured by $(1 - \hat{\beta}_t)$. Demyanyk et al (2008) provide an extensive review of this literature and test whether EMU has altered the β coefficient for members of the euro area. Their results indicate no improvement in consumption risk sharing among the EMU member countries during the post-1999 period. However, these authors do find that “income risk sharing” has improved among this group after 1999: the pass-through from gross domestic product shocks to gross national income has declined. This is consistent with increasing financial integration since gross investment income flows are increasing in the scale of cross-border investment positions and are a component of gross national income but not of gross domestic product (Figure 6 shows the rapid increase in gross investment income flows for the Euro 12 group in recent years). However, their analysis finds little direct support for a role for measures of financial integration in explaining the patterns of consumption or income risk sharing during this period.

Gerlach and Hoffmann (2008) pursue an alternative empirical strategy by examining bilateral comovements in consumption among pairs of advanced economies. Their empirical specification is

$$\Delta \log c_{it} - \Delta \log c_{jt} = \phi_{ij} + \delta_t + \beta(\Delta \log GDP_{it} - \Delta \log GDP_{jt}) + \varepsilon_{ijt} \quad (4)$$

with

$$\beta = \beta_0 + \beta_1 EXTRA_{ij} + \beta_2 INTRA_{ij} \quad (5)$$

where $EXTRA_{ij}$ is 0-1 dummy which scores 1 if only one country is a member of the euro area, $INTRA_{ij}$ is a 0-1 dummy which scores 1 if countries i and j are both members of the euro area. A decrease in β is consistent with an improvement in bilateral risk sharing, with a decrease in β_1 suggesting improved risk sharing between EMU members and outside countries and a decline in β_2 showing the extent of improved risk sharing among pairs of EMU member countries. Using consumption and GDP data from the Penn World Tables over 1990 to 2004, these authors find that β_1 and β_2 declined during 1999-2004 relative to 1990-1998. We confirm their finding at a qualitative level in column (1) of Table 6, even if the changes are not statistically significant. Moreover, this pattern continues to hold when we extend the time period to 2006 by extending the Penn World Tables data with data from the United Nations in column (2). However, if the United Nations data are used for the whole sample in columns (3) and (4), the β_1 and β_2 coefficients are not significant for the 1999-2006 period.

Jappelli and Pistaferri (2008) pursue an alternative empirical approach by examining consumption smoothing across Italian households. These authors investigate whether the capacity to smooth consumption in the face of income shocks has improved after the introduction of the euro but reject that the euro has decreased the sensitivity of consumption to income shocks.

The mixed nature of the results from these studies serves to highlight that establishing the impact of EMU on risk sharing faces several complications. First, even aside from the

data quality issues in measuring consumption, it is difficult to properly derive a measure of international financial integration that is relevant for tests of risk sharing. For instance, gross levels of foreign assets and liabilities (and/or gross flows of investment income credits and debits) face the linkage problem that many types of international financial positions generate an intimate connection between returns on foreign assets and returns on foreign liabilities. For instance, a bank in country i may have an affiliate in country j and obtain FDI earnings in line with the profits of the affiliate. However, in turn, the shares of the bank in country i may be predominantly owned by foreign portfolio investors, such that an increase in FDI earnings is offset by some combination of an increase in portfolio equity investment income debits (if the bank raises its dividend to shareholders) or an increase in foreign liabilities (if the increase in profits is embedded in the market value of the bank). Even more mechanically, a significant proportion of cross-border investment positions represent trades by financial intermediaries. For instance, foreign investors may own shares in a mutual fund that is resident in country j , where the mutual fund exclusively holds foreign portfolio assets. In this case, an increase in the value of the mutual fund represents a symmetric increase in foreign assets (the foreign assets held by the mutual fund) and foreign liabilities (the ownership shares in the mutual fund that are held by foreign investors).

Second, as was argued above, the introduction of the euro was an important stimulus to financial liberalisation in several member countries, with a sharp reduction in real interest rates and a relaxation of credit constraints. In these countries, it was rational for the level of consumption to increase in response to the change in the credit environment. In some cases, the scale of the adjustment in consumption was amplified by a local asset price boom, especially in residential and commercial property sectors. Since these assets were predominantly owned by domestic residents, these national asset price booms primarily raised domestic wealth and, together with the relaxation in borrowing constraints, have been a factor contributing to a divergence in wealth and consumption dynamics across the euro area.

Figure 7 shows the dispersion in house price dynamics across the euro area over 1997-2007. Peripheral member countries such as Ireland, Spain and Greece experienced cumulative house price increases of 342 percent, 289 percent and 241 percent respectively. In contrast, housing price growth in Germany and Austria was much more modest at 95 percent and 105 percent respectively. In view of such dispersion in housing wealth growth during this period, it is hardly surprising that national consumption growth rates have not converged.

More generally, the relaxation of credit constraints means greater scope for the de-linking of consumption and income through international borrowing and lending. This mechanism does not constitute risk sharing but just involves the intertemporal redistribution of consumption. While it can improve welfare by promoting consumption smoothing, the capacity to borrow and lend internationally can also lead to over-borrowing scenarios if other frictions mean that consumption decisions are distorted. Moreover, even if international risk sharing is promoted by geographical diversification, an increased capacity to

engage in cross-border borrowing may increase sectoral risk to the extent that domestic firms in given sectors increase leverage to expand overseas and domestic property investors build on domestic capital gains to acquire debt-financed international property portfolios.⁸

Furthermore, the largest increase in cross-border investment positions within the euro area has been in debt assets that are very close substitutes for domestic debt assets. Accordingly, the extent of diversification provided by these investments is quite limited. Indeed, the elimination of nominal assets that provide payoffs in national currencies may actually have reduced the scope of diversification, to the extent that historical payoffs on domestically-denominated debt instruments systematically co-moved with domestic macro-economic conditions (Neumeyer 1998).

Member countries have also increased the scale of international investments in non-member countries. While this in itself may contribute to global risk sharing, heterogeneity across the member countries in the geographical and sectoral patterns of international investment means that these external investments may reduce the similarity of wealth dynamics within the euro area. Indeed, this mechanism has been emphasised an important factor in the decision of the United Kingdom not to join EMU (HM Treasury 2003). Examples include the importance of Central and Eastern Europe as a direct investment destination for Austrian banks and Latin America for Spanish and Portuguese firms, while the scale of Ireland's direct investment liabilities vis-a-vis the United States is especially striking.

Table 3 shows that the growth in international investment positions has been quite heterogeneous across the euro area, even ignoring the outsized statistics for the major financial-processing centres of Ireland and Luxembourg. Moreover, Table 4 also shows that the relative importance of the euro area as a destination for portfolio investment shows considerable variation across the member countries. Accordingly, member countries are asymmetrically exposed to international financial shocks, such that the variation in international financial integration can act as a source of disharmony under some scenarios.

Fourth, a host of real frictions limit the true scope for international risk sharing. At a general level, the literature on limited enforceability and contract incompleteness provides strong theoretical reasons as to why production risk cannot be completely diversified. Moreover, financial transaction costs are non-trivial. For instance, in relation to the issuance of securities, scale factors are important, such that smaller firms are not proportionately represented on public markets. For private financing, informational asymmetries and contract enforcement issues mean that local financiers have a comparative advantage over external investors. More generally, the non-tradability of claims on labour income limits the extent of domestic and international risk sharing, such that even perfectly-diversified financial portfolios would not necessarily hedge macroeconomic risks. Finally, as is emphasised by a growing literature, the importance of non-tradables and domestically-produced tradable

⁸A good example is provided by the Irish situation. Many domestic households used a combination of equity release from the large capital gains earned on owner-occupied housing to buy overseas holiday homes and buy-to-let properties across Europe, the United States and further afield. In similar fashion, commercial property developers leveraged domestic profits to aggressively invest in commercial property, especially in the United Kingdom.

goods in consumption means that domestic and foreign households may choose quite different portfolios, since consumption risks differ across countries (Obstfeld and Rogoff 2001, Obstfeld 2007, Coeurdacier 2008).

Finally, it is possible that the risk sharing gains from increased financial integration may not show up in data over a relatively short interval such as a decade. In particular, the main gain from international risk sharing may be in terms of diversification vis-a-vis large-scale rare disasters.⁹ To the extent that such adverse rare events are country-specific in nature, the increase in cross-border asset positions provides useful insurance even if it is rarely called upon.

4.3 Net Capital Movements

Along another dimension, financial integration may also alter the dynamics of net capital movements. Net flows have the potential to improve welfare through two main channels: (a) the allocation of capital to the most productive uses; and (b) the smoothing of consumption during the convergence process and in the event of temporary macroeconomic shocks. In relation to the capital allocation function, monetary union eliminates the national currency risk that historically posed a major risk to investment returns, especially in relation to the risk of episodic currency crises. At one level, greater efficiency in capital allocation should allow countries to converge more rapidly to steady-state output levels. At the cyclical frequency, as was emphasised by the real business cycle literature, it should also increase the responsiveness to productivity shocks, possibly amplifying the local business cycles.

One form of consumption smoothing relates to the convergence process, since the prospect of higher future incomes stimulates an increase in current consumption. In relation to temporary shocks, the welfare cost of cyclical fluctuations is ameliorated by the capability to insulate consumption from excessive fluctuations. The impact of monetary union on cyclical consumption smoothing should be greatest for those countries that historically were characterized by a low level of domestic financial development and pro-cyclical access to credit (as is the standard pattern for emerging market economies).

In relation to consumption smoothing, the ability to borrow and lend in response to shocks has been particularly enhanced by participation in an integrated wholesale banking market and the growth in multi-country banks. Banks play a critical role since small firms and households primarily raise external finance through the banking system. Accordingly, a more developed banking system that is populated by diversified banks will be better able to provide stable financing in the event of shocks. As is emphasised by Demyanyk et al (2007, 2008), the evidence from the United States is that the deregulation of the US banking system in relation to restrictions on cross-state banking activity has substantially improved the smoothing of personal incomes, especially for small business owners. At the international level, Cetorelli and Goldberg (2008) highlight the role of internal capital markets within global banks in smoothing national liquidity shocks. Moreover, such channels

⁹The literature on rare disasters and asset pricing is growing rapidly. See Barro (2006) amongst others.

contribute to the stabilisation of output in addition to the smoothing of income by weakening the impact of the financial accelerator mechanism on the production and investment decisions of firms.

However, in the presence of other distortions, a more elastic supply of external capital may lead to over-borrowing. In relation to governments, political economy factors may generate a temptation to borrow more in order to increase public spending or cut taxation; however, the fiscal restraints built into the Maastricht Treaty and embodied in the Growth and Stability Pact curb that tendency. For banks and near-banks, poorly-designed regulations or inadequate supervision may encourage excessive lending on the back of funds raised through the wholesale market or securitisation.¹⁰ For corporates, if the corporate governance environment is inadequate, international leveraging may tempt some executives to undertake excessive investment or make ill-advised acquisitions. Under these scenarios, capital flows magnify the impact of such distortions and may amplify cyclical shocks through a pro-cyclical pattern in capital flows.

Figure 8 shows the cross-sectional dispersion of current account balances for the EMU 12 group of countries over 1970 to 2007, while Figure 9 shows the dispersion in accumulated net international investment positions. While large current account imbalances were run in the late 1970s and early 1980s, these proved to be very temporary in nature, with large deficits typically closed through a crisis episode. In contrast, the increase in dispersion in current account balances over the last decade has been associated with highly-persistent net flows for certain countries. Table 7 shows that the persistence of current account balances has drifted upwards and that persistence within the euro area since 1999 is significantly higher than among non-member advanced countries.¹¹

Moreover, as is shown by Blanchard and Giavazzi (2002), the link between net flows and income levels has strengthened under EMU, with the lower-income countries typically running large current account deficits. Fagan and Gaspar (2007) provide a model of how EMU led to a major increase in the current account deficits of those member countries that may have been expected to grow relatively quickly for convergence reasons and that historically operated under credit constraints. For these countries, the advent of EMU was associated with a reduction in real interest rates and a major increase in cross-border borrowing. While such factors help to explain the emergence of persistent current account deficits, it is also possible that access to external capital contributed to excessive expansion in the property sector in some countries and to an unsustainable increase in local asset prices.

The emergence of large and persistent current account imbalances within the euro area also raises important adjustment issues, especially to the extent that deficits have been used to finance consumption or investment in low-productivity sectors. While monetary union may insulate a member country from speculative attacks on a national currency,

¹⁰Historically, politically-connected non-banks may have also been tempted to over borrow, in the belief that the government would provide a rescue package in the event of trouble. However, EU restrictions on state aids sharply limit the scope for the bail out of non-financial firms.

¹¹The non-EMU group consist of Australia, Canada, Denmark, Iceland, Israel, Japan, New Zealand, Norway, Sweden, Switzerland, United Kingdom and the United States.

the real exchange rate depreciation that is a typical part of the adjustment to increase in net external liabilities cannot be achieved through nominal depreciation. Moreover, there is increasing evidence that nominal depreciation offers a double benefit for the external balance sheet of a debtor economy. In addition to the presumed positive impact on the trade balance (albeit with a lag), nominal depreciation that is not fully offset by a differential in expected returns also generates a positive valuation effect to the extent that foreign assets are disproportionately in foreign currency and foreign liabilities in domestic currency. For instance, Gourinchas and Rey (2007) find a substantial role for the currency-based valuation channel in the adjustment dynamics of the United States (see also Tille 2003 and Lane and Milesi-Ferretti 2005). The absence of independent national currencies means that this valuation channel does not play a role in the adjustment dynamics of the member countries of the euro area, at least in relation to intra-area imbalances.

Moreover, real depreciation vis-a-vis other member countries can only be achieved through a negative inflation differential. Accordingly, this requires wages to grow more slowly than in other member countries, which is difficult to achieve if the institutional environment governing the domestic labour market does not facilitate rapid corrections in wage levels. Moreover, a drawn-out period of anticipated real depreciation can amplify the negative impact on domestic activity, since the ex-ante real interest rate will be higher, depressing domestic spending. The slow pace of adjustment in Portugal in correcting its large current account deficit and loss of external competitiveness shows the difficulties involved in external adjustment under EMU (Blanchard 2007). Moreover, there is evidence that the sensitivity of wages to the level of competitiveness is also weak in some other member countries (Honohan and Leddin 2006).

We also note that the prominence of inter-bank lending as a source of finance for current account deficits within the euro area means that a version of the “sudden stop” mechanism is a potential risk. If banks in a given deficit country are unable to rollover short-term debt, the current account deficit may quickly close in a manner that is compounded by a domestic banking crisis. While the generalised nature of the 2007-2008 financial turmoil has permitted the European Central Bank to provide liquidity support to all banks in the euro area, a similar response would not necessarily apply in the context of a country-specific problem. While national governments have intervened to provide support to domestic banks during the current crisis, it is too early to tell whether this will be sufficient to avert a sharp reversal in capital flows to major deficit countries in the euro area.

Accordingly, the external adjustment process for member countries is potentially quite challenging. However, it is important to keep in mind the appropriate counterfactual. In particular, it is not so obvious that a floating exchange rate is automatically helpful in facilitating adjustment. As the current international financial crisis reminds us, a deficit country may also be vulnerable to a currency attack especially during a period of international turmoil, with currency and financial crises feeding on each other. Moreover, the beggar-thy-neighbour characteristics of independent monetary responses to crisis situations were an important motivation for the formation of EMU, since free trade and cooperation on other economic and political issues is difficult to sustain if nominal exchange rates are

subject to manipulation (Eichengreen 1993).

5 Conclusions

The evidence is that the first ten years of EMU has generated a remarkable increase in financial integration, even if the extent of convergence varies across different sectors within the overall financial system. However, it is also clear that there remain many outstanding barriers to full integration. In relation to technical frictions, initiatives such as SEPA, Target-2, the proposed integration of securities settlement with the payments system (T2S) and the new version 2 of the Correspondent Central Banking System (CCBS2) should improve the support infrastructure to enable greater progress in achieving deeper and broader financial integration.¹²

Further financial integration is also dependent on the success of moves to improve the European financial stability framework and the system for the supervision of large multi-country banks. The tension between the internationalisation of banking activity and national responsibility for financial stability was evident from the outset of EMU (see, amongst others, Begg et al 1999 and Portes 2001). Indeed, considerable efforts have been made to promote cooperation and coordination between the different national systems in order to make this approach operate in an effective manner but the 2007-2008 international financial crisis has illustrated the limits to voluntary cooperation and the potential for “beggar-thy-neighbour” interventions. Accordingly, the current crisis clearly signals the imperative of establishing a truly pan-European mechanism to cope with stresses in the financial system. However, the viability of an area-wide regime faces the limitation that the provision of financial stability ultimately requires a fiscal backstop and the political acceptability of pooling fiscal resources is open to question. The current crisis has also vividly highlighted the global interdependence of financial systems, such that the internationalisation of the financial stability function requires improved coordination mechanisms at the global level, in addition to making progress in respect of the intra-European dimension.

A major focus of this paper has been to analyse the impact of increased financial integration on the macroeconomic behaviour of the member countries. There is a presumption that financial integration promotes financial development and thereby contributes to a higher long-run level of productivity and the initial evidence provides encouraging support for this channel. However, a decade of data is not long enough to establish conclusive evidence on contribution of the euro to financial development, such that this area requires ongoing research attention. Moreover, the current crisis is sure to complicate the analysis of the contribution of expanded capital markets to long-term macroeconomic performance, since the full impact cannot be assessed until recovery is fully established.

In relation to international diversification, we have highlighted that there is little evidence to support that EMU has generated a substantial increase in the cross-border sharing of macroeconomic risks. This should not be interpreted as a surprising outcome, in view

¹²See European Central Bank (2008) for a comprehensive description of the ESCB’s role in fostering further financial integration.

of the mechanisms that give rise to wealth divergence during the transition phase in which peripheral member countries have enjoyed a sustained decline in risk premia and large credit booms. However, over the longer term, the contribution of increased cross-border investment positions to risk sharing may well show up more strongly in the data. The third macroeconomic dimension that we covered was to argue that EMU has allowed some member countries to run persistent current account deficits. While this may well accelerate convergence in income levels, the improved access to external credit may also have contributed to over-investment in property and unsustainable increases in domestic asset prices in some membership countries. Moreover, membership of a monetary union also alters the external adjustment process such that the transition from trade deficits to trade surpluses may be more prolonged than under a floating exchange rate.

Finally, EMU over the next decade is set to undergo further transformation over the next decade, with the entry of increasing numbers of the new EU member states.¹³ The analysis in this paper suggests that the euro has the greatest financial impact on those member countries with initially less-developed financial systems. Accordingly, as is projected by Masten et al (2008), joining the euro area should accelerate the financial development of the new member states. In addition, conditional on possessing a high degree of macroeconomic and fiscal stability upon entry to EMU, the euro area should be a safe haven for the new member states relative to the difficulties involved in managing an floating exchange rate in a world of high capital mobility. Finally, the enlargement of the euro area further reinforces the urgency to improve the European financial stability framework, in view of the risks posed by the increased heterogeneity in banking systems across the euro area.

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¹³See Darvas and Szapary (2008) for an analysis of euro adoption strategies by this group of countries.

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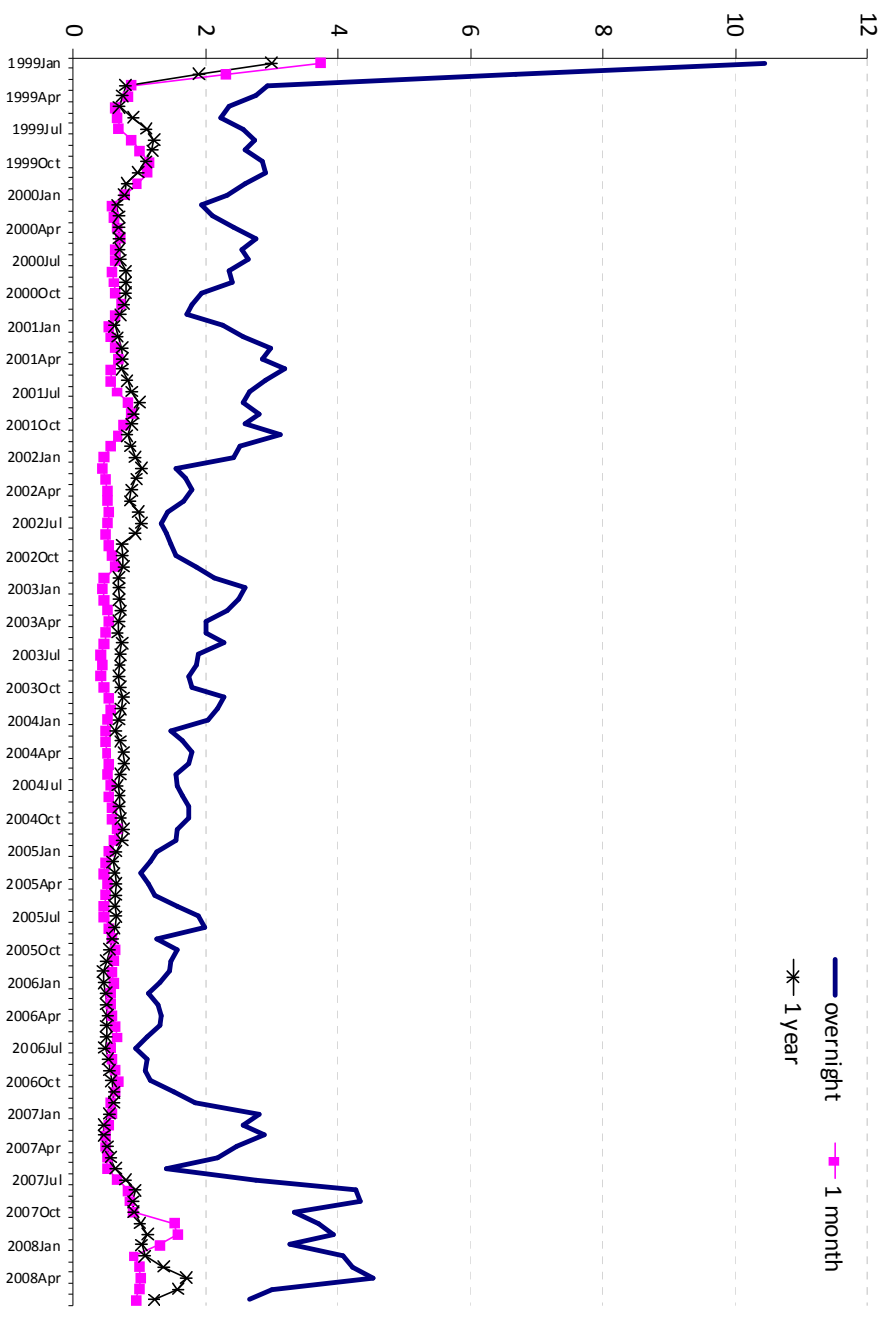


Figure 1: Cross-Country Dispersion in Money Market Rates. Note: Cross-country standard deviation in unsecured lending rates.

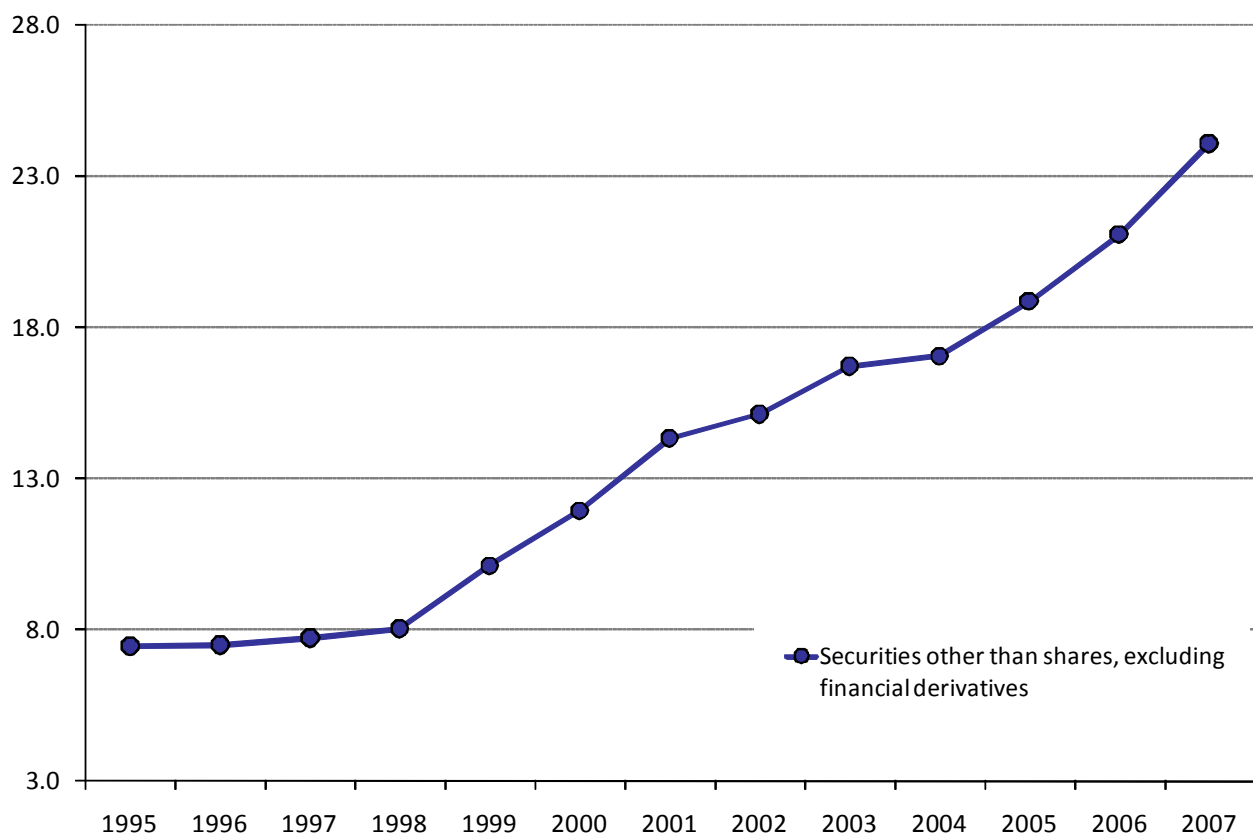


Figure 2: Outstanding Securities Issued by Non-MFI corporations. Source: Author's calculations based on ECB data.

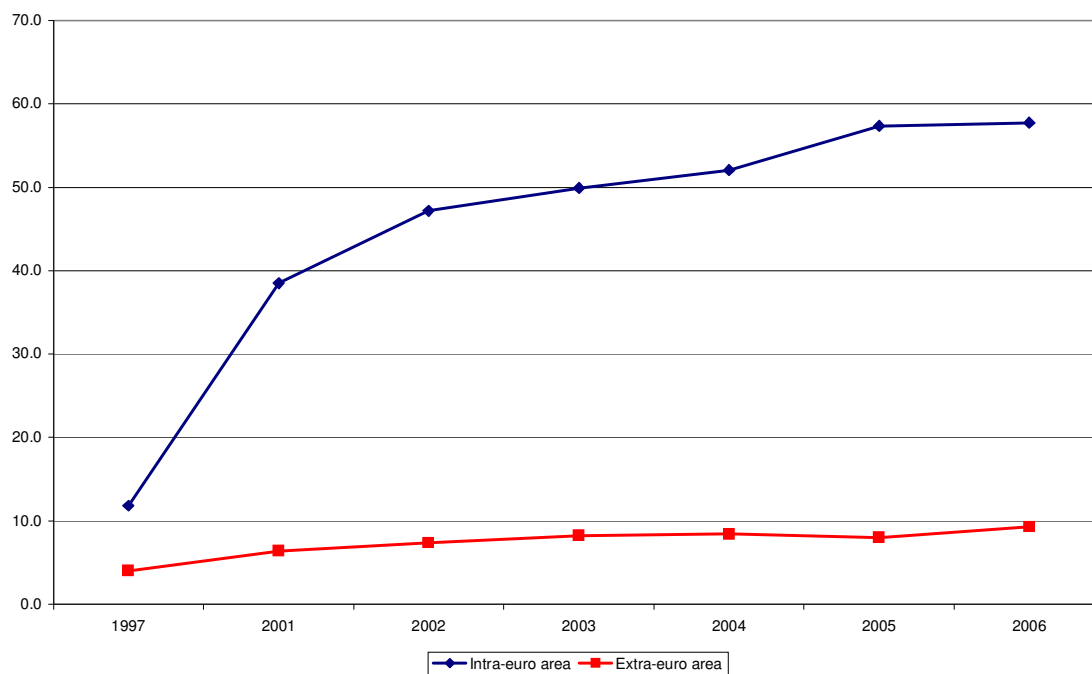


Figure 3: Cross-Border Ownership of Euro Long-Term Debt. Note: . Source: European Central Bank's *Financial Integration Indicators* database.

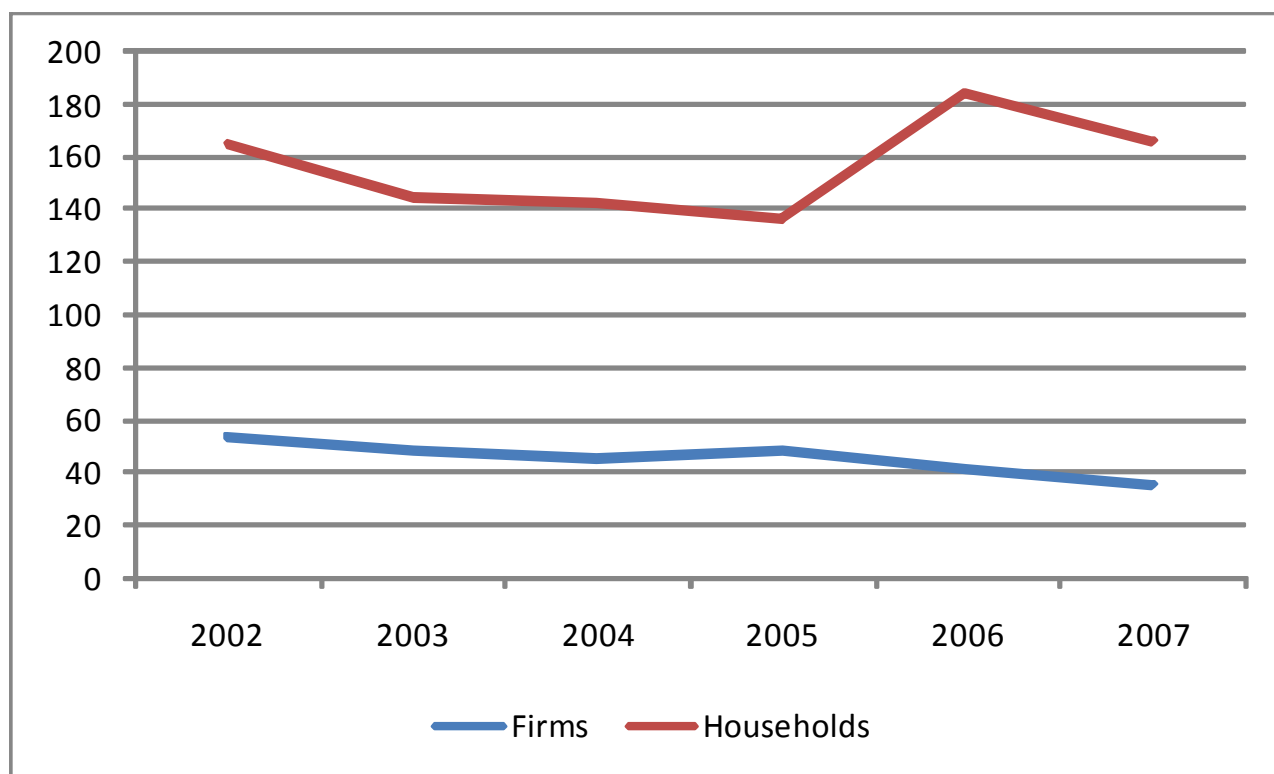


Figure 4: Cross-Country Dispersion in Lending Rates. Note: Data from ECB Statistical Data Warehouse.

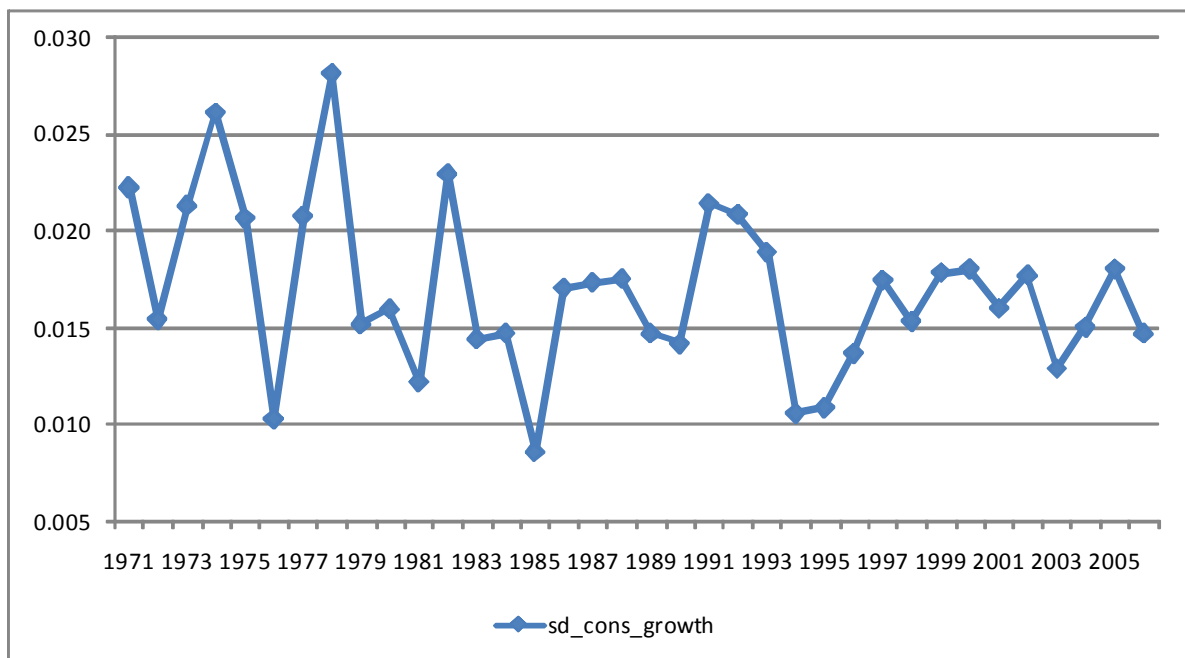


Figure 5: Dispersion of Consumption Growth Rates, 1970-2007. Note: Cross-country standard deviation of consumption growth rates. Source: Author's calculations based on United Nations data.

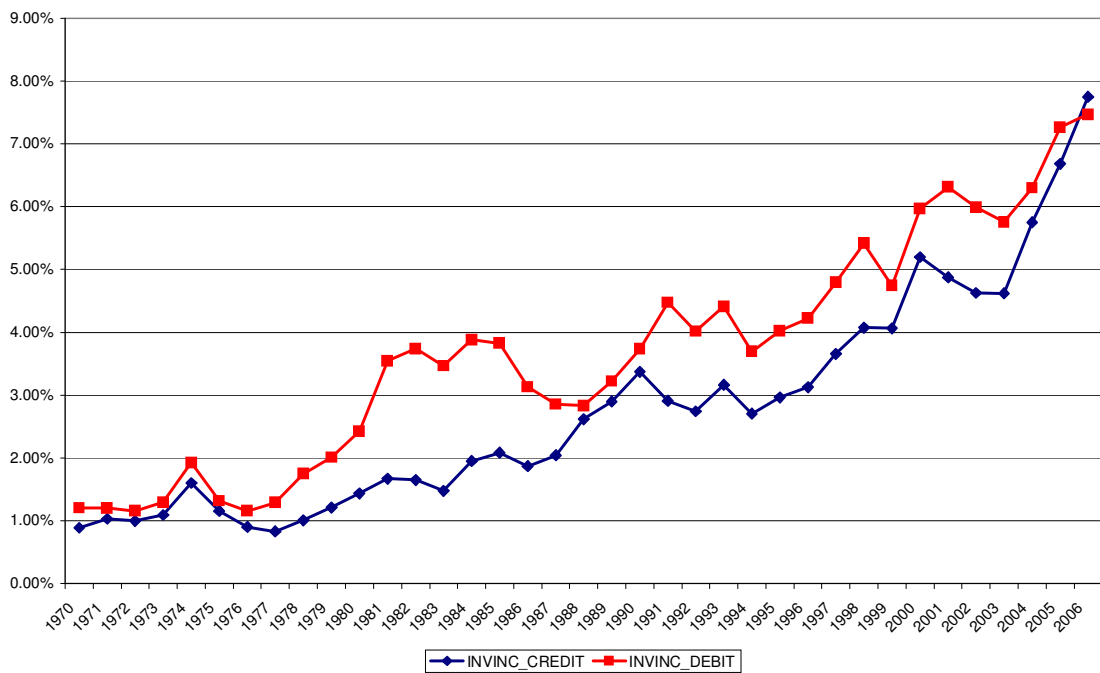


Figure 6: Investment Income Flows, 1970-2006. Note: Ratios to GDP, median of Euro 12 group of countries. Source: Author's calculations, based on data from the IMF's *Balance of Payments* Statistics database.

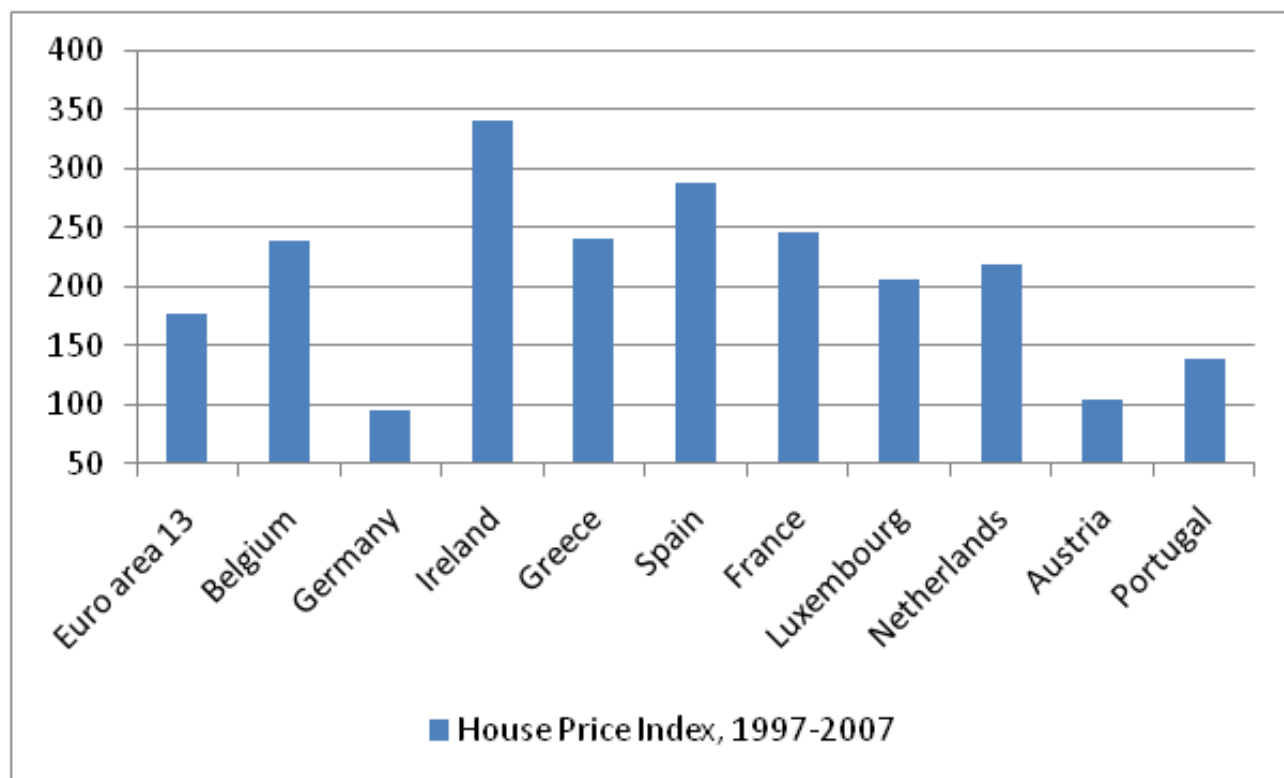


Figure 7: Cumulative House Price Increases, 1997-2007. Source: Author's calculations based on ECB data.

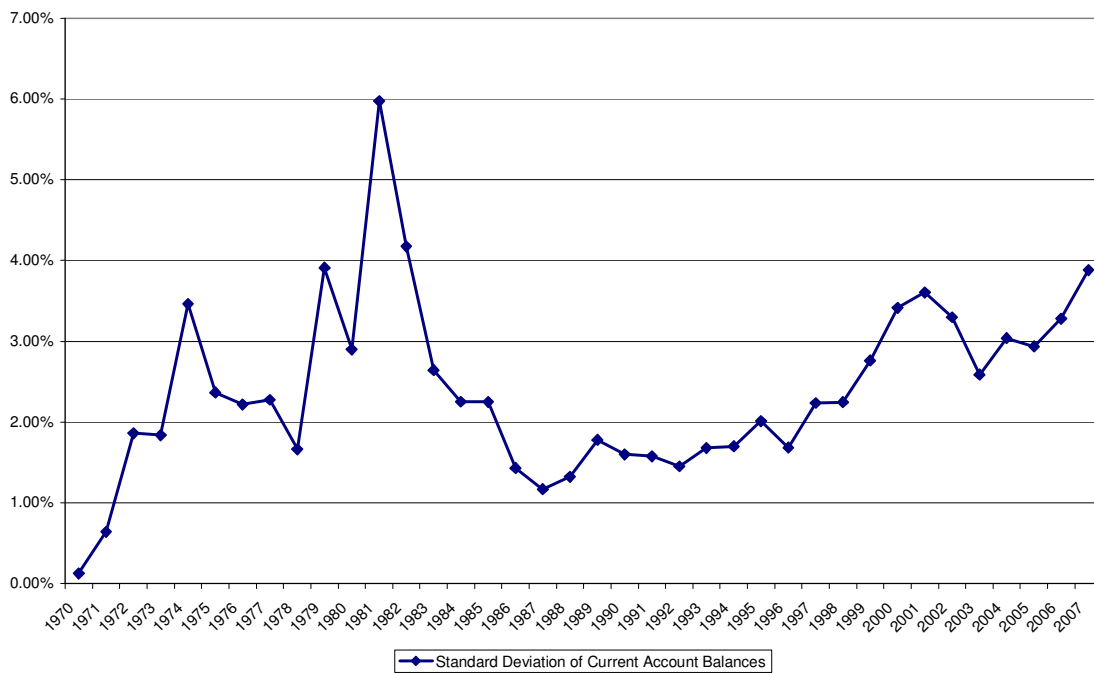


Figure 8: Dispersion of Current Account Balances, 1970-2007. Note: Standard deviation of CA/GDP ratio for Euro 12 group of countries (excluding Luxembourg). Source: Author's calculations, based on data from the World Bank's *World Development Indicators* database.

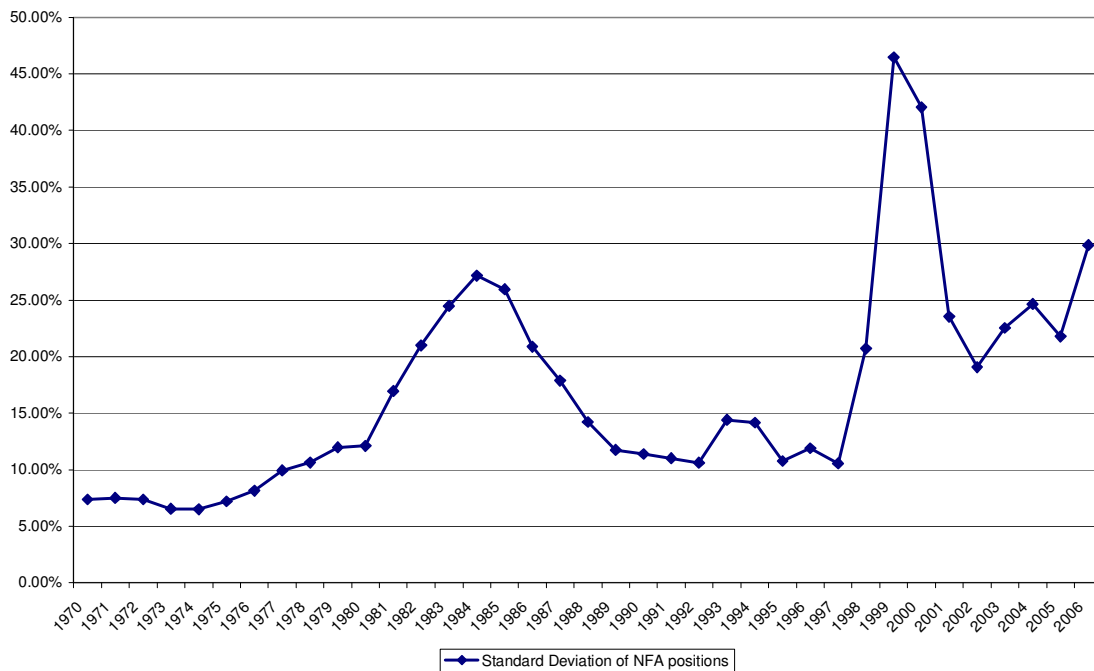


Figure 9: Dispersion of NFA positions, 1970 to 2006. Note: Standard deviation of NFA/GDP ratios for Euro 12 group (excluding Luxembourg). Source: Author's calculations based on an extended version of the "External Wealth of Nations" dataset documented in Lane and Milesi-Ferretti (2007).

Table 1: Share of Domestic Counter-Parties in Money Market Business

	2002	2003	2004	2005	2006	2007
Unsecured money market	28.2	32.9	34.5	31.5	25.3	28.2
Repo money market	42.9	35.8	37.7	36.6	28.1	40.0
Short-term securities	32.2	54.9	39.7	46.8	37.9	47.8
Forward Rate Agreements		12.3	18.0	18.0	21.4	24.4
Foreign exchange swaps	19.2	22.9	20.9	19.2	27.1	25.0
Interest rate swaps	26.6	20.2	22.1	20.3	21.3	24.4
Overnight interest rate swaps	16.9	14.6	21.5	22.7	22.08	24.5
Cross-currency swaps	22.9	11.8	24.5	19.7	17.4	13.2

Percentage of euro money market business done with domestic counterparties. Source: ECB Money Market Survey (ECB Statistical Data Warehouse).

Table 2: Issuance of Euro Securities by Non-Euro Countries

	1998	2007
United States	9.9	15.9
United Kingdom	11.1	33.5
Japan	6.0	15.6
Switzerland	18.4	50.9
Denmark	38.3	73.4
Sweden	25.6	58.9
Norway	15.7	41.4
Iceland	30.3	52.0
Canada	9.3	13.4
Australia	4.5	26.3
South Africa	14.9	40.8
Brazil	9.5	8.8
Russia	15.3	15.7
India	3.6*	4.7
China	3.9	7.5
Korea	5.6	12.9
Mexico	13.3	16.5

Share of Euro-denominated securities in total outstanding securities. *: 1996. Source: Author's calculations based on data from Bank of International Settlements.

Table 3: International Financial Integration

	1997		2001		2006	
	FA	FL	FA	FL	FA	FL
Austria	78.5	95.2	137.0	163.0	258.4	283.7
Belgium	241.6	211.6	331.8	281.6	488.2	453.6
Finland	56.7	97.0	128.2	209.1	213.3	226.5
France	117.3	108.1	180.1	167.4	287.0	281.5
Germany	81.2	77.5	140.6	133.6	197.8	175.0
Greece	36.8	51.3	39.3	79.6	62.0	139.8
Ireland	313.8	299.7	724.0	734.3	1187.7	1194.4
Italy	67.4	73.8	94.5	101.4	128.8	145.2
Luxembourg	5118.4	5013.4	7705.9	7636.1	11984.5	11840.0
Netherlands	162.8	186.3	307.0	322.2	443.8	445.0
Portugal	84.4	100.8	133.4	184.7	179.6	266.3
Spain	55.4	71.6	99.8	127.1	140.7	200.8

Foreign assets and foreign liabilities as ratios to GDP. Source: Updated version of External Wealth of Nations database reported by Lane and Milesi-Ferretti (2007).

Table 4: Share of Euro Area in Cross-Border Portfolio Assets

	Debt			Equity		
	1997	2001	2006	1997	2001	2006
Austria	46.7	62.0	65.5	50.2	53.5	55.6
Belgium	59.8	74.9	77.4	84.1	78.9	79.7
Finland	28.7	75.1	74.6	34.9	31.1	38.8
France	45.2	58.9	66.8	39.3	51.1	50.5
Germany	46.9	65.0	66.6	39.2	59.7	69.6
Greece		33.5	30.7		50.1	43.0
Ireland	42.6	43.8	48.4	13.9	18.5	26.8
Italy	19.7	49.5	64.9	55.6	64.3	79.2
Luxembourg		60.4	57.4		37.0	33.6
Netherlands	68.5	66.7	69.3	22.7	26.5	25.6
Portugal	43.2	57.1	60.6	54.0	65.5	67.3
Spain	27.6	67.0	56.8	45.8	54.2	77.0

Note: Author's calculations based on data from the IMF's Coordinated Portfolio Investment Survey and the Bundesbank.

Table 5: Trade in Financial Services

	1998 Exports	1998 Imports	2006 Exports	2006 Imports
Austria	0.7	0.8	0.6	0.5
Belgium			1.1	1.0
France	0.2	0.2	0.1	0.3
Germany	0.2	0.2	0.4	0.3
Italy	0.2	0.3	0.2	0.2
Luxembourg			84.3	44.3
Netherlands	0.2	0.3	0.3	0.4
Finland	0.0	0.1	0.1	0.2
Greece	0.2	0.1	0.1	0.4
Ireland	0.3	1.1	8.6	6.2
Portugal	0.2	0.2	0.2	0.3
Spain	0.3	0.3	0.4	0.5
Switzerland	3.1	0.2	4.4	0.4
United Kingdom	1.6	0.3	2.4	0.5

Source: Author's calculations based on data from OECD Services Trade database. Data are expressed as ratios to GDP.

Table 6: Bilateral Consumption Co-Movements.

	PWT 1990-98	PWT 1999-04	Hybrid 1999-06	UN 1990-98	UN 1999-06
β_0	0.83 [0.02]***	0.95 [0.06]***	0.96 [0.05]***	0.72 [0.02]***	0.77 [0.04]***
β_1	-0.16 [0.03]***	-0.21 [0.06]***	-0.15 [0.05]***	-0.11 [0.03]***	0.04 [0.04]
β_2	-0.24 [0.03]***	-0.28 [0.06]***	-0.23 [0.05]***	-0.16 [0.03]***	0.02 [0.05]
Observations	2277	1518	2024	2277	2024

See equation (4) in the text. *** denotes significance at the 1 percent level. PWT: Penn World Tables.

Table 7: Current Account Persistence

	1980-1989	1990-1998	1999-2007
EMU			
δ	0.59 [7.6]***	0.67 [8.5]***	0.81 [11.3]***
Observations	105	108	108
Non-EMU			
δ	0.43 [4.7]***	0.64 [7.7]***	0.59 [8.1]***
Observations	108	108	108

Fixed-effects panel regressions $CA_{it} = \alpha_i + \delta CA_{it-1} + \varepsilon_{it}$. *** denotes significance at 1 percent level. Data source: World Economic Outlook database.

