

# Financial Globalisation and the Crisis

Philip R. Lane\*

Trinity College Dublin and CEPR

July 2012

The global financial crisis provides an important testing ground for the financial globalisation model. We ask three questions. First, did financial globalisation materially contribute to the origination of the global financial crisis? Second, once the crisis occurred, how did financial globalisation affect the incidence and propagation of the crisis across different countries? Third, how has financial globalisation affected the management of the crisis at national and international levels?

---

\* Prepared for the 11th BIS Annual Conference on "The Future of Financial Globalisation," Lucerne, June 21st-22nd 2012. I thank Michael Curran, Michael O'Grady and Clemens Struck for diligent research assistance. I am grateful to Dani Rodrik and the conference participants for helpful comments. Email: [plane@tcd.ie](mailto:plane@tcd.ie). Tel: +353 1 896 2259. Postal Address: Economics Department, Trinity College Dublin, Dublin 2, Ireland.

# 1 Introduction

The decade before the global financial crisis was marked by very rapid growth in cross-border financial positions. While the 1990s Mexican and Asian crises had certainly induced greater caution among emerging economies, most advanced economies fully embraced the financial globalisation model. Although the potential risks from these developments were much discussed, by and large there was relatively little by way of policy responses to the structural changes generated by financial globalisation.

The relative calm in the global economy during this period meant that the full implications of financial globalisation could not be evaluated. First, it is only in retrospect that the build up of vulnerabilities in the pre-crisis phase can be fully appreciated. Second, the cross-country and cross-group variation in the scale of international financial integration might deliver very different outcomes in the heat of a financial crisis than during non-crisis times. Third, the capacity of national governments and the international system to effectively manage a financial crisis in an environment of very high international financial linkages was not not challenged during this period.

Accordingly, the global financial crisis provides an important testing ground for the financial globalisation model. While the market-panic phase of the global crisis was most intense during Autumn 2008 and Spring 2009, subsequent crisis stages are still playing out, with Europe at the centre of the current phase of the crisis.

It is useful to think about three dimensions of the inter-relation between financial globalisation and the global crisis. First, did financial globalisation materially contribute to the origination of the global financial crisis? Second, once the crisis occurred, how did financial globalisation affect the incidence and propagation of the crisis across different countries? Third, how has financial globalisation affected the management of the crisis at national and international levels?

The goal of this paper is to address these issues. In tackling these questions, there will be two recurrent themes. First, the contrasting experiences of advanced and emerging economies during the global crisis can be directly related to their very different modes of engagement with financial globalisation during the pre-crisis period. Second, the current European crisis provides important lessons for the rest of the world, in view of the extremely high levels of cross-border financial integration within Europe (especially within the euro area).

There is a vast literature on financial globalisation. The risks attached to international financial integration have received much attention, although the main focus has been on the vulnerabilities of emerging and developing economies.<sup>1</sup> In particular, the 1990s emerging-market crises led to a much more sceptical view of full-scale financial integration for these economies (see, amongst many others, Rodrik 1998, Rodrik 2000, Obstfeld 2009, Prasad and Rajan 2009, Jeanne et al 2012).

In contrast, there was more optimism about the impact of financial globalisation on advanced economies. In particular, the empirical evidence suggested that financial globalisation delivered benefits in terms of improved macroeconomic performance, greater risk sharing and

---

<sup>1</sup>Of course, a longer historical perspective provides major examples of international financial crises also affecting advanced economies (see, amongst many others, Eichengreen 1991 and Obstfeld and Taylor 2004).

institutional development for countries that passed threshold levels of income per capita, even if these gains were quantitatively relatively minor in scale (Kose and others 2009a, 2009b, 2009c). In terms of risk factors for advanced economies, the main focus was on the emergence of global current account imbalances, with the funding of the large US current account deficit a primary concern. However, the risk of a large-scale financial crisis was not much discussed, with some well-known exceptions (Rajan 2005, Stulz 2005).

The structure of the rest of the paper is as follows. Section 2 reviews the quantitative evolution of cross-border financial positions during the pre-crisis period. We analyse the interactions between financial globalisation and the crisis in Section 3. We outline the policy reforms required at national and international levels in Section 4. Finally, Section 5 concludes.

## 2 The Dynamics of Financial Globalisation

The sum of foreign assets and foreign liabilities (expressed as a ratio to GDP and termed the IFI ratio) is a useful measure of the de facto scale of cross-border financial integration (Lane and Milesi-Ferretti 2001, 2007). While financial globalisation also operates through the determination of asset prices and the responsiveness of international capital flows to shocks, the accumulated stocks of foreign assets and foreign liabilities reflect the history of past capital flows, plus the impact of valuation adjustments on previous positions. In addition, the level and composition of the international balance sheet matter for the exposure of individual countries to shocks to underlying asset prices and exchange rates. Finally, the net international investment position is a key state variable in many dynamic macroeconomic models.

Figures ??-?? show the aggregate IFI ratios for groups of advanced and emerging economies respectively.<sup>2</sup> Figure ?? shows the remarkable expansion in cross-border financial positions for the advanced-economy group, which rose from 68.4 percent in 1980 to a peak of 438.2 percent in 2007. Within this period, there were two acceleration phases, with a step increase in the growth of cross-border positions in the mid-1990s and a further intensification during 2004-2007. While the IFI ratio plunged in 2008, it subsequently recovered during 2009-2010.

Within the advanced-economy group, it is important to underline that the level of cross-border financial integration within Europe far exceeds the levels observed for other high-income countries. To illustrate this point, Figure ?? plots the IFI ratios for the euro area, the United States and Japan (where intra-area cross-border positions are included in the calculated for the euro area). We can see that international financial trade grew far more quickly for the European countries from the mid-1990s onwards.

Figure ?? shows some important differences for the emerging-economy group. While the IFI ratio more than doubled from 34.9 percent in 1980 to 73.3 percent in 2007, this is far below the level of cross-border positions recorded by the advanced-economy group. In addition, the IFI ratio was quite flat between 1999 and 2007, so that the emerging-economy group did not participate to the same extent in the international financial boom in the mid-2000s. As with the advanced-economy group, the IFI ratio fell during 2008 but had returned to close to its peak value by 2010.

So far, we have focused on international balance sheet data. It is instructive to also examine the data on international financial flows drawn from the balance of payments. Figure ??

---

<sup>2</sup>Following Lane and Milesi-Ferretti (2011, 2012), we drop very small countries with total GDP less than 10 billion dollars.

shows aggregate financial outflows and inflows for the advanced-economy and emerging-economy groups over 2002-2010. Gross financial flows more than doubled (relative to GDP) between 2002-2007 for the advanced economies before undergoing a dramatic contraction in 2008, with only partial recovery during 2009-2010 (see also Milesi-Ferretti and Tille 2011). The dynamic pattern is qualitatively similar for emerging economies but the scale of pre-crisis boom and the subsequent reversal is a lot milder for this group.

In view of the limited time span, it is difficult to quantify the drivers of time variation in international financial integration. Of course, financial globalisation has been facilitated by the secular decline in legal barriers to cross-border financial flows. Figure ?? shows the evolution of the financial account liberalisation index developed by Chinn and Ito (2006, 2008). While financial account restrictions have been largely abolished for advanced economies, emerging economies typically still operate under a tighter legal framework.

In fact, such *de jure* measures of financial openness explain relatively little in the cross-time or cross-country variation in the scale of cross-border financial trade. In their empirical work, Lane and Milesi-Ferretti (2008) point to financial innovation and the liberalisation of the European financial system as important factors in the acceleration of cross-border financial trade among the advanced economies. In relation to financial innovation, new investment classes (such as asset-backed securities), new investment vehicles (such as special purpose vehicles [SPVs]) and the rise of lightly-regulated types of asset managers (hedge funds) all promoted cross-border financial trade.

In related fashion, the growth in the market share of globally-active banks provided important infrastructural support, in view of the roles played by inter-office transactions and international market making by these banks in facilitating global asset trade (Goldberg 2009, CGFS 2010, McCauley et al 2010, Bruno and Shin 2012). Indeed, in part, financial innovation was directed at cross-border regulatory arbitrage, chopping up the financial intermediation chain to minimise tax obligations and maximise regulatory flexibility. In this regard, different types of international financial centres played a special role, with countries specialising in different niches in the provision of international financial services (Lane and Milesi-Ferretti 2011a).

The liberalisation of the European financial system and the launch of the euro provided further impetus to cross-border financial trade (Lane 2006, Lane 2010). Regulatory harmonisation and freedom of establishment facilitated the integration of European financial markets, while the single currency led to especially rapid growth in cross-border trade in money and credit markets. The real investment opportunities provided by the integration of Central and Eastern Europe into the European Union provided a further boost to cross-border financial trade, especially in relation to FDI (with banking-sector FDI especially prominent). While European financial integration disproportionately affected intra-European trade, the creation of a larger single market also boosted trade vis-a-vis non-European financial partners.

In terms of cross-country variation in international financial integration, Lane and Milesi-Ferretti (2008) identify a number of robust co-variates. In particular, it seems that those countries with larger domestic financial systems, higher levels of output per capita and smaller populations exhibit the highest values for the IFI ratio. It is not immediately obvious that domestic financial trade and international financial trade should be complements, in view of the potential for substitution between these two activities but the complementarity effect dominates in the data. The positive correlation with output per capita is consistent with a greater capacity in richer countries to pay the fixed costs involved in developing the institutional capacity associated with cross-border financial trade, while the lower capacity for domestic risk diversification is one

reason why smaller countries typically run larger external financial positions.

These structural factors help to explain why the level of international financial integration for emerging economies than for advanced economies. A lower level of financial development and lower GDP per capita differentiate these countries from the advanced countries. In addition, emerging economies do not have the same types of institutional linkages that stimulate financial trade among the European countries. Finally, tighter regulation of banking systems (and tighter capital controls in some emerging economies) discouraged emerging-market banks from embracing the financial innovation wave in the mid-2000s in the same manner as banks in many advanced economies.

In addition to these structural factors, it is also important to take into account the marked shift in emerging-market strategies in the wake of the 1990s financial crises. As documented by Lane and Milesi-Ferretti (2007), Lane and Shambaugh (2010) and Prasad (2011), these countries reduced net external liabilities by running current account surpluses, improved liquidity by accumulating foreign-exchange reserves and lowered debt-equity ratios in the composition of external liabilities.

The IFI ratio only captures the aggregate scale of international balance sheets. It is especially important to consider the debt-equity mix, in view of the different risk-bearing properties of debt and equity instruments. Figures ??-?? show international debt-equity ratios for the advanced and emerging economies. In relation to the debt-equity mix for advanced economies, Figure ?? shows an important reversal between 1999 and 2008: after a sustained period in which cross-border equity positions grew more quickly than cross-border debt positions, the decade before the crisis saw a sharp increase in debt-equity ratios. Moreover, the debt-equity ratio for advanced economies was higher for external liabilities than for external assets.

Figure ?? shows that the debt-equity patterns are quite different for emerging economies. The debt-equity ratio is much higher for foreign assets than for foreign liabilities. On the foreign asset side, there was a rapid increase in the debt-equity ratio between 1999 and 2002, which was partly reversed during 2003-2007. In relation to foreign liabilities, there was a marked downward shift in the debt-equity ratio from 2001 onwards, as these countries favoured FDI and portfolio equity inflows over debt inflows.

The "long equity, short debt" strategy pursued by many advanced economies clearly carried risks. While this mix might earn a positive net return during normal times, it is destabilising during a crisis period since a decline in equity values reduces the net worth of domestic investors at the same time that tighter conditions in credit markets increases funding risks for debt liabilities.

By way of contrast, the "long debt, short equity" profile of emerging economies provided substantial protection. The buffer provided by holding liquid foreign-currency foreign debt assets covered in the event of disruption in credit markets or currency depreciation, while the high equity component in external liabilities provided considerable outward risk transfer in the event of a decline in domestic asset prices. Still, at the same time, this profile also contained vulnerabilities, since foreign debt assets are exposed to default risk during crisis periods. In addition, the funding of equity liabilities and the value of domestic assets can be compromised by international financial multiplier effects, by which foreign investors that face a tougher domestic financial environment may be forced to sell foreign positions through a variety of mechanisms (Krugman 2008).

From the perspective of 2006-2007, it seemed that financial globalisation was a strong secular process that was creating ever-stronger financial linkages across countries. This was especially true among the advanced economies, with the group of emerging economies adopting a

more cautious approach. The crisis that took hold in 2008 and is still ongoing would provide an important test of the properties of financial globalisation. We turn to the inter-relations between the crisis and financial globalisation in the next section.

### **3 Financial Globalisation and the Crisis**

We divide our analysis into three parts. First, it is useful to ask whether financial globalisation was an important contributory factor in the origination of the global financial crisis. Second, conditional on the crisis occurring, we can address the mechanics of how financial globalisation affected the propagation and incidence of the crisis across countries, since some properties of financial globalisation may have amplified crisis shocks while other properties of financial globalisation may have provided a buffer that mitigated the impact of crisis shocks. Third, financial globalisation plausibly affected crisis management by policymakers through a variety of channels. In this section, we address each of these dimensions in turn.

#### **3.1 Financial Globalisation and Sources of the Crisis**

Did the rise in cross-border financial trade contribute to the origination of the global financial crisis? It is possible to identify two main channels by which financial globalisation contributed to the financial conditions that ultimately gave rise to the crisis.

First, the participation of foreign investors (especially foreign banks) fuelled the accelerated growth of the asset-backed securities markets in the United States that were central in the original market panic in 2007-2008. As documented by Acharya and Schnabl (2009) and Bernanke et al (2011), European banks were major purchasers of asset-backed securities. In large part, these banks also obtained dollar funding in the US money markets, as detailed by Shin (2011). For this reason, the role of European banks in enabling the expansion of the US ABS markets did not jump out of the balance of payments data, although the implicit risk exposure of European parent banks grew in line with these US activities.

Second, financial globalisation permitted rapid growth in the balance sheets of many banks. This took place at two levels. In relation to globally-active banks, the size and complexity of these banks grew rapidly, making it difficult for national regulators to adequately police risk profiles. In addition, the capacity of local banks to expand lending by tapping international wholesale markets fuelled credit growth in a number of countries.

Third, the growing role of emerging markets in the world financial system may also have contributed to the build up of weaknesses in credit markets. In particular, the general-equilibrium impact of the demand for low-risk debt assets from emerging-market official sources and the increased supply of equity opportunities in these countries may have added fuel to the securitisation boom (see, amongst many others, Bernanke et al 2011).

In these ways, although there is no easy way to quantify its importance relative to other factors, financial globalisation plausibly contributed to the credit market vulnerabilities that were at the origin of the global financial crisis. In essence, financial globalisation magnified the impact of underlying distortions, such as inadequate regulation of credit markets and banks, by allowing the scaling-up of financial activities that might have faced capacity limits in autarkic financial systems (see also Borio and Disyatat 2011).

Going further, the variation in the cross-country incidence and propagation of the global crisis may be linked to differential levels and types of participation in cross-border financial trade.



For instance, Lane and Milesi-Ferretti (2011b) identify the rate of pre-crisis credit growth and the scale of pre-crisis current account deficits as important correlates of the scale of the decline in output and domestic expenditure during 2009. More generally, credit growth is an important leading indicator of subsequent financial crises, with recent estimates provided by Jorda et al (2011) and Gourinchas and Obstfeld (2012). In related fashion, Lane and Milesi-Ferretti (2012) show that the scale of pre-crisis "excess" current account deficits has been associated with larger current account turnarounds over 2008-2010, which were mostly accomplished through reductions in domestic absorption.

Financial globalisation plausibly contributed to rapid domestic credit growth by operating on both supply factors and demand factors. In relation to credit supply, domestic banks and the affiliates of foreign banks can raise various types of wholesale funding on international markets, with foreign investors also an important source of bank equity (both through portfolio equity and FDI). In relation to credit demand, capital inflows can contribute to a low interest rate environment and improve the net worth of domestic borrowers by pushing up domestic asset prices.

For a sample of European countries, Lane and McQuade (2012) find that international capital inflows were indeed correlated with domestic credit growth during the 2003-2008 pre-crisis period. In particular, a high level of net debt inflows was associated with more rapid domestic credit growth, as is shown in Figure ???. This is consistent with the funding channel by which domestic banks were able to expand lending capacity by raising wholesale funding on international markets. The flip side is that high rates of net debt outflows were associated with lower domestic credit growth in key source countries such as Germany.

As noted, it is also plausible that financial globalisation facilitated the emergence of large and persistent current account imbalances. Figure ??? shows the cross-country standard deviation in current account balances over 1995-2010, which captures a marked increase in dispersion during 2002-2007, followed by a compression phase during 2008-2010. On the deficit side, a larger pool of international investors made it easier to obtain external funding; on the surplus side, the availability of foreign assets provided an alternative outlet for domestic savings.

At a global level, Blanchard and Milesi-Ferretti (2010) highlight that the factors driving current account balances varied across different phases. Still, international financial integration surely increased the elasticity of capital flows to these underlying forces, both in relation to welfare-increasing factors (such as differences in demographics or productivity) and welfare-reducing factors (asset bubbles, overborrowing distortions).

For a European sample, Lane and Pels (2012) find that the covariates of current account imbalances shifted around 2003. Before 2003, external imbalances were highly correlated with differences in output per capita, with richer European countries running surpluses and poorer European countries running deficits. This pattern was interpreted benignly by Blanchard and Giavazzi (2002) as conforming to neoclassical patterns by which capital running downhill should accelerate output convergence and improve welfare.

However, Lane and Pels (2012) show that differences in growth projections across countries emerged as a strong correlate of current account imbalances during the 2003-2007 period in which the level of dispersion in external positions sharply increased. To the extent that these growth projections were extrapolations from the unsustainable expansion of the nontraded sectors in some countries (Ireland and Spain and some Eastern European countries come to mind), these types of current account deficits were not necessarily welfare enhancing. Indeed, these authors show that a primary source of the covariation between growth projections and the current account during 2003-2007 was an increase in construction investment in the deficit countries, which was a

danger signal in terms of repayment capacity (see also Blanchard 2007, Giavazzi and Spaventa 2011, Chen et al 2012).

In summary, we can consider financial globalisation to have contributed to the origination of the crisis by enabling the scaling-up of the US securitisation boom that was the proximate trigger for the crisis -- it is difficult to imagine that the growth in these credit markets would have been of similar magnitude without the participation of foreign investors. In addition, financial globalisation also had a central role in the emergence of large and persistent differences in credit growth and current account imbalances across countries -- these imbalances would play a central role in determining the cross-country incidence and propagation of the original crisis.

### **3.2 Financial Globalisation: Crisis Amplifiers and Crisis Buffers**

Regardless of whether financial globalisation contributed to the origination of the crisis, it is important to investigate the mechanisms by which cross-border financial integration either amplified crisis dynamics or provided a buffer that mitigated crisis shocks.

It is useful to divide the analysis between "flow" effects and "balance sheet" effects. In relation to the behaviour of capital flows during the crisis, Milesi-Ferretti and Tille (2011) document a "great retrenchment" during the crisis (see also Figure ?? in Section 2). At a general level, periods of enhanced global risk are associated with much smaller volumes of gross capital flows (Forbes and Warnock 2012), as investors refrain from making international commitments and seek to pull back from accumulated positions that were built up during normal times but look oversized in a higher-risk environment.

The most dramatic turnaround took place in relation to banking-sector flows, with foreign investors draining liquid liabilities (deposits, short-term wholesale funding) from stressed banks and domestic investors similarly repatriating foreign liquid assets. In both directions, banks were the main proximate investors in other banks, so the cross-border retrenchment was part of the general breakdown in inter-bank markets during the crisis. While individually rational, the collective exit from these markets contributed to the illiquidity problems that defined the acute phase of the crisis. Given the lack of an adequate international regulatory framework, cross-border liquidity runs were more difficult to forestall than domestic liquidity runs. (We defer the discussion of the central banking policy response to the next subsection.)

In passing, it is worth noting that the exit from foreign markets was far from uniform, with the composition of the investor base mattering for the scale of the capital flow reversal. For instance, De Haas and Van Horen (2011) show that banks were most likely to pull back from destinations that were more geographically distant from the home market. In similar fashion, Galstyan and Lane (2011) show that foreign investors were more likely to reduce portfolio equity and portfolio debt positions in further-distant host countries.

It might be expected that some types of capital flows could be a stabilising force during a crisis. For instance, in the wake of a decline in domestic asset prices, bargain-seeking foreign investors could be a source of new capital inflows in the forms of portfolio investment and foreign direct investment. While this mechanism has partially operated during the crisis, it has less force in the context of a banking crisis, in view of the opacity of banking-sector balance sheets and the risks of subsequent regulatory interventions that could harm foreign investors in distressed domestic banks.

For those countries suffering the most severe domestic crises, the opportunity to repatriate foreign assets might assist in domestic recovery. This has most force if there is a low (or even



negative) correlation between foreign asset returns and domestic asset returns and if foreign assets are selected to provide diversification against domestic risks. However, the effectiveness of this mechanism is weaker during a global downturn in asset prices; it also is less helpful if foreign asset purchases acted to concentrate risk rather than to diversify risk (CGFS 2010). For instance, domestic speculators who had done well during the real estate boom in Ireland doubled down by making aggressive purchases in the property sector in other hot markets (Central and Eastern Europe, United Kingdom, United States). This pattern boosted levered returns during the global real estate boom but exacerbated the losses once the global property prices went into reverse.

Turning to the role of "international balance sheet" effects, the rise in foreign holdings has magnified the quantitative importance of the valuation channel of external dynamics (Lane and Milesi-Ferretti 2001, Lane and Milesi-Ferretti 2007, Gourinchas and Rey 2007, Obstfeld 2012a, Obstfeld 2012b). All else equal, capital gains on foreign assets and capital losses on foreign liabilities improve the net international investment position and such gains in external wealth can provide a stabilising force if excess returns are earned during crisis periods. However, it is also possible to envisage scenarios in which valuation losses occur during a crisis, which is a destabilising pattern. In fact, this was the classic pattern in traditional emerging-market crises, with the toxic pattern of exchange rate depreciation in combination with high levels of foreign-currency debt delivering negative valuation effects that amplified crisis dynamics.

It is notoriously difficult to execute careful empirical work on valuation effects, in view of the quality issues related to international balance sheet data.<sup>3</sup> In particular, the recorded levels of foreign assets and foreign liabilities are subject to frequent and large-scale revisions that relate to shifts in survey methods and other measurement issues. For this reason, it is difficult to correctly capture the true valuation effects in the data.

In addition, it is also not straightforward to identify the "ultimate" owner of various foreign assets, especially in countries with large international financial centres (see also Milesi-Ferretti et al 2010). For instance, the United Kingdom reported losses on holdings of US asset-backed securities during 2008. However, it turned out that a non-trivial proportion of these losses fell on the British affiliates of foreign-owned banks, so that its FDI liabilities also declined in this period as these foreign-owned banks announced losses on these positions.

In working out the role played by the valuation channel during the current crisis, a number of factors have to be taken into consideration. First, the strong global co-movement in equity prices during the crisis meant that the overall net equity position of each country was very important in determining the distribution of gains and losses. In this regard, the general pattern was that advanced economies lost and emerging markets gained, in view of the asymmetric positions of the two groups in relation to portfolio equity and FDI net positions.

Second, it is important to differentiate across different debt categories. In relation to the 2008 US-centred phase of the crisis, the foreign investors in loss-making, asset-backed securities were primarily from other advanced economies. In contrast, investors from emerging markets (mainly official investors) held safe government-backed securities and so were not exposed to the meltdown in the ABS markets.

Taking a longer and broader view of the crisis, the full attribution of losses on debt positions is incomplete, since there are typically long delays before losses on bank loan books are fully acknowledged, while the distinction between "hold to maturity" securities and "trading" securities means that the accounting treatment of bank holdings of sovereign debt only partially

---

<sup>3</sup>See, amongst others, Lane and Milesi-Ferretti (2009), Balli et al (2012), Curcuru et al (2012), Gourinchas et al (2012).

reflects mark-to-market principles.

Still, the writing down of 107 billion in Greece's sovereign debt obligations to private-sector investors (corresponding to 50 percent of Greek GDP) will primarily fall on foreign investors, substantially improving its net international investment position. On a more minor scale, the write down of 14 billion on the subordinated debt issued by Irish banks corresponds to about 9 percent of Irish GDP and will also overwhelmingly fall on foreign investors. Over time, the scale of national and sectoral debt burdens in Europe makes it likely that external balance sheet adjustment will partly take place through further debt write downs (see also Reinhart et al 2012).

Third, exchange rate movements have a primary role in determining valuation effects, since foreign assets are typically denominated in foreign currency and, especially for advanced economies, foreign liabilities typically have a large domestic-currency component (see, amongst many others, Lane and Shambaugh 2010). During 2008, the appreciation of the US dollar constituted a capital loss for the United States but a capital gain for the many emerging markets that maintained "long dollar" positions, largely consisting of high levels of dollar-denominated official reserves (see also Milesi-Ferretti 2009 and Gourinchas et al 2012). In contrast, the sizeable depreciation of Sterling during 2008 provided a valuation gain to the United Kingdom, while Australia and New Zealand also enjoyed sizeable currency-related valuation gains during 2008. Within the euro area, both foreign assets and foreign liabilities are mainly denominated in euro, so that the exchange rate component of the valuation channel is weaker for these countries than for countries with independent exchange rates.

The currencies of many emerging markets also depreciated during 2008. Historically, this would have been problematic due to high levels of foreign-currency debt. However, the accumulation of large foreign-currency reserves meant that domestic currency depreciation now was associated with a capital gain on foreign assets, while the shift from foreign-currency debt to equity-type instruments reduced the impact on the liability side of the international balance sheet.

Finally, the overall return on foreign assets and foreign liabilities is determined by international investment income flows as well as by capital gains and losses. The general decline in interest rates in the advanced economies during the crisis constituted a reduction in net international payments on the "short debt" positions of these economies. Since 2010, a partial exception has been the euro area periphery, to the extent that rising spreads on sovereign debt liabilities have offset the lower policy interest rates.

### **3.3 Financial Globalisation: Crisis Management**

Financial globalisation also affected crisis management along a number of dimensions. At a basic level, the very high levels of cross-border financial positions captured in Figures ??-?? mark the current crisis as quantitatively different from previous crisis episodes in terms of the scale of international financial linkages. In turn, this has constrained the intervention capacity of national governments, while increasing the importance of different types of international policy responses.

In relation to the international banking system, the contagion risks associated with the vulnerabilities of global systemically-important financial institutions (G-SIFIs) highlighted the inadequacy of national-level financial regulatory systems (Claessens et al 2010). In turn, this prompted the upgrading of the activities of the Financial Stability Board (FSB), even if this remains far from acting as a global regulator.

At a European level, a new European System of Financial Supervision (ESFS) was created,

including the establishment of the European Systemic Risk Board (ESRB) and three new pan-European sectoral agencies (the European Banking Authority; the European Insurance and Occupational Pensions Authority; and the European Securities and Markets Authority). Still, even within Europe, the primary responsibility for financial supervision remains at the national level.

In terms of the provision of central bank liquidity, the high reliance of international banks (especially European banks) on dollar funding exposed the limitations of relying on home central banks as a source of non-market liquidity. In part, foreign-currency liquidity was obtained by the ability of the local affiliates of international banks to tap the liquidity facilities offered by national central banks. In addition, foreign-currency liquidity was made available through a remarkable series of ad-hoc currency swap arrangements among the world's major central banks (see, amongst others, McGuire and Von Peter 2009). Still, in terms of institutional design, the absence of a long-term standing currency-swap agreements limit the capacity of the international system to deal with financial shocks.

The resolution of failing banks is also made more challenging by financial globalisation. First, the cross-country issues involved in the Lehmans bankruptcy process illustrate the complexity of liquidating internationally-active banks. Second, cases such as Dexia show the difficulties involved in sharing the fiscal costs involved in the resolution of multi-country banking groups (see Pisani-Ferry and Sapir 2010).

Third, (actual or prospective) losses concentrated in overseas affiliates might tempt a home government to cut loose these affiliates in order to protect the parent bank. While this risk remains non-trivial, it is important to recognise that some home governments have accepted substantial fiscal costs in order to support the foreign affiliates of domestic banks. For instance, Broadbent (2012) calculates that 75 percent of the losses of the major UK banks were related to their non-UK balance sheets. In related fashion, current estimates of the losses of foreign-owned banks in Ireland amount to 18 percent of Irish GDP ( Honohan 2012, Deutsche Bank 2012).

Ad-hoc financial diplomacy may also have deterred some parent banks from abandoning troubled affiliates. The most notable example is the Vienna Initiative by which Western European parent banks agreed to maintain commitments vis-a-vis affiliates in Central and Eastern Europe during the initial stages of the global financial crisis (see De Haas et al 2012). This coordinated approach solved the "race to the exit" problem by which individual parent banks might fail to internalise the systemic impact of pulling funding from affiliates in host countries, especially those host countries in which foreign-owned banks were the bedrock of the local financial system.

While such a coordinated approach might have been effective in forestalling a panic-driven suboptimal equilibrium during the most intense phase of the crisis, it does not remove the underlying tensions between home and host countries in relation to the relative financial health of parent banks and affiliate banks and differing regulatory incentives (see also Beck et al 2012).

The very high level of cross-border financial integration within the euro area has posed particular difficulties in managing the banking crisis (see also Allen et al 2011). A remarkable feature of the European crisis has been the replacement of private-sector capital flows to the periphery with quasi-automatic official flows in the form of ECB liquidity flows. Relative to countries with independent currencies and/or with foreign-currency liabilities, ECB liquidity flows have been a stabilising force during the crisis, ameliorating the impact of the large-scale private-sector reversal in capital flows. For instance, Lane and Milesi-Ferretti (2012) calculate that liquidity inflows grew from virtually zero during the pre-crisis period to 2010 values of 54 percent of GDP for Ireland, 22 percent for Greece and 17 percent for Portugal. In related fashion, cross-border liquidity flows are the source of the large Target 2 imbalances that have emerged

since the onset of the crisis.

Still, even with the over-collateralisation of refinancing operations, the ECB takes on credit risk in providing liquidity funding. In turn, this gives rise to the possibility of cross-border transfers if banks in a given country default on ECB obligations and the underlying collateral proves to be inadequate, since the losses are shared among the member countries in proportion to their share in the capital key of the ECB.

In order to manage this risk, liquidity needs can be reduced by scaling down bank balance sheets through an asset disposal programme. In addition, a primary policy prescription is to require banks to hold a sufficient level of capital to absorb expected losses, thereby increasing the ability of banks to raise wholesale funding and reducing the risk of defaulting on central bank obligations. If current capital levels are too low to cover prospective loan losses, this entails a bank recapitalisation programme.

The composition of asset disposal programmes may also involve cross-country asymmetries. In particular, home regulators may push banks to dispose of foreign assets, in order to avoid the impact of domestic asset sales. While this may represent a form of financial protectionism, the prioritisation of foreign asset sales may be desirable to the extent that the original acquisition of foreign assets was driven by distorted over-expansion of the balance sheets of domestic banks (CGFS 2010). Under this scenario, foreign asset sales represent the shrinkage of "non-core" operations, allowing these banks to focus on their core activities.

It is difficult to set the optimal speed of deleveraging through asset disposals, especially in relation to long-lived assets such as mortgages and other property-backed loans where the value of the underlying collateral would be driven down in the event of overly-rapid deleveraging. In this regard, there is a clear collective-action problem if deleveraging programmes are not coordinated across countries, especially when banks under different national regulators have outstanding positions in common loan markets.

In addition to the fire-sale problem, non-coordinated deleveraging programmes also pose problems for macroeconomic policy, in view of the negative impact of deleveraging on the current level of aggregate demand. A slower pace of deleveraging may necessitate a longer period of reliance on central bank liquidity. A faster pace raises expected losses on asset disposals, requiring a greater degree of recapitalisation. This trade off can give rise to cross-border tensions in view of the different distribution of risk across these two margins.

Banks can be recapitalised from a variety of sources. Equity injections from private-sector investors are difficult to obtain, especially if there are large non-crystallized prospective losses. Even in scenarios in which private-sector interest might be envisaged, the entry of foreign equity investors is hampered by asymmetric information problems by which the quality of domestic loans might be especially hard to assess by non-local investors.<sup>4</sup> In the other direction, the disposal of foreign affiliates can be a source of extra capital if these are profitable and the sale generates a capital gain. This can be the case if the domestic loan book is the main source of losses, while foreign affiliates operate in better-performing markets.

In cases where existing shareholders are virtually wiped out, capital may also be obtained by achieving write downs on subordinated debt obligations. Going further, it is arguable that it is desirable to extract concessions on senior bonds (at least in the case of extreme losses). However, senior bonds have so far remained untouched in the euro area, even if recent proposals from the

---

<sup>4</sup>By way of counter-example, one of the main Irish banks (Bank of Ireland) was able to raise foreign private-sector equity as part of its recapitalisation programme only after the quality of its loan books had been subjected to a rigorous granular stress test that was managed by an external agency.

European Commission recommend that senior bonds should form part of the loss-absorbing component of the capital structure in the future.

If these market-based options prove insufficient, the taxpayer is the final source of fresh capital for banks. If foreign investors hold a large proportion of bank bonds, there is a clear conflict of interest between domestic taxpayers and foreign bondholders in relation to recapitalisation options: the more can be obtained through writedowns of bonds, the lower the fiscal cost. Moreover, to the extent that the protection of bondholders is motivated by financial stability concerns, there is an externality in relation to international financial stability. While this applies at a global level, it is even stronger within a currency union, in view of the high degree of integration of common-currency bond markets. In the presence of this externality, national governments will undervalue the public good of international financial stability.

One way to address the externality issue is to provide directly recapitalise banks through a common international fund.<sup>5</sup> Furthermore, this would break the "diabolic loop" between national banking systems and national sovereigns in relation to the heavy fiscal costs of resolving deeply-troubled banking systems. Again, the importance of breaking this link applies most strongly inside the euro area, in view of the greater scope for cross-border contagion across banks and across national governments.

Such international cooperation in the provision of risk-bearing funding is not yet in place. Rather, official funding during the crisis has taken the traditional form of plain-vanilla loans and lines of credit to national governments. After a period of quietude, the IMF has become an active lender again during this crisis, committing more than \$300 billion in loans to member countries since 2007. This has required a major increase in the IMF's funding capacity, with further expansion planned.

In addition to its traditional role of acting as a source of foreign-currency funding for emerging-market economies that have been shut out of international markets, the IMF has taken on a major role in lending to high-income members of the euro area. In view of the scale of official funding needs in Europe, the IMF has entered joint loan agreements with the European Union, with the IMF providing only a minority of the required funding.

At one level, the marriage of IMF and regional funding is an appealing combination. In particular, the greater financial and trade linkages at the regional level mean that contagion risks are higher at a regional level than at a global level. However, there is a limit to the effectiveness of regional funding in the case of a common shock that negatively affects the fiscal positions of all countries in a given region. Moreover, cross-country political sensitivities at a regional level make it more difficult to implement standard adjustment programmes, since both creditor and debtor countries may seek to obtain politically-attractive exceptions to normal official loan conditions.

In view of the very large increase in financial balance sheets and the scale of cross-border financial positions, it is not too surprising that the scale of official funding requirements has grown dramatically. The macroeconomic and financial impact of a sudden stop in capital flows and/or the funding of fiscal deficits is increasing in the scale of balance sheet exposures. Moreover, the scope for cross-country contagion is also increasing the extent of cross-border financial positions.

The importance of official funding is even stronger inside a currency union. First, the inability to devalue means that fiscal policy is the main macroeconomic stabilisation instrument at a national level, so that swings in fiscal positions during a crisis are larger and more persistent than

---

<sup>5</sup>Of course, international bank recapitalisation would have to be accompanied by parallel international regulatory control of such banks.



under an independent currency regime. Second, investor demand for national sovereign debt is more elastic, since alternative sovereign debt assets from other member governments are available without having to take on currency risk. During the crisis, this "flight to safety" effect within the euro area has generated substantial cross-border capital flows, with a reduction in demand for peripheral sovereign debt and sharp reductions in the yields on the main safe asset, the German bund.

Third, the empirical evidence during the crisis indicates that there is considerable contagion among sovereign spreads inside the currency union, with a jump in the spread for one vulnerable country quickly spreading to other member countries with similar fiscal characteristics (see Favero and Missale 2012, amongst many others).

Financial globalisation also affected macroeconomic policy management during the crisis. In terms of global policy coordination, the world's major central banks announced coordinated interest rate cuts in October 2008, while coordinated fiscal expansions were announced at the G-20 summit in November 2009. After this most intense phase of the crisis in Autumn 2008, explicit macroeconomic policy coordination has not been maintained.

The limited role for global policy coordination has obvious explanations in view of the domestic mandates under which macroeconomic policy is determined. Still, the international spillovers from macroeconomic policy choices highlight the inefficiencies embedded in a non-coordinated approach. In addition to traditional spillovers from interest rate choices and fiscal choices, there are also international spillovers from the non-standard monetary instruments activated by central banks (Glick and Leduc 2012, Neely 2012).

Again, the potential gains from policy coordination are largest within the euro area, in view of the strong financial and trade linkages across the member countries. Relative to alternative monetary arrangements, a common central bank certainly delivers a coordinated interest rate policy. The ECB main refinancing rate was cut substantially during the crisis, from 4.25 percent in June 2008 to 1.0 percent by April 2009. It is an open question whether similarly-low policy interest rates could have been delivered by all member countries under a system of independent national currencies, in view of the risk premia and liquidity premia traditionally faced by the smaller member countries under previous systems.

At the same time, the ECB's traditional focus on area-wide aggregates in making its monetary policy decisions may be inadequate under conditions in which fundamental asymmetries exist among the member countries. In particular, as we saw in Section 2, cross-border financial integration was associated with the emergence of large net external imbalances among the member countries. In turn, the process of external adjustment among the member countries necessitates substantial shifts in intra-area real exchanges, which can only take the form of intra-area inflation differentials.<sup>6</sup> In view of the considerable evidence of downward wage rigidities, a temporarily-higher inflation target could facilitate external adjustment at a lower cost in terms of the shortfall of aggregate output and employment relative to potential.

Furthermore, fiscal policy coordination within the euro area is quite weak, despite the fiscal spillovers across the member countries. In particular, the European economic governance system is primarily directed at monitoring fiscal sustainability at a national level, even if the guidelines in principle do recognise the importance of taking into account the overall European macroeconomic situation in determining fiscal policies.

---

<sup>6</sup>As quantified by Chen et al (2012), the importance of extra-area trade for the main deficit countries means that a decline in the external value of the euro can also play an important role in the adjustment of broader trade-weighted measures of real exchange rates.

Still, the primary emphasis placed on national-level fiscal targets means that insufficient attention is given to the implications for the area-wide fiscal stance. Moreover, hard-wired fiscal coordination through the European-level joint fiscal budget is currently very small (at about one percent of aggregate GDP), especially relative to other monetary unions (such as the United States). This lack of fiscal coordination is especially problematic during a crisis period in view of the inherent fragility of national-level fiscal positions inside a currency union that was discussed above.

These factors indicate how financial integration reinforces the importance of fiscal reforms to improve the stability of the euro area. Of course, more prudent national fiscal policies during normal times would reduce the vulnerability of member countries during crisis periods by reducing average debt levels and improving the cyclical conduct of fiscal policy.

However, joint fiscal initiatives are also important. As pointed out by Brunnermeier et al (2011), the issuance of European-level tranching bonds can delink the "flight to safety" effect and cross-border flows, even if each national government remains fully liable for its own debt. The various proposals for eurobonds that involve joint-and-several liability can also accomplish this goal, although with a deeper level of fiscal union required in view of the moral hazard problems associated with jointly-guaranteed debt.

As noted above, a larger European-level fiscal budget can also relieve the pressure on national sovereigns. Here, two routes can be envisaged. First, a limited form of fiscal union would be involved in the creation of a common fiscal reserve fund that would be able to finance area-wide stimulus programmes in the event of an aggregate negative shock. As is the case with a common banking resolution fund and the European Stability Mechanism, this type of fiscal fund would only target the tail risks associated with crisis periods, such that fiscal policy primarily remains national in scope during normal times.

However, a deeper level of fiscal union would require a greater pooling of area-wide tax revenues in order to finance cyclically-sensitive expenditure lines (such as unemployment insurance) or distribute resources to member states in line with area-wide GDP rather than national-level GDP. Since such schemes could entail permanent net transfers across member countries in the event of permanent asymmetric shocks, a high level of political integration would be required to ensure the sustainability of this type of deep fiscal union.

Accordingly, the current intense debate about constructing European-level banking and fiscal institutions serves to illustrate the implications of a high level of financial integration for macroeconomic and financial stability, especially when financial globalisation amplifies the costs of various underlying distortions (such as inadequately-regulated banks and overborrowing incentives in different sectors). By way of contrast, the much weaker state of global governance (relative to even existing intra-European governance arrangements) suggests that a similar level of financial integration among a broader set of countries would not be remotely sustainable.

## **4 Financial Globalisation After the Crisis: Policy Reforms**

The global crisis has reinforced the importance of an array of policy reforms at international and national levels. There are two broad categories - reforms that can reduce the likelihood and severity of future crises and reforms that can improve macroeconomic and financial resilience in the event of a crisis.

At the international level, the most direct challenge is to improve the regulation of the global financial system. Here, the reform agenda is well known and includes the coordinated,

effective regulation of the group of global banks that form the backbone of the international financial system. At a basic level, this would be facilitated by a much deeper knowledge base about the international activities of these banks, which in turn requires much richer data collection, including the full integration of offshore international financial centres into the data matrix on cross-border financial activities (Lane and Milesi-Ferretti 2011a, Haldane 2012). In related fashion, better analytical models of international systemic risk are needed in order to usefully interpret such data and develop appropriate preventive policy responses (see, amongst others, Gourinchas 2012).

At the same time, regulatory oversight cannot be an adequate substitute for ensuring that these banks have sufficient incentives to avoid excessive risk taking, while market discipline can also be enhanced through the design of capital structures that increase the incentives for investor monitoring (Haldane 2011). In addition to enhancing bank safety, it is essential to develop international resolution regimes that can handle failures among this group of banks.

The other main element in international policy reform is the construction of stronger international safety nets. Even with the recent increases in its resources, the lending capacity of the IMF has not kept pace with the growth in cross-border financial positions. Given the costliness of avoidable defaults to the debtor country and, through contagion effects, to the global system, international liquidity provision has to remain a fundamental component in the international financial architecture.

At the same time, the growing size of international balance sheets and the fiscal costs of backstopping international liquidity facilities reinforces the importance of designing bailout systems that limit moral hazard problems (Obstfeld 2011a, Obstfeld 2011b). In related fashion, the international system has to be better prepared to deal with insolvency cases, whether it is bankrupt sovereigns or bankrupt banking systems. To this end, the potential gains from establishing an international bankruptcy court could be revisited (Sachs 1995).

In addition to global-level institutional reform, the very high level of financial integration in Europe (especially within the euro area) calls for the development of regional-level institutions that can help to improve macroeconomic and financial stability. The main ingredients were discussed above in Section 3 and it is beyond the scope of this paper to provide a full treatment of the European reform debate (see also Lane 2012). Still, an important differentiating factor between global-level and European-level reform is the much closer degree of political integration at the European level, even if it remains to be seen whether there is sufficient political will to deliver the required European-level institutional reforms.

Still, even if the global and regional financial architectures were much improved, it would remain the case that domestic residents bear the largest costs in the event of a financial crisis. Accordingly, the main responsibility for adapting policy regimes to cope with financial globalisation lies with national governments. In general, domestic policy reforms should be complementary to parallel reforms at the international level.

While operating under the general auspices of international or regional regulatory frameworks, the implementation of financial regulation is set to remain primarily local (with the possible exception of very large financial institutions). A key step is the development of national bank resolution regimes that limit the systemic and fiscal costs of failing banks. In addition, as is well understood, a primary challenge is to develop effective macro-prudential instruments that limit systemic risk. Even more important, national governments have to be willing to actively implement a rigorous macro-prudential framework, even at the risk of committing Type II errors that forestall sustainable expansions in credit growth. As emphasised by Ostry et al (2011) and

Jeanne et al (2012), a broad macro-prudential framework can include a role for capital controls. Finally, excessive leverage in the non-financial sector (corporates and households) can be further deterred through tax and regulatory policies that do not favour debt financing over equity financing (see also Rogoff 1999).

In terms of national macroeconomic policy frameworks, two key principles should guide the implementation of monetary and fiscal policies. First, the global crisis has provided further evidence of the costs of excessive imbalances (whether excessive domestic credit growth or excessive external deficits). While accepting that it is difficult to draw the line between sustainable and excessive imbalances, a prudential approach would suggest greater activism to lean against the wind. This includes operating a countercyclical fiscal policy that takes into account financial cycles as well as the output cycle (Benetrix and Lane 2011).

Second, it is important to have in place national buffers that can cope with adverse shocks. In terms of monetary regimes for countries with independent currencies, the crisis has revised upwards the prudential level of foreign-currency reserves, even if that level remains far below the scale of reserves currently maintained by some countries. In relation to fiscal policy, a basic message is that the crisis has revised downwards the level of public debt that can be considered "safe" in normal times, in view of the scope for rapid growth in public debt during financial crises (Reinhart and Rogoff 2009, 2011).

Moreover, the crisis has shown the importance of a strong public balance sheet in order to adequately address balance sheet problems in other domestic sectors (households, corporates, banks). In addition to maintaining a sufficiently-low public debt, this can involve the accumulation of a liquid rainy-day fund, since even a low-debt government may find it difficult to borrow during crisis periods.

For those countries still operating under binding financial account controls, the importance of a robust domestic institutional and policy framework in effectively managing cross-border financial integration strengthens the case for a gradualist approach to financial account liberalisation (see, amongst many others, Obstfeld 2009). At the same time, the classic tension remains -- external account restrictions protect the monopoly power of domestic financial institutions, at the possible cost of lower efficiency and lost growth opportunities (Kose and others 2009a, Mishkin 2007, 2009). Managing this trade off remains a primary challenge for policy officials in emerging and developing economies.

Finally, there are international externality effects from national policy choices, especially in areas such as the implementation of financial regulation, reserve accumulation and capital controls. In related fashion, there are international externality effects from national systemic imbalances (banking-system fragilities, external imbalances). Accordingly, an additional role for international institutions is to flag such externalities through monitoring and surveillance frameworks, even if such "soft" financial diplomacy faces natural limits.

## **5 Conclusions**

After a long period of relative calm in the international financial system, the global crisis has provided a severe test of financial globalisation. At a global level, the rapid growth in cross-border financial trade in the decade before the crisis contributed to the excessive growth in credit markets that was at the centre of the initial phase of the crisis. Moreover, financial globalisation fuelled the asymmetries in credit growth and external positions across countries that have played a critical role in determining the cross-country incidence and propagation of the crisis.

Once the crisis occurred, financial globalisation provided a buffer against the crisis for some countries, whereas it amplified the crisis for others. By and large, the structure of the international balance sheets of emerging economies provided valuable insulation against the crisis. In contrast, the " long equity, short debt" profile of many advanced economies was a risky profile in the face of declining equity markets and disruption in credit markets. However, currency depreciation for some advanced economies did improve external positions during the crisis.

Moreover, the global crisis has powerfully demonstrated that international financial integration amplifies the costs of policy and regulatory failures, both in terms of crisis prevention and crisis management. Although there has been an array of policy reforms in the wake of the crisis, much more remains to be done in terms of designing global, regional and national policy frameworks that can cope with high levels of international financial integration.

If the appropriate international and national institutions are put in place, financial globalisation retains its potential to positively contribute to risk diversification, consumption smoothing and efficient capital allocation. Indeed, under an improved institutional framework, a lower volume of cross-border financial trade might deliver more genuine benefits from financial globalisation, if " smart" international asset trade is enhanced at the expense of " distorting" international asset trade. I leave it to each reader to assess the likelihood and timing of these insitutional reforms.



## References

- Acharya, Viral V. and Philipp Schnabl (2010), " Do Global Banks Spread Global Imbalances? Asset-Backed Commercial Paper During the Financial Crisis of 2007--09," *IMF Economic Review* 58 (1), 37--73.
- Allen, Franklin, Thorsten Beck, Elena Carletti, Philip R. Lane, Dirk Schoenmaker and Wolf Wagner (2011), *Cross-Border Banking in Europe: Implications for Financial Stability and Macroeconomic Policies*, CEPR Report.
- Balli, Faruk, Sebnem Kalemli-Ozcan and Bent Sorensen (2012), " Risk Sharing Through Capital Gains," *Scandinavian Journal of Economics*, forthcoming.
- Beck, Thorsten, Radomir Todorov and Wolf Wagner (2012), " Supervising Cross-Border Banks: Theory, Evidence and Policy," *mimeo*, Tilburg University.
- Benetrix, Agustin and Philip R. Lane (2011), " Financial Cycles and Fiscal Cycles," *mimeo*, Trinity College Dublin.
- Bernanke, Ben S., Carol Bertaut, Laurie Pounder DeMarco and Steven Kamin (2011), " International Capital Flows and the Returns to Safe Assets in the United States, 2003-2007," *Banque de France Financial Stability Review* 15, 13-26.
- Blanchard, Olivier (2007), " Current Account Deficits in Rich Countries," *IMF Staff Papers* 54(2), 191-219.
- Blanchard, Olivier and Francesco Giavazzi (2002), " Current Account Deficits in the Euro Area: The End of the Feldstein-Horioka Puzzle?" , *Brookings Papers on Economic Activity* 2(2002), 147-186.
- Blanchard, Olivier and Gian Maria Milesi-Ferretti (2010), " Global Imbalances: In Midstream," in *Reconstructing the World Economy* (edited by Il SaKong and Olivier Blanchard), Washington DC: International Monetary Fund.
- Borio, Claudio and Piti Disyatat (2011), " Global Imbalances and the Financial Crisis: Link or No Link?," *BIS Working Paper No. 346*.
- Broadbent, Ben (2012), " Deleveraging," *mimeo*, Bank of England.
- Brunnermeier, Markus, Luis Garicano, Philip R. Lane, Marco Pagano, Ricardo Reis, Tano Santos, David Thesmar, Stijn Van Nieuwerburgh and Dimitri Vayanos (2011), " European Safe Bonds (ESBies)," *mimeo*, [www.euro-nomics.com](http://www.euro-nomics.com).
- Bruno, Valentina and Hyun Song Shin (2012), " Capital Flows, Cross-Border Banking

and Global Liquidity," *mimeo*, Princeton University.

Chen, Ruo, Gian Maria Milesi-Ferretti and Thierry Tressel (2012), "Euro Area Debtor Countries: External Imbalances in the Euro Area," *Economic Policy*, forthcoming.

Chinn, Menzie D. and Hiro Ito (2006), "What Matters for Financial Development? Capital Controls, Institutions, and Interactions," *Journal of Development Economics* 81(1), 163-192.

Chinn, Menzie D. and Hiro Ito (2008), "A New Measure of Financial Openness," *Journal of Comparative Policy Analysis* 10(3), 309-322.

Claessens, Stijn, Richard J. Herring and Dirk Schoenmaker (2010), *A Safer World Financial System: Improving the Resolution of Systemic Institutions*, 12th Geneva Report on the World Economy.

Committee on the Global Financial System (2010), "Long-Term Issues in International Banking," *CGFS Paper No. 41*.

Curcuru, Stephanie E., Charles P. Thomas and Francis E. Warnock (2012), "On Returns Differentials," *mimeo*, University of Virginia.

De Haas, Ralph and Neeltje Van Horen (2011), "Running for the Exit: International Banks and Crisis Transmission," *EBRD Working Paper No. 124*.

De Haas, Ralph, Yevgeniya Korniyenko, Elena Loukoianova, and Alexander Pivovarsky (2012), "Foreign Banks and the Vienna Initiative: Turning Sinners into Saints?," *IMF Working Paper No. 12/117*.

Deutsche Bank (2012), "Irish Banks: Not Out of the Woods Yet," *Special Report*.

Eichengreen, Barry (1991), "Trends and Cycles in Foreign Lending," in (Horst Siebert, ed.) *Capital Flows in the World Economy*, Tübingen: Mohr (Siebeck), 3-28.

Favero, Carlo and Alessandro Missale (2012), "Sovereign Spreads in the Euro Area. Which Prospects for a Eurobond?," *Economic Policy*, forthcoming.

Forbes, Kristin J. and Francis E. Warnock (2012), "Capital Flow Waves: Surges, Stops, Flight, and Retrenchment," *Journal of International Economics*, forthcoming.

Galstyan, Vahagn and Philip R. Lane (2011), "Bilateral Portfolio Dynamics During the Global Crisis," *IIS Discussion Paper No. 366*.

Giavazzi, Francesco and Luigi Spaventa (2011), "Why the Current Account Matters in a Monetary Union," in *The Euro Area and The Financial Crisis* (Miroslav Beblavy, David Cobham and L'udovit Odor, editors), Cambridge University Press, 59-80.

Glick, Reuven and Sylvain Leduc (2012), " Central Bank Announcements of Asset Purchases and the Impact on Global Financial and Commodity Markets," *Journal of International Money and Finance*, forthcoming.

Goldberg, Linda S. (2009), " Understanding Banking Sector Globalization, " *IMF Staff Papers* 56(1), 171-197.

Gourinchas, Pierre-Olivier (2012), " Global Imbalances and Global Liquidity," *mimeo*, UC-Berkeley.

Gourinchas, Pierre-Olivier and Helene Rey (2007), " International Financial Adjustment," *Journal of Political Economy* 115, 665-703.

Gourinchas, Pierre-Olivier and Maurice Obstfeld (2012), " Stories of the Twentieth Century for the Twenty-First," *American Economic Journal: Macroeconomics* 4(1), 226-265.

Gourinchas, Pierre-Olivier, Helene Rey and Kai Truempler (2012), " The Financial Crisis and The Geography of Wealth Transfers," *Journal of International Economics*, forthcoming.

Haldane, Andrew (2011), " Capital Discipline," *mimeo*, Bank of England.

Haldane, Andrew (2012), " Towards a Common Financial Language," *mimeo*, Bank of England.

Hoggarth, Glenn, Lanvan Mahadevaand and Jeremy Martin (2010), " Understanding International Bank Capital Flows During the Recent Financial Crisis," *Bank of England Financial Stability Paper No.08*.

Honohan, Patrick (2012), " Household Indebtedness: Context, Consequences & Correction," *mimeo*, Central Bank of Ireland.

Jeanne, Olivier, Arvind Subramanian and John Williamson (2012), *Who Needs To Open the Capital Account?*, Peterson Institute for International Economics.

Jordà, Òscar, Moritz Schularick and Alan M Taylor (2011), " Financial Crises, Credit Booms, and External Imbalances: 140 Years of Lessons," *IMF Economic Review* 59(2), 340-378.

Kose, M Ayhan, Eswar Prasad, Kenneth Rogoff, and Shang-Jin Wei (2009a), " Financial Globalization: A Reappraisal, " *IMF Staff Papers*, 56(1), 8-62.

Kose, M. Ayhan, Eswar S. Prasad, and Marco E. Terrones (2009b), " Does Openness to International Financial Flows Raise Productivity Growth?, " *Journal of International Money and Finance*, 28(4), 554-580.

Kose, M. Ayhan, Eswar S. Prasad, and Marco E. Terrones (2009c), " Does Financial Globalization Promote Risk Sharing?," *Journal of Development Economics* 89(2), 258-270.

Kose, M. Ayhan, Eswar S. Prasad, and Ashley D. Taylor (2011), " Thresholds in the Process of International Financial Integration," *Journal of International Money and Finance* 30(1), 147-179.

Krugman, Paul (2008), " The International Finance Multiplier," *mimeo*, Princeton University.

Lane, Philip R. (2011), " The Irish Crisis," in *The Euro Area and The Financial Crisis* (Miroslav Beblavy, David Cobham and L'udovit Odor, editors), Cambridge University Press, 59-80.

Lane, Philip R. (2012), " The European Sovereign Debt Crisis," *Journal of Economic Perspectives*, forthcoming.

Lane, Philip R. and Gian Maria Milesi-Ferretti (2001), " The External Wealth of Nations: Measures of Foreign Assets and Liabilities for Industrial and Developing Countries," *Journal of International Economics* 55(2), 263-294.

Lane, Philip R. and Gian Maria Milesi-Ferretti (2007), " The External Wealth of Nations Mark II: Revised and Extended Estimates of Foreign Assets and Liabilities, 1970-2004," *Journal of International Economics* 73, 223-250.

Lane, Philip R. and Gian Maria Milesi-Ferretti (2008), " The Drivers of Financial Globalization," *American Economic Review (Papers & Proceedings)* 98(2), 327-332.

Lane, Philip R. and Gian Maria Milesi-Ferretti (2009), " Where Did All the Borrowing Go? A Forensic Analysis of the US External Position," *Journal of the Japanese and International Economies* 23(2), 177-199.

Lane, Philip R. and Gian Maria Milesi-Ferretti (2011a), " Cross-Border Investment in Small International Financial Centers," *International Finance* 14(2), 301-330.

Lane, Philip R. and Gian Maria Milesi-Ferretti (2011b), " The Cross-Country Incidence of the Global Crisis," *IMF Economic Review* 59(1), 77-110.

Lane, Philip R. and Gian Maria Milesi-Ferretti (2012), " External Adjustment and the Global Crisis," *Journal of International Economics*, forthcoming.

Lane, Philip R. and Jay C. Shambaugh (2010), " Financial Exchange Rates and International Currency Exposures," *American Economic Review* 100(1), 518--540.

Lane, Philip R. and Peter McQuade (2012), " Domestic Credit Growth and International Capital Flows," *mimeo*, Trinity College Dublin.

Lane, Philip R. and Barbara Pels (2012), " Current Account Imbalances in Europe," *Moneda y Credito*, forthcoming.

McCauley, Robert, Patrick McGuire and Goetz Von Peter (2010), " The Architecture of Global Banking: From International to Multinational?," *BIS Quarterly Review* (March), 25-37.

McGuire, Patrick and Goetz von Peter (2009), " The US Dollar Shortage in Global Banking and the International Policy Response," *BIS Working Paper No. 291*.

Milesi-Ferretti, Gian Maria (2009), " A \$2 Trillion Question," VOXEU.

Milesi-Ferretti, Gian Maria, Francesco Stobbe and Natalia Tamirisa (2010), " Bilateral Financial Linkages and Global Imbalances: a View on The Eve of the Financial Crisis," *IMF Working Paper No. 10/257*.

Milesi-Ferretti, Gian Maria and Cedric Tille (2011), " The Great Retrenchment: International Capital Flows During the Global Financial Crisis," *Economic Policy* 26(66), 285-342.

Mishkin, Frederic S. (2007), " Is Financial Globalization Beneficial?," *Journal of Money, Credit and Banking* 39(2-3), 259-294.

Mishkin, Frederic S. (2009), " Why We Shouldn't Turn Our Backs on Financial Globalization," *IMF Staff Papers* 56(1), 139-170.

Neely, Christopher J. (2012), " The Large-Scale Asset Purchases Had Large International Effects," *mimeo*, Federal Reserve Bank of St. Louis.

Obstfeld, Maurice (2009), " International Finance and Growth in Developing Countries: What Have We Learned?," *IMF Staff Papers* 56(1), 63-111.

Obstfeld, Maurice (2011a), " International Liquidity: The Fiscal Dimension," *mimeo*, UC Berkeley.

Obstfeld, Maurice (2011b), " The International Monetary System: Living With Asymmetry," *mimeo*, UC Berkeley.

Obstfeld, Maurice (2012a), " Financial Flows, Financial Crises, and Global Imbalances," *Journal of International Money and Finance* 31, 469-480.

Obstfeld, Maurice (2012b), " Does the Current Account Still Matter?," *American Economic Review*, forthcoming.

Obstfeld, Maurice and Alan M. Taylor (2004), *Global Capital Markets: Integration, Crisis, and Growth*, Cambridge University Press.



Ostry, Jonathan D., Atish R. Ghosh, Karl Habermeier, Luc Laeven, Marcos Chamon, Mahvash S. Qureshi and Annamaria Kokenyne (2011), "Managing Capital Inflows: What Tools to Use?," *IMF Staff Discussion Note No. 11/06*.

Pisani-Ferry, Jean and André Sapir (2010), "Banking Crisis Management in the EU: An Early Assessment," *Economic Policy* 25, 341-373.

Prasad, Eswar S. (2011), "Role Reversal in Global Finance," *NBER Working Paper No. 17497*.

Prasad, Eswar S. and Raghuram G. Rajan (2009), "A Pragmatic Approach to Capital Account Liberalization," *Journal of Economic Perspectives* 22(3), 149-72.

Prasad, Eswar S., Raghuram G. Rajan and Arvind Subramanian (2007), "Foreign Capital and Economic Growth," *Brookings Papers on Economic Activity* 38(1), 153-230.

Rajan, Raghuram G. (2005), "Has Financial Development Made the World Riskier?," *Symposium Proceedings*, Federal Reserve Bank of Kansas City, 313-369.

Ranciere, Romain, Aaron Tornell and Frank Westermann (2008), "Systemic Crises and Growth," *Quarterly Journal of Economics* 123(1), 359-406.

Reinhart, Carmen M. and Kenneth S. Rogoff (2009), *This Time Is Different: Eight Centuries of Financial Folly*, Princeton University Press.

Reinhart, Carmen M. and Kenneth S. Rogoff (2011), "From Financial Crash to Debt Crisis," *American Economic Review* 101(5), 1676-1706.

Reinhart, Carmen M., Vincent R. Reinhart and Kenneth S. Rogoff (2012), "Debt Overhangs: Past and Present," *Journal of Economic Perspectives*, forthcoming.

Rodrik, Dani (1998), "Who Needs Capital-Account Convertibility?," in *Should the IMF Pursue Capital-Account Convertibility?*, Princeton Essays in International Finance No. 207.

Rodrik, Dani (2000), "How Far Will International Economic Integration Go?," *Journal of Economic Perspectives* 14(1), 177-186.

Rodrik, Dani and Arvind Subramanian (2009), "Why Did Financial Globalization Disappoint?," *IMF Staff Papers* 56(1), 112-138.

Rogoff, Kenneth (1999), "International Institutions for Reducing Global Financial Instability," *Journal of Economic Perspectives* 13(4), 21-42.

Rogoff, Kenneth, M. Ayhan Kose, Eswar Prasad and Shang-Jin Wei (2004), "Effects on Financial Globalization on Developing Countries: Some Empirical Evidence," *IMF Occasional*

*Papers 220*, International Monetary Fund.

Sachs, Jeffrey D. (1995), " Do We Need an International Lender of Last Resort?," *Frank Graham Memorial Lecture*, Princeton University.

Schmitz, Martin (2011), " Financial Reforms and Capital Flows to Emerging Europe," *Empirica* 38(4), 579-605.

Schularick, Moritz and Alan M. Taylor (2012), " Credit Booms Gone Bust: Monetary Policy, Leverage Cycles, and Financial Crises, 1870-2008," *American Economic Review* 102(2), 1029-1061.

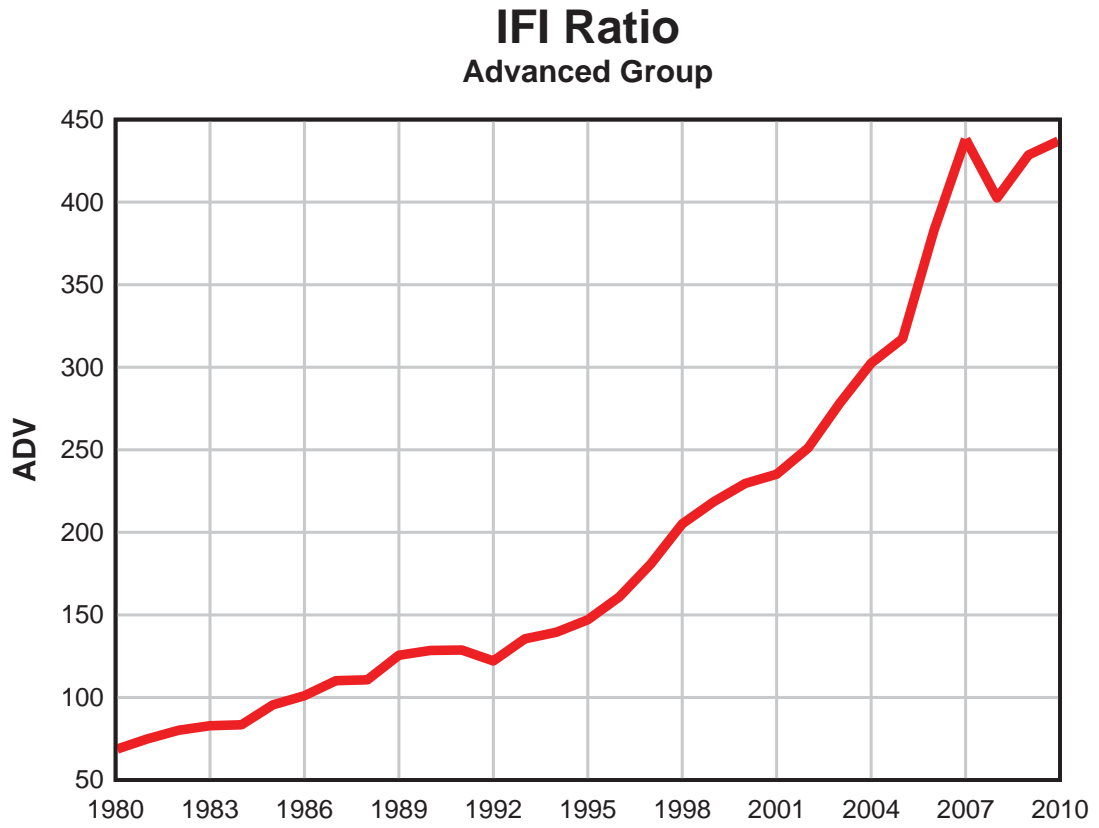
Shin, Hyun Song (2011), " Global Banking Glut and Loan Risk Premium," *mimeo*, Princeton University.

Stiglitz, Joseph (2010), " Risk and Global Economic Architecture: Why Full Financial Integration May be Undesirable," *American Economic Review* 100(2), 388-392.

Stulz, René M. (2005), " The Limits of Financial Globalization," *Journal of Finance* 60(4), 1595-1638.

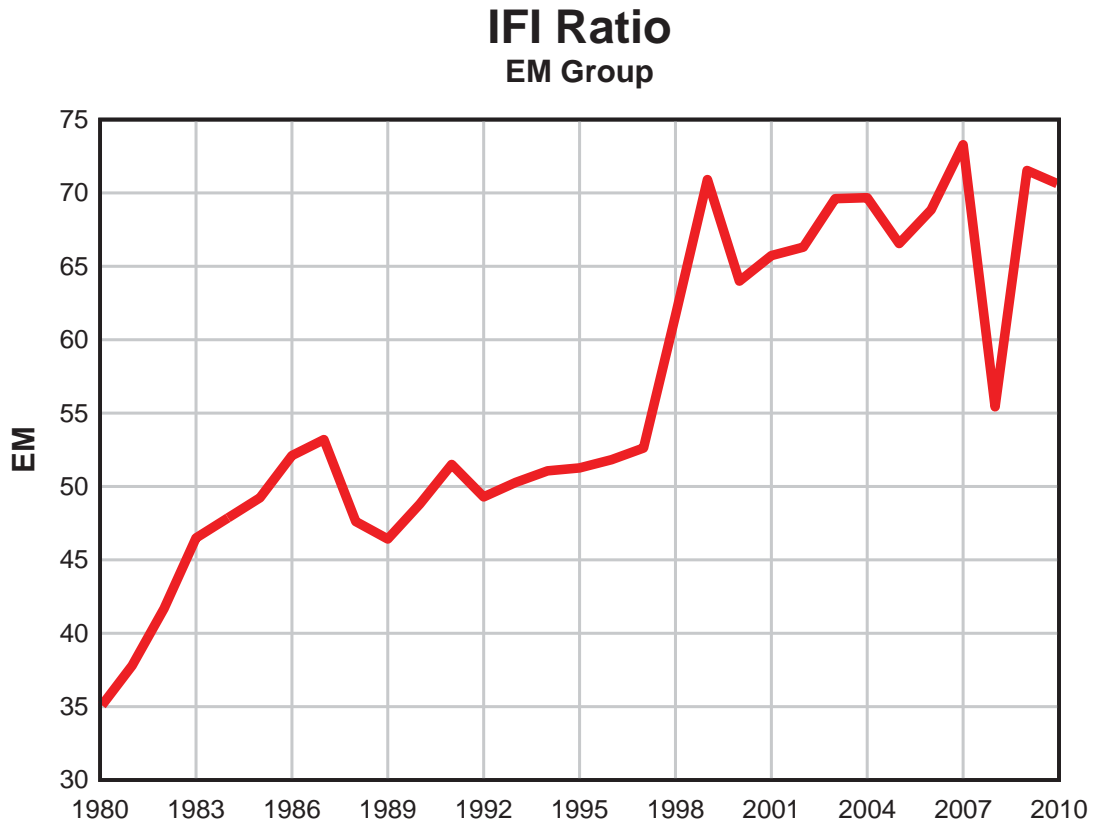
Wolf, Martin (2009), *Fixing Global Finance*, Yale University Press.

**Figure 1 IFI Ratio: Advanced Economies**



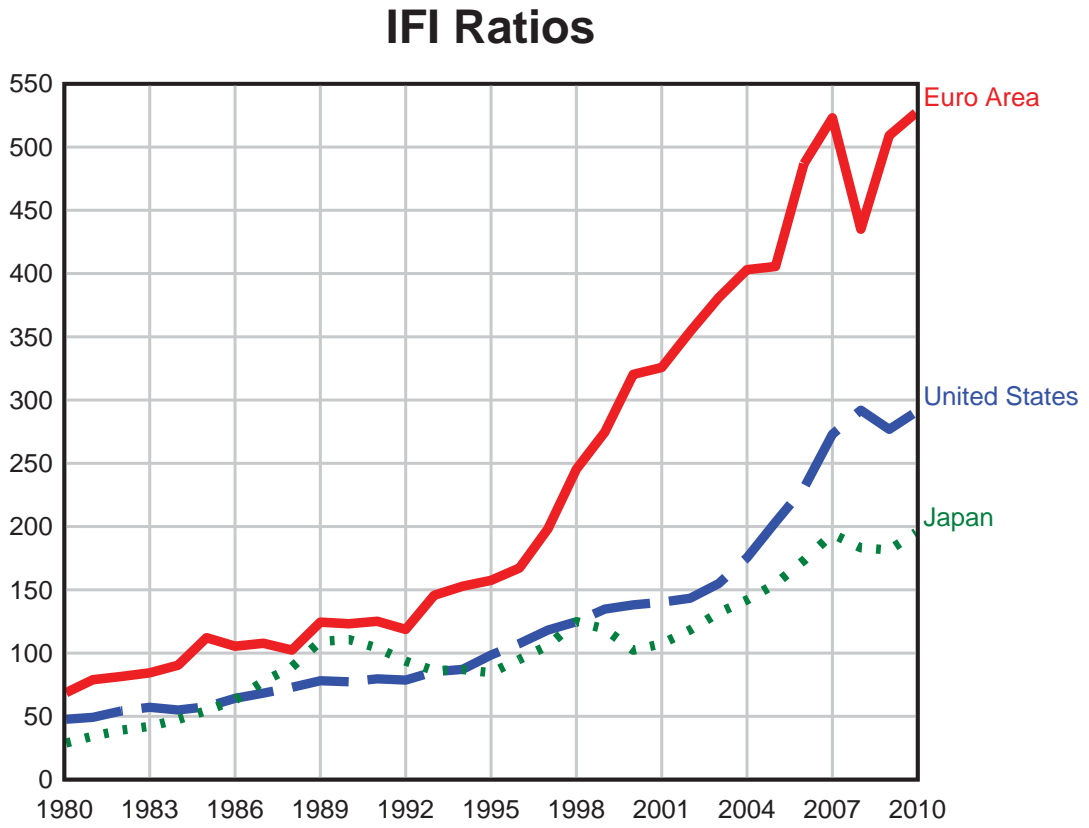
Source: Author's calculations, based on updated version of dataset developed by Lane and Milesi-Ferretti (2007).

Figure 2. IFI Ratio: Emerging Economies



IFI Ratio: Emerging Economies. Source: Author's calculations, based on updated version of dataset developed by Lane and Milesi-Ferretti (2007).

Figure 3. IFI Ratios (Euro Area, United States, Japan)

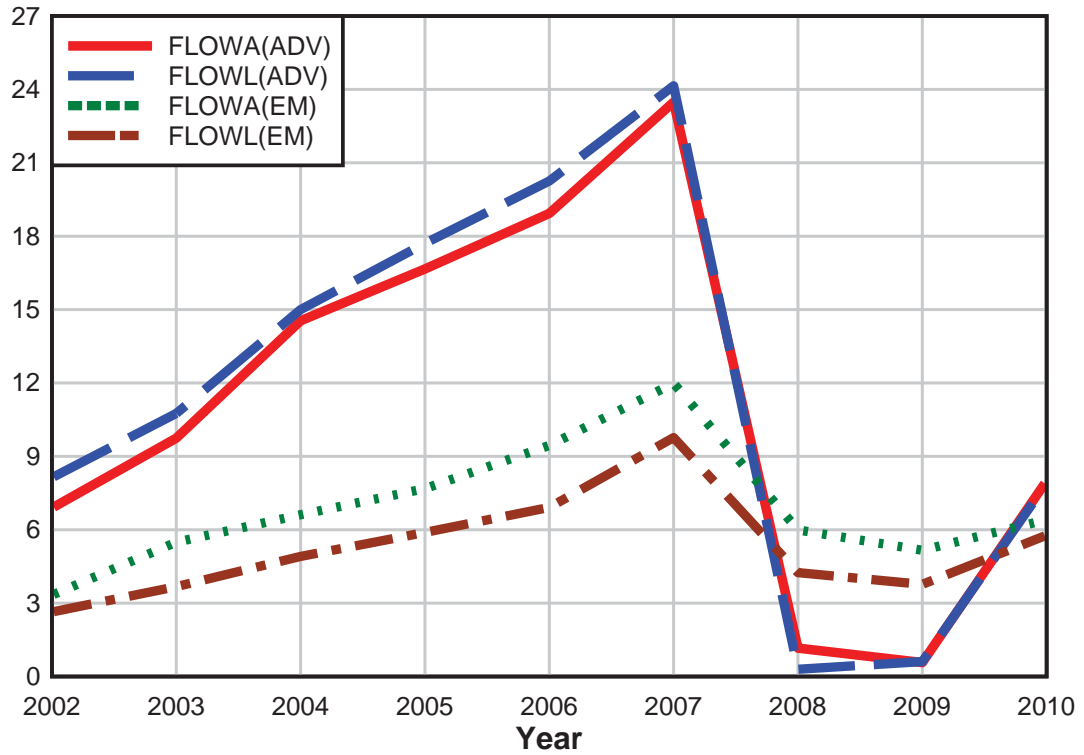


Note: Euro Area is sum of cross-border positions of individual member countries. Source: Author's calculations, based on updated version of dataset reported in Lane and Milesi-Ferretti (2007).



Figure 4. Gross International Financial Flows, 2002-2010

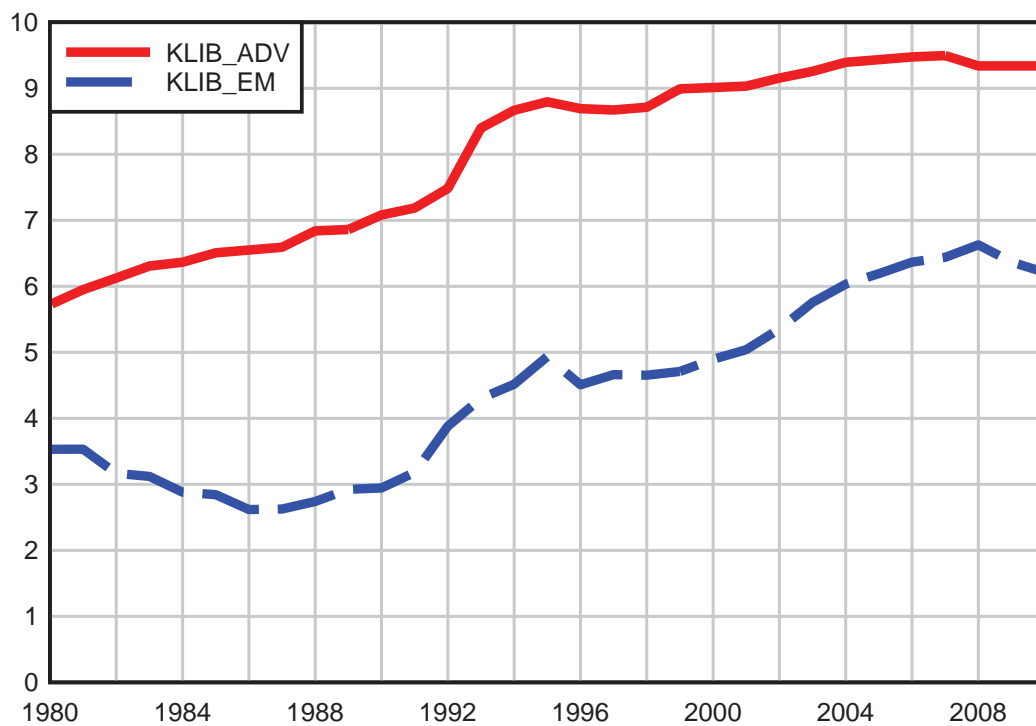
### Cross-Border Capital Flows, 2002-2010



Source: Author's calculations, based on IMF BOPS data.

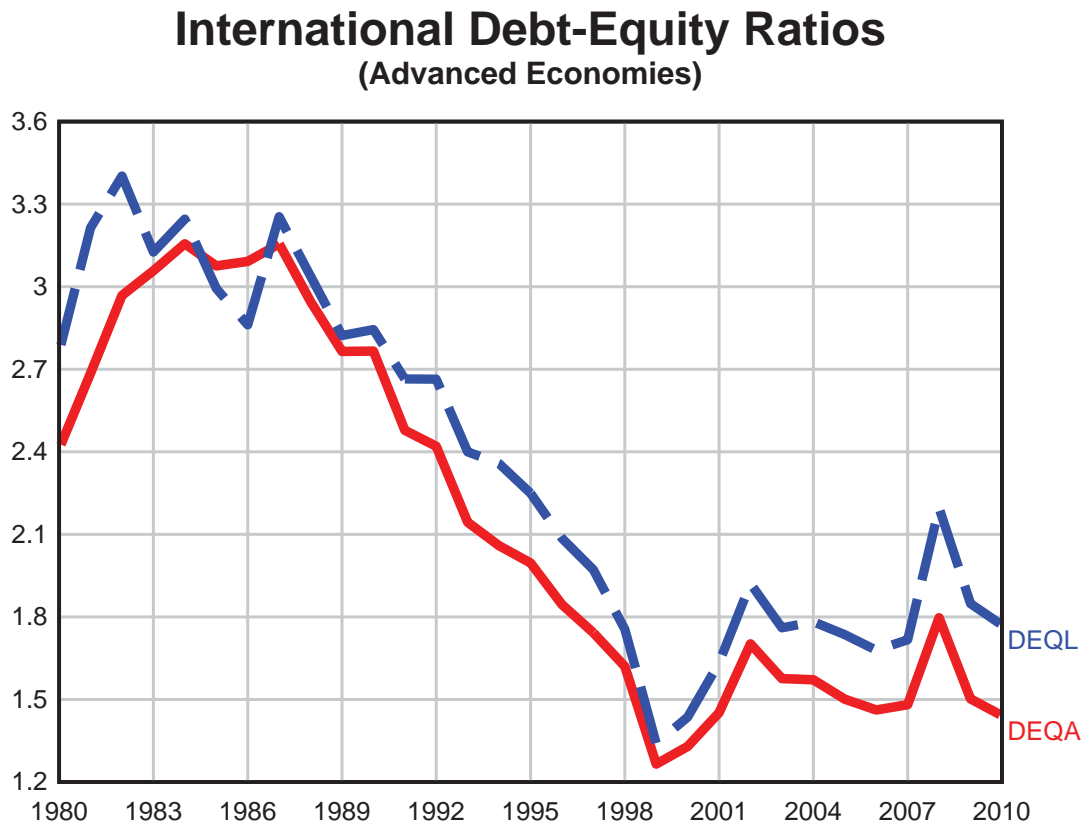
Figure 5. Financial Account Liberalisation Index

### Financial Account Liberalisation Index (Chinn-Ito Index)



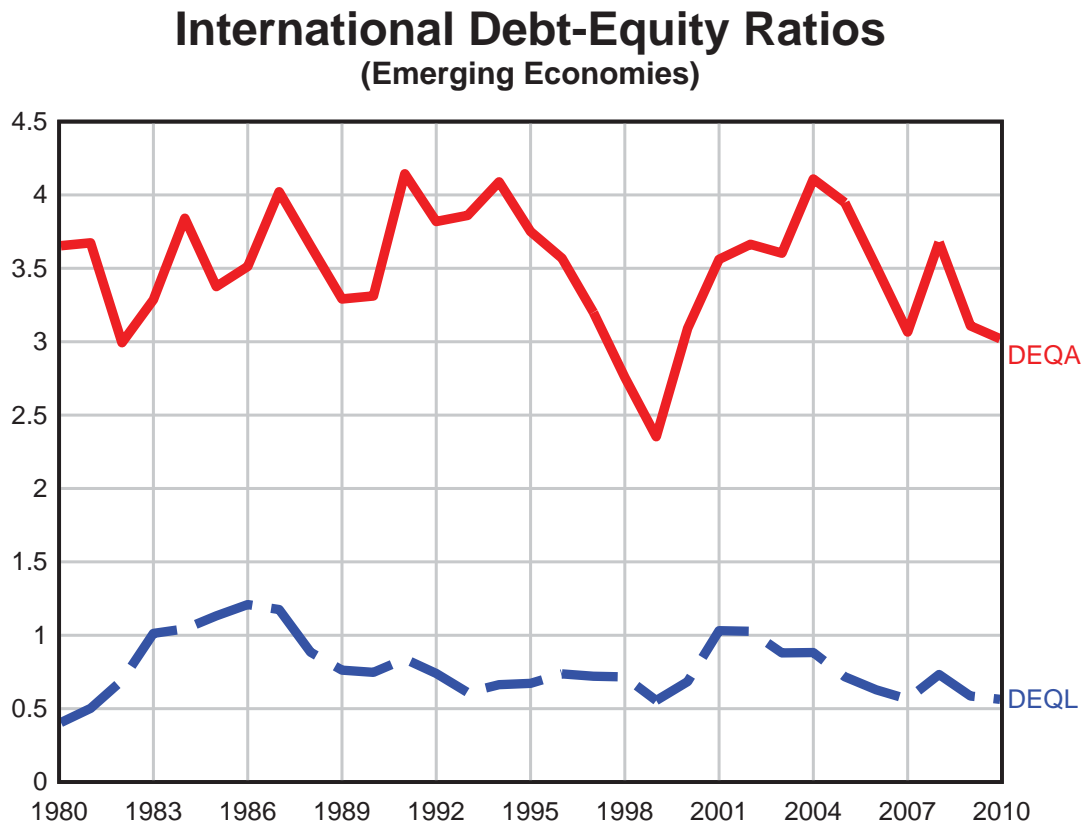
Note: Chinn-Ito index, rescaled.

Figure 6 International Debt-Equity Ratios (Advanced Economies)



Note: DEQA is ratio of foreign debt assets to foreign equity assets; DEQL is ratio of foreign debt liabilities to foreign equity liabilities. Source: Author's calculations based on updated version of dataset reported in Lane and Milesi-Ferretti (2007).

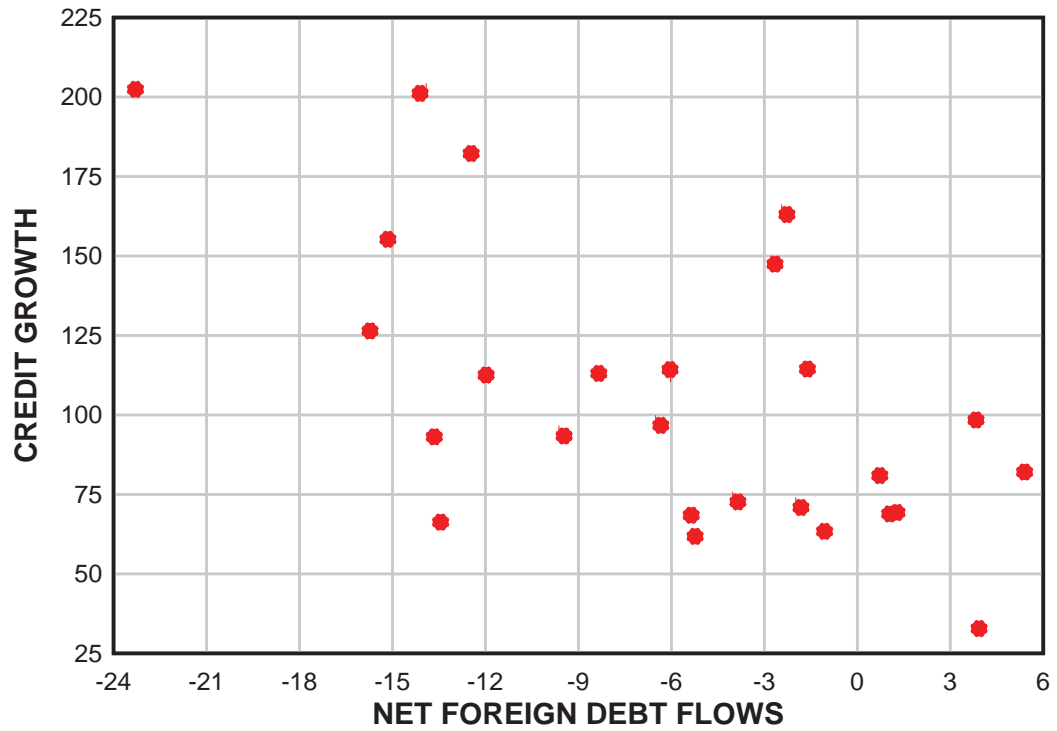
Figure 7 International Debt-Equity Ratios (Emerging Economies)



Note: DEQA is ratio of foreign debt assets to foreign equity assets; DEQL is ratio of foreign debt liabilities to foreign equity liabilities. Source: Author's calculations based on updated version of dataset reported in Lane and Milesi-Ferretti (2007).

Figure 8. Domestic Credit Growth and International Debt Flows, 2003-2008

## Domestic Credit Growth and International Capital Flows

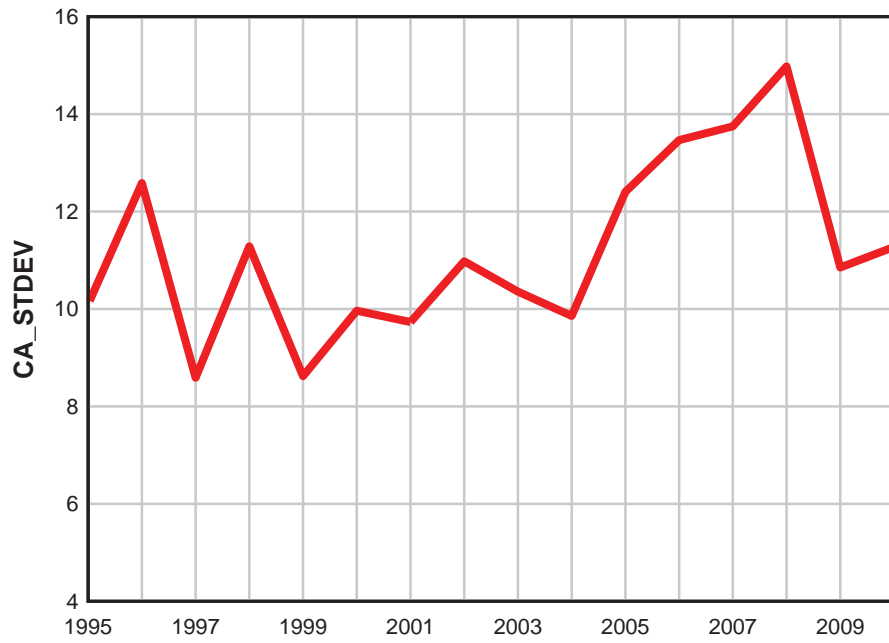


Source: Based on Lane and McQuade (2012).



**Figure 9 Cross-Country Standard Deviation of Current Account Balances, 1995-2010**

**Cross-Country Standard Deviation of Current Account Balances**



Source: Author's calculations based on WEO data.