Working Paper Series

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The great moderation in international capital flows: a global phenomenon?

Abstract

This paper highlights a recent 'great moderation' in global capital flows, characterised by smaller volumes and lower volatility of cross-border transactions. However, there are substantial differences across countries and regions which we analyse by comparing the level of international capital flows observed in 2005-06, immediately prior to the onset of the global financial crisis, to the post-crisis period of 2013-14, when global flows arguably settled at a 'new normal'. We find that since the pre-crisis period, gross capital inflows recovered more for economies with smaller pre-crisis external and internal imbalances, lower per capita income, improving growth expectations, a less severe impact of the global financial crisis and less stringent macroprudential policy. On the asset side, countries with a more accommodative monetary policy, a milder impact of the crisis and oil exporters managed to increase gross capital outflows in the post-crisis period.

Keywords: International capital flows, global financial crisis, external imbalances, monetary policy, macroprudential policy

JEL Classification: F15, F21, F32.

Non-technical summary

The global financial crisis in 2008 led to a precipitous decline in international capital flows, representing an abrupt interruption of the financial globalisation process. Our analysis in this paper starts from the observation that global capital flows have recovered somewhat in the 'advanced' post-crisis period, which we define as 2013-2014, but have settled at a far more moderate level compared to the pre-crisis period. Moreover, the volatility of international capital flows has declined substantially in recent years, justifying the notion of a 'great moderation' in international capital flows.

At the same time, the composition of global flows has changed substantially both in terms of the types of instruments as well as geographic composition. Compared to the pre-crisis period, global capital flows are now characterised by a persistently subdued level of cross-border banking flows and by a smaller share of flows to advanced economies, while capital now appears to exhibit a greater tendency to flow 'downhill' to lower income economies and foreign direct investment flows have gained in importance.

Our empirical analysis focuses on the substantial country heterogeneity in terms of the post-crisis recovery of capital flows by comparing the level of international capital flows observed in 2005-06, immediately prior to the onset of the global financial crisis, to the post-crisis period of 2013-14, when global flows arguably settled at a 'new normal'. We find that since the pre-crisis period, gross capital inflows have recovered more for economies with smaller pre-crisis external and internal imbalances, as measured by net foreign liabilities as well as public and private debt. Moreover, the recovery in inflows was more pronounced for economies with lower per capita income, improving growth expectations, a less severe impact of the global financial crisis and less stringent macroprudential policy. On the foreign asset side, countries with a more accommodative monetary policy, a milder impact of the crisis and oil exporters managed to increase gross capital outflows in the post-crisis period.

The cross-country results point to the exhaustion of some pre-crisis drivers of financial globalisation such as euro area financial integration and increasing balance sheets of financial institutions in advanced economies. Moreover, our results suggest that macroprudential policies could be impediments to international capital flows that may have permanent, in addition to short-term effects. Finally, we find a significant role for monetary policy as a driver of financial flows since the crisis, in particular on the asset side.

1 Introduction

International financial integration has stalled since the global financial crisis. The persistent tendency toward ever greater international financial integration in the decades leading up to the crisis has been well documented in the literature (see for example Lane and Milesi-Ferretti, 2007). However, the onset of the global financial crisis led to a precipitous decline in international financial flows, representing an abrupt interruption of the financial globalisation process (Milesi-Ferretti and Tille, 2011; Lane, 2013a). Although cross border financial flows have started to recover, they remain substantially below their pre-crisis peaks. At the same time, the composition of flows has altered substantially both in terms of the types of assets as well as source and host countries.

This paper examines gross financial flows, i.e. the foreign purchases of domestic assets by foreign investors (capital inflows) and the domestic purchases of foreign assets by domestic investors (capital outflows). Analysis of gross flows has become common in the academic literature in recent years given the much larger scale of gross flows compared to net flows. Rey (2013) argues that gross financial flows are crucial for assessing financial stability and credit conditions, while net flows (mirroring current account imbalances) are key for the sustainability of net international investment positions.[1] Borio and Disyatat (2015) posit that it is conceptually and empirically more appropriate to focus on gross flows rather than net flows in open macroeconomy models.

Broner et al. (2013, 2014) find that gross capital flows are typically pro-cyclical; thus they collapse during crises, with the retrenchment occurring both in the form of capital flight by foreign residents and repatriation of foreign investments by domestic investors.[2] Forbes and Warnock (2012) emphasise the importance of global factors for gross international capital flows, most notably those associated with common risk factors as measured by the VIX index. Rey (2013) shows that there is a strong correlation of capital flows across different types and regions driven by a global financial cycle. Accordingly, our analysis also examines the role of global factors.

However, despite the commonalities observed in international capital flows, there is substantial country heterogeneity of developments since the pre-crisis period, which we investigate in this paper.[3] By focusing on the years 2013-2014 and thus taking a more long-term perspective with regard to the effects of the global financial crisis on international capital flows, we extend

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[1]Clearly the change in the pattern of gross flows described in this paper is closely linked to adjustments in net external positions and current account balances in a number of countries. However, this paper deliberately maintains a focus on gross flows as an extensive literature on the emergence and unwinding of current account imbalances after the crisis already exists (see Lane and Milesi-Ferretti, 2012; Lane and Pels, 2012; Hobza and Zeugner, 2014).

[2]According to Alberola-Ila et al. (2016) the pro-cyclicality of gross outflows is strongly related to reserve accumulation in non-OECD countries. This also implies that countries with high reserves are less likely to place capital abroad during a crisis.

[3]In the literature the period until 2007 is generally defined as the 'pre-crisis' phase, while the 'post-crisis' period starts in 2010.

the analysis of previous papers that examined the more immediate impact of the crisis on international capital flows, most notably Milesi-Ferretti and Tille (2011). These authors find that following the fall of Lehman Brothers a great retrenchment of international capital flows set in at the end of 2008 and in early 2009, which they attribute to a global risk shock. This particularly affected banks in advanced countries, while emerging economies suffered a more short-lived fall in capital flows. Milesi-Ferretti and Tille (2011) point out that a reassessment of risk by investors led to a more significant pullback from countries with worse macro-financial characteristics such as large net external liabilities or credit-fuelled booms. Lane (2013a and 2013b) highlights a boom-bust cycle in international capital flows during the period 2003 to 2012 and finds that the initial recovery from 2010 to 2012 has been stronger for international capital flows to emerging than advanced countries.

Our analysis starts from the observation that global capital flows have recovered somewhat in the post-crisis period, but appear to have settled at a far more moderate level compared to the pre-crisis period. Moreover, the volatility of international capital flows has declined substantially in recent years, justifying the notion of a great moderation.[4] Second, we focus on explaining changes in capital flow developments at the country level in the more advanced post-crisis period (2013 to 2014) compared with pre-crisis developments. This time frame also has the advantage that it excludes the peak of the European sovereign debt crisis from mid-2011 to mid-2012 which affected capital flows particularly of European countries.

By focusing on as broad a group of countries as possible to maintain a largely global perspective, we differ from papers such as Ahmed and Zlate (2014) and Lane (2015) which concentrate on capital flows to specific regions or groups of countries. Ahmed and Zlate (2014) emphasise the importance of advanced economies' monetary policy as a determinant of capital flows to emerging markets. They find that interest rate differentials between emerging and advanced economies as well as global risk appetite are important determinants of net private capital inflows. Lane (2015) shows for a sample of low income countries that the role of economic fundamentals in explaining the cross-country variation in international financial flows changes over time such that macroeconomic variables associated with inflows in one period may be correlated with outflows in another. Research by the IMF (2016) focuses on the decline in net capital inflows to emerging market economies since 2010, which can be attributed to both weaker gross inflows and stronger gross outflows. Bussiere et al. (2016) also provide a detailed account of the persistent decline in global capital flows – in particular among advanced economies – since the financial crisis, but do not explore the drivers of cross-country differences.

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[4]The term 'great moderation' is commonly used to describe the decline in macroeconomic volatility in advanced economies from the mid-1980s up to the mid-2000s (see for example Bernanke, 2004). Despite the relatively short time span for which we identify a 'great moderation' in international capital flows, we deem it as an appropriate concept in light of the fact that cross-border flows typically experience much more amplified cycles than output or prices. Moreover, the identified great moderation represents a break in the trend toward ever greater global financial integration that had been a feature of the post-Bretton Woods era up to the global financial crisis.

Regarding the sustained decline in global capital flows, Milesi-Ferretti and Tille (2011) suggest that a number of factors driving the pre-crisis growth in international capital flows had run their course, most notably euro area financial integration, financial deepening in advanced countries associated with increases in financial balance sheets as well as international portfolio diversification. Moreover, efforts aimed at reforming banking and financial regulation could also hinder a recovery in banking flows due to reduced scope for regulatory arbitrage. On the other hand, Bremus and Fratzscher (2015) find that changes in regulatory policy, notably increases in supervisory power or independence, have encouraged credit outflows since the crisis. Similarly, Cerutti et al. (2015) propose a link between the stringency of macroprudential policy measures, credit growth and cross-border borrowing. Beck et al. (2015) take stock of recent macroprudential capital flow management measures and find that these can contribute to financial fragmentation both at the global and at the EU level. Conversely, Milesi-Ferretti and Tille (2011) see more potential for on-going international financial integration of emerging market economies as banks there had expanded their cross-border activities less prior to the crisis and there might be more room for further increases in international portfolio diversification (Schmitz, 2013).

Our paper proceeds as follows: in Section 2 we present stylised facts on the development of global capital flows since the outbreak of the global financial crisis. In Section 3, we present our empirical framework, while Section 4 reports the results from the regression-based analysis explaining cross-country heterogeneity. Section 5 concludes.

2 Stylised facts on the great moderation in international capital flows

2.1 Global developments

Figure 1 illustrates the sharp spike in global capital flows observed in 2007 and the subsequent steep decline in 2008 and 2009.[5] Most notable is the large swing in other investment flows (mostly banking sector flows) from strong growth in the pre-crisis period (reaching around 14% of global GDP in 2007) to retrenchments of around 5% of global GDP in 2008 and 2009. Lane (2013) points out that the retrenchment was largely driven by a breakdown in cross-border interbank markets, as foreign investors drained liquid liabilities (mostly deposits and short-term wholesale funding) from stressed banks, while domestic investors repatriated foreign liquid assets. Since then, bank related cross-border flows have remained substantially below the levels observed during the boom period reflecting strong deleveraging and potentially more stringent regulation in cross-border banking activities. Global portfolio debt and equity flows

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[5]The previous peak was observed in the year 2000, immediately prior to the 2001 'dot com' equity bust, and was largely driven by foreign direct investment flows.

also declined sharply in the aftermath of the collapse of Lehman Brothers and experienced another setback during 2011 at the height of the European sovereign debt crisis, but have recovered somewhat since then. FDI flows responded more gradually during the initial phase of the crisis, but have also remained well below the pre-crisis level, while foreign reserve flows peaked in 2009-2010 and have since declined markedly.

Milesi-Ferretti and Tille (2011) and Warnock (2012) highlight the importance of a global risk shock as the key explanation for the decline in capital flows observed during the crisis. Following these papers, we regress the ratio of the sum of global gross capital inflows and outflows to world GDP on global GDP growth, trade openness and global risk aversion (for which we use as a proxy the VIX index of implied volatility on the S&P 500). The results in Table 1 confirm the findings of the literature in showing an important role for elevated risk in reducing global capital flows and demonstrate that the effect of elevated risk aversion varies across asset types, with other investment flows proving to be the most sensitive. However, it should be noted that the volatility observed in the latter part of the sample period (which covers 1997Q4 to 2014Q4) is considerably lower than at the peak of the global financial crisis. Similarly, the growth rate of global GDP and trade openness have both recovered to a greater extent than global financial flows. Thus, there is a deterioration in the explanatory power of the model with the R^2 declining from 0.66 in the period up to 2009Q4 (column 1) to 0.48 when observations for the subsequent five years are included (column 2). Although developments in the VIX around the collapse of Lehman Brothers proved useful for explaining the marked decline of global capital flows in 2008 and 2009, the VIX does not account for the great moderation in international capital flows in the post crisis period.

Therefore, we suggest additional global factors that contributed to the 'great moderation' in international capital flows. Figure 2 displays the VIX and the global level of reserves held at central banks by other depository corporations. The latter serves as a proxy for liquidity provided by central banks and thus the overall monetary policy stance.[6] Giambacorta et al. (2014) posit that central banks often implemented unconventional policies specifically in response to mounting financial market uncertainty. One interpretation of Figure 2 is that expansionary global monetary policy may have dampened the VIX by reducing asset price volatility, but without generating renewed risk appetite for international investments. Similarly, Figure 3 illustrates that the great moderation in international capital flows has taken place against the backdrop of consistently accommodative conventional monetary policy as captured by global money supply and global interest rates. Assuming that the VIX remains a reliable proxy for global risk aversion and given that global monetary policy has been very accommodative since the crisis, it follows that other factors such as macroprudential policies may have been important determinants of

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[6]Keister and McAndrews (2009) show that these reserves reflect the size of monetary policy interventions. The authors state that, irrespective of whether an individual bank changes its lending activity, a change in monetary policy will be reflected in the reserves of the banking system as a whole. The change in reserves held at the central bank is therefore a useful indicator to gauge the scale of unconventional monetary policy.

international capital flows.

Measures of global macroprudential policy (based on Cerutti et al., 2016) and capital stringency (Barth et al., 2013) indeed show that since the onset of the global financial crisis countries have increased the stringency of macroprudential and microprudential policies to improve banks' loss absorbing capacity and promote financial stability (Figure 4). The trend toward stricter regulation may have reduced cross-border bank lending, for instance due to higher capital requirements. On the other hand, regulatory arbitrage could push credit to countries with lower regulatory standards. The former supports Milesi-Ferretti and Tille's (2011) conjecture that tighter regulation of bank activities might contribute to a moderation in international capital flows. Empirically, Bremus and Fratzscher (2015) and Ichiue and Lambert (2016) find contradictory evidence on this issue.[7]

Consistent with the fall in cross-border flows, stocks of foreign assets decreased markedly in 2008, in particular for portfolio equity driven by the crash in global stock markets (Figure 5). In line with subdued capital flow developments, cross-border positions have remained somewhat below their pre-crisis peaks, which indicates a marked departure from the strong growth in cross-border holdings observed in the 1990s up to 2008. The geographical distribution of foreign asset flows has changed since the crisis (Figure 6): in the pre-crisis period the euro area and other advanced economies accounted for the vast majority of international capital flows (around 95% of asset flows in the period 2000 to 2006). Although the share of international capital flows accounted for by emerging market economies is now larger than in the pre-crisis period (about 25% of total in the period 2010-2014), this is more a reflection of the decline in the asset flows of advanced economies rather than substantial increases in flows of emerging markets. Moreover, global developments in financial flows differ from the ones observed for output and trade (Figure 7): in the pre-crisis period, international capital flows increased at a rate exceeding that of global exports or output. Strikingly, financial flows experienced a much more pronounced decline during the crisis. Moreover, while global exports and GDP have surpassed pre-crisis levels since, the recovery in global financial flows has largely stalled.

Since the start of the financial crisis, global capital flows have not only settled at a lower level, but have also exhibited markedly less volatility than in the pre-crisis peak period (Figure 8).[8] Based on eight-quarter rolling standard deviations of asset and liability flows, one can observe a gradual rise in volatility up to 2008, before volatility increases sharply during the peak of the crisis and remains elevated until around 2011. Since-mid 2012 international capital flows have fluctuated significantly less and volatility has declined further to lower levels than

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[7]According to Bremus and Fratzscher (2015), the tighter the capital requirements in the source country, the higher the increase in the cross-border bank claims of the source country. However, this result is not found to hold when both source and recipient countries are in the euro area. The results of Ichiue and Lambert (2016) suggest that tighter regulations reduced international banking activities following the 2008 financial crisis.

[8]Volatility of assets and liabilities is measured for samples of 22 advanced and 16 emerging economies, respectively.

seen for most of the 2000s.[9] These patterns are apparent in both advanced and emerging economies. Overall, the broad-based decline in both the level and volatility of international capital flows justifies the notion of a 'great moderation'.

2.2 Cross-country developments

While the 'advanced' post-crisis period can be characterised globally by a decline in volumes of capital flows and lower volatility of cross-border transactions, this subsection provides evidence of substantial heterogeneity across regions and countries: Figures 9 to 11 present side-by-side asset and liability flows across different country groups. In the case of advanced countries, very similar patterns of asset and liability flows are visible (Figure 9), with the steepest decline occurring in other investment. Portfolio equity flows to advanced economies recovered somewhat more strongly than other types of capital flows and constitute a larger part of capital flows now compared to the pre-crisis period. There has been a sharp decline in portfolio debt liability flows to advanced economies – most likely driven by the European sovereign debt crisis – though they have recovered somewhat recently. Moreover, advanced economies experienced a relatively sharp decline in FDI activity in 2014.

Among emerging market economies (Figure 10) there has been a similar fall in terms of banking sector flows for both assets and liabilities, while FDI inflows held up relatively well over the post-crisis period. In addition, emerging market reserve asset flows have declined strongly since the onset of the global financial crisis, representing a reversal of the trend observed in the decade after the Asian financial crisis. Portfolio flows remain very small, but exceed pre-crisis flows for debt on the liability side.

In the euro area (Figure 11), the ratio of foreign asset and liability flows to GDP is generally higher compared to other advanced economies, reflecting the high degree of financial integration among Member States. The decline in portfolio equity flows – both on the asset and liability side – was relatively steep as reflected in repatriation flows in 2008. Strikingly, the sovereign debt crisis only had a visible impact on portfolio debt on the asset side, while on the liability side safe haven flows to countries such as Germany offset the retrenchment from euro area stressed economies in 2011. In contrast to the global picture, it is remarkable that other investment flows experienced another retrenchment in 2013, before turning positive in 2014, which can be partly explained by official sector flows (in particular through the Eurosystem's TARGET2 system and EU/IMF financial assistance programmes).

In Figure 12, we introduce our main metric for assessing the cross-country evolution of capital flows since the global financial crisis, i.e. the level of capital inflows across asset classes in the post-crisis period (defined as 2013-2014) as a percentage of the values observed in the

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[9]Using the coefficient of variation shows a very similar picture. In fact the spike in volatility during the height of the global financial crisis is even more pronounced according to this measure, as average global capital flows fell to levels around zero.

pre-crisis reference period (2005-2006). Crucially, we do not see the level of capital flows in 2005 and 2006 as a benchmark or normative target, but rather as a reference value. We choose these years as our reference, because they were characterised by a high level of global liquidity and low risk aversion, while at the same time not showing the extreme peak in international capital flows as seen in 2007, when the crisis began. Figure 12 shows that total inflows, globally and among advanced economies reach only around 50% of the level recorded in the pre-crisis period and just 25% in the case of EU countries, while for emerging countries, they amount to 80% of the pre-crisis level. Globally, among advanced countries and EU countries, portfolio equity inflows have recovered the most (exceeding 100% of pre-crisis flows in 2013-14), followed by FDI inflows (95% globally) and portfolio debt (50% globally), while other investment inflows remain very low (around 30% globally and even negative – at -22% – for EU countries). Portfolio debt flows to emerging market economies are more than three times larger than in the pre-crisis period, perhaps reflecting financial deepening – albeit from low starting levels – in these markets, as well as an increase in the search for yield among investors.

In the EU, there has been a relatively strong recovery in portfolio equity flows, in particular for the non-euro area CEE countries where these flows were 13 times larger than in the period 2005 to 2006. FDI activity in the EU also has recovered substantially, with the exception of the non-euro area CEE countries where it only reaches 50% of the inflows observed in the reference period. Interestingly, in the case of equity and FDI flows the recovery is somewhat more pronounced in the balance of payments of the euro area (i.e. capital inflows from non-resident investors into the euro area) than in terms of intra-euro area capital flows, while for other investment the retrenchment vis-a-vis the euro area banking sector continued to be more pronounced by non-euro area residents.

Figure 13 displays a scatter plot of the ratio of total inflows in the post-crisis period to inflows in the pre-crisis period across countries and the log of GDP per capita in 2013-14. The chart suggests a negative correlation between the two variables, with relatively lower income countries receiving increased inflows in the post-crisis period. Notably, the ratio of post-to-pre crisis inflows is low or even negative for many euro area countries and also smaller than for advanced economies with comparable income per capita. In contrast, total inflows exceed pre-crisis levels not only in large emerging countries such as Brazil (433%), China (283%), India (204%), but also a number of large advanced economies such as Japan (201%), Canada (152%) and Australia (144%).[10] The United States reached a value of 60%, while among euro Member States the lowest ratios – in fact negative, indicating disinvestment by foreign investors in 2013-2014 – were recorded for Cyprus (-116%), Greece (-36%) and Germany (-18%), whereas Slovakia (165%) stands out as country with more inflows than in the pre-crisis period.[11]

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[10]This metric requires excluding all countries that experienced negative total capital inflows (disinvestment) in the period 2005 to 2006 which was the case for only four countries (Mali, Niger, Nigeria and Zambia).

[11]In the case of Germany, the disinvestment is driven by other investment outflows of EUR 194 billion in 2013. The largest part of this (EUR 141 billion) stems from withdrawals by non-residents (mostly from the United Kingdom)

3 Empirical framework

Given the cross-country heterogeneity in capital flow patterns observed since the crisis, the empirical analysis seeks to explain the ratio of financial flows in the post-crisis period (defined as 2013-2014) to flows in the pre-crisis period (2005-2006).[12] In our main regressions we consider capital flows expressed in US dollar terms, such that the ratio of post- to pre-crisis capital flows is not directly affected by developments in GDP growth which might in turn be partly driven by developments in capital flows. However, we also present alternative estimations in which capital flows in the two periods are scaled by GDP in order to account for changes in the size of rapidly growing economies.

We examine both the asset and liability side and also decompose these total flows into FDI, portfolio equity and debt, other investment and reserves components.[13] These data are taken from the IMF's Balance of Payments Statistics, the IMF World Economic Outlook and the ECB's Balance of Payments Statistics.[14] Our set of explanatory variables is inspired by the literature on international capital flows such as Milesi-Ferretti and Tille (2011) and like that contribution, our research design does not focus on analysing determinants of the levels of capital flows in a given period *per se*, but on determinants of changes in the level of capital flows.[15] In particular, we test whether country-specific determinants such as the existence of pre-crisis imbalances, measures of economic performance during the crisis and institutional factors have a bearing on the changes observed in the cross-country patterns of international capital flows since the crisis. We estimate the following benchmark specification with heteroskedasticity robust standard errors:

$$\frac{FLOWS_i^{1314}}{FLOWS_i^{0506}} = \alpha + \beta \mathbf{X}_i^{0506} + \gamma \mathbf{Y}_i^{1314} + \delta(\mathbf{Z}_i^{1314} - \mathbf{Z}_i^{0506}) + \theta CRISIS_i^{0910} + e_i \qquad (1)$$

The explanatory variables in the baseline specification can be broadly divided into four

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of short-term deposits held in German banks. According to the Bundesbank (2014) these reflect transactions within banking groups and a reversal of safe haven flows amid the European sovereign debt crisis. Moreover, end-of-year window dressing operations by the banking sector – particularly in the run-up to the ECB's asset quality review – may have contributed.

[12] We choose the ratio of flows in 2013-2014 to 2005-2006 as the dependent variables, as this allows for comparisons of volumes of capital flows between the two periods. Analysing changes between the two periods would not reveal any information on the scale of post-crisis flows relative to pre-crisis flows. Using percentage changes/growth rates is equivalent to the ratio-approach.

[13] We also analyse other investment excluding official sector flows which might be particularly relevant for euro area countries due to the Eurosystem's TARGET2 flows as well as for countries receiving official financial assistance (e.g. by the IMF). We do not include data on financial derivatives in our analysis as these are usually not available separately for assets and liabilities, but only on a *net* basis.

[14] Our capital flows dataset largely relies on data constructed according to the Balance of Payments Manual (BPM) 6 methodology which for most countries start in 2005. We map the flows from BPM5 (until 2004) to BPM6 in accordance to the guidelines of the BPM6. Appendix Table A1 provides an overview of all variables used in this paper and their sources.

[15] Lane and Milesi-Ferretti (2008) and Portes and Rey (2005), among others, show that bilateral financial asset positions and flows can be well explained by empirical gravity-type models which link bilateral investment patterns to differences in transaction costs.

groups. Initial period values $\mathbf{X}_i^{0506}$ (for the period 2005-06) are employed to control for the degree of economic and financial imbalances of a country shortly before the financial crisis. With the outbreak of the global financial crisis, there was a broad-based re-assessment of risks among investors (Tille and Milesi-Ferretti, 2011). Thus, while growing economic and financial imbalances might not have been a concern to investors during the pre-crisis period, the re-assessment of risk during the crisis may have triggered strong effects on subsequent capital flow movements. Moreover, using the initial values of these variables has the advantage of avoiding reverse causality issues as capital flows since the financial crisis are likely to have affected the degree of imbalances observed today.

In particular, we employ the average public debt level (as a ratio to GDP) in 2005-06 to observe if a larger stock of sovereign debt during the pre-crisis period had a negative effect on subsequent capital flows. The European sovereign debt crisis showed that, with the re-pricing of risks, high public debt in euro area countries became an important concern for investors. Hence, the initial level of public debt might be seen as a proxy for the likelihood of subsequent sovereign debt problems, while being exogenous to ensuing capital flow developments.[16] The ratio of private credit to GDP (measured in 2005-06) is included as larger values tend to be associated with excesses in the financial sector resulting in a more pronounced boom-bust cycle and potentially debt overhang (see for example Gourinchas and Obstfeld, 2012).[17] The inclusion of a credit variable follows a number of studies such as Lane and McQuade (2014) which highlight interlinkages between private credit growth and international capital flows. The net foreign asset (NFA) position (2005-06) is an important measure for the degree of overall external imbalances of an economy. Specifically, large net foreign liabilities tend to be associated with a high probability of experiencing a financial crisis (Catao and Milesi-Ferretti, 2014), as it might for example indicate heightened liquidity risks in the banking sector. Our set of stock imbalance variables might also capture the degree of excessive pre-crisis borrowing and emergence of asset price bubbles, which could trigger stronger disinvestment in the ensuing bust period.

Second, we include contemporaneous values $\mathbf{Y}_i^{1314}$ (i.e. averages over the period 2013 to 2014) for a number of variables. GDP per capita is employed to control for the overall stage of economic development of a country. This variable may provide information on whether there has been any change in the tendency for capital not to flow 'downhill', i.e. from developed to developing economies (Lucas, 1990; Gourinchas and Jeanne, 2013). In general, relatively poorer countries are in need of more foreign capital, whereas richer countries are able to export capital. Lane (2015) points out that measures of institutional quality also tend to be positively correlated with GDP per capita as richer countries are perceived as safer investment oppor-

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[16]While a higher level of public debt may, on average, increase the likelihood of subsequent sovereign debt crises, it should be acknowledged that countries such as Spain and Ireland experienced severe sovereign debt problems despite entering the crisis with relatively low levels of public debt.

[17]Moreover, one can interpret a larger private credit to GDP ratio as an indicator of more bank-reliance in international financial intermediation, a sign of a higher degree of general financial development or as a crude measure of the state of the financial cycle.

tunities. We also include country size (as measured by the log of nominal GDP), since scale effects arising from larger and more liquid markets may be an important correlate of capital flows. Moreover, we include de-jure financial openness (Chinn and Ito, 2006) as it might be associated with easier access to external funding and thus, more capital inflows.

Third, a number of variables are incorporated as changes between the initial and end-of-period values, i.e. $(\mathbf{Z}_i^{1314} - \mathbf{Z}_i^{0506})$. Given the link between output growth and international financial flows in the literature (Broner et al., 2013), we use the change in projected GDP growth (averaged over the respective five-year period ahead) as featured in the relevant vintages of the IMF's World Economic Outlook. The intertemporal model of the current account predicts that countries with higher growth prospects run current account deficits to fund higher consumption today. In addition, more optimistic growth forecasts may also stimulate investment by improving the expected profitability of firms (see Lane and Pels, 2012). Both factors give rise to capital inflows. An additional advantage of including projected rather than realised GDP growth is that it partially addresses endogeneity concerns that may be valid for actual GDP growth. As a broad-based indicator of institutional quality we include the differences between 2005-06 and 2013-14 in the average score of the World Bank's Worldwide Governance Indicators (WGI) to measure the impact of changes in the institutional and regulatory environment which have been found to be important determinants of international capital flows in papers such as Schmitz (2011).

Fourth, as a measure of how countries fared at the height of the global crisis, we employ the average GDP growth in the years 2009 and 2010 ($CRISIS_i^{0910}$). The intuition for this is that severe output losses and associated adjustment may have resulted in some scarring of the economy which could make it less attractive to international investors. For example, Reinhart and Rogoff (2015) show that recoveries from financial crises can be unusually slow, thereby reducing the attractiveness of a country for both domestic and foreign investors.

Apart from the regressors included in our baseline model, we examine the importance of monetary policy following Ahmed and Zlate (2014) and Bremus and Fratzscher (2015). In order to control for this factor we introduce the level of short-term and long-term interest rates and the change in reserves held at the central bank. The latter variable – measured as the change in reserves of other depository corporations held at central banks – is used as a proxy for the monetary policy stance and the amount of liquidity provided by central banks.

In order to assess the potential impact of macroprudential policy, we include the change in the aggregate macroprudential policy index constructed by Cerutti et al. (2015). The aggregate index includes both foreign exchange based measures associated with emerging markets, as well as the borrower-based policies more frequently utilised by advanced economies. Cerutti et al. (2015) provide evidence of the link between the stringency of macroprudential policy measures and cross-border borrowing, which should be directly observable in international capital flows, or in other variables such as credit developments which are indirectly linked to international capital flows. In order to control for changes in bank capital regulations we introduce the

capital stringency index compiled by Barth et al. (2013).

In other regressions we control for being a euro area Member State, include measures of financial remoteness (Schmitz, 2014) and changes in the oil balance and the financial cycle. Regarding the latter, and in line with Borio (2012), we apply the band-pass filter developed by Christiano and Fitzgerald (2003) to the ratio of private credit to GDP and residential house prices. We then construct a single financial cycle indicator based on principal component analysis. Moreover, we control for demographic changes (both actual and projected), indicators of fiscal austerity, the exchange rate regime (based on Ilzetzki et al., 2010) and exchange rate developments.

4 Empirical results

4.1 Capital inflows

4.1.1 Benchmark estimations

Table 2 shows the results of our baseline specification focusing on gross financial (liability) inflows in 2013-2014 (as a ratio to inflows recorded in 2005-2006) as the dependent variable. Starting with total financial inflows (column 1), the relatively parsimonious list of explanatory variables explains an appreciable proportion of the cross-country variation as reflected in an R^2 of 51%.[18] The results highlight the importance of pre-crisis imbalances for financial flows in the period 2013-14: countries with higher initial levels of outstanding credit to the private sector, public debt and net foreign liabilities experience significantly lower total financial inflows compared to the pre-crisis period. As discussed above, the re-pricing of risk factors is likely to partly drive these results.[19] In addition, it shows that macro-financial imbalances in the pre-crisis period, potentially through their role as predictors of subsequent crises, exert a profound influence on financial flows even in the more 'advanced' post-crisis period. Moreover, improved growth expectations and a milder impact of the global financial crisis (measured as average GDP growth performance during 2009 and 2010) are associated with increased financial inflows. The results also indicate that poorer countries (as measured by GDP per capita) received increased capital inflows (in line with the 'downhill' hypothesis), as did larger economies.

Based on the R^2, our benchmark specification explains most variation for total capital inflows. Analysing individual categories of financial flows (with the number of observations varying by category), reveals that FDI flows have increased to those countries with lower GDP per

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[18] Apart from excluding countries with negative flows in 2005-06, we exclude outliers for which the ratio of inflows in 2013-2014 to 2005-2006 is larger than 600% or smaller than -300%. For instance, in the case of total inflows, this applies to five countries countries (Ecuador, Kenya, Lesotho, Malaysia and Venezuela) which exceed a ratio of 600%.

[19] In unreported regressions, we split the overall net external position into its equity (FDI and portfolio equity) and debt (portfolio debt and other investment) components. For both subcomponents, we find positive, significant coefficients.

capita and improvements in their institutional framework since the pre-crisis period. The fact that less developed countries managed to increase their FDI inflows (rather than portfolio inflows) might be due to the fact that financially constrained countries have the tendency to rely more on FDI as it is harder to expropriate (Albuquerque, 2003). The important role of institutions for FDI inflows – which tend to be long-term in nature compared to many other forms of investment – is well-established in the literature (see e.g. Daude and Stein, 2007).

Portfolio equity inflows have increased to countries with a larger degree of capital account openness and improving economic prospects. The latter result has intuitive appeal because equity flows tend to be forward-looking in nature. Countries with a better growth performance during the financial crisis and more open capital accounts also managed to increase their portfolio debt inflows, while a larger initial stock of public debt is associated with a decline in bond inflows.[20] The latter might be reconciled with the theoretical model of Broner et al. (2014), as the share of public debt held by domestic creditors tends to increase in countries with severe sovereign debt problems (such as the euro area countries under stress during the sovereign debt crisis). Broner et al.'s (2014) model accounts for creditor discrimination, since – in times of crises – sovereign debt offers a higher expected return to domestic creditors than to foreign investors.[21] Hence, creditor discrimination of foreign investors may be the underlying mechanism through which a higher level of initial public debt (as a proxy for larger subsequent sovereign debt problems) is associated with a decline in portfolio debt inflows as foreign investors disinvest from countries with sovereign debt problems, in particular in a crisis environment.

Initial period net foreign asset positions are positively correlated with other investment (i.e. mostly banking sector related) inflows. Moreover, increased other investment inflows are recorded for poorer countries and for those with improved growth expectations. When official sector flows are excluded (which reduces the sample size substantially), the negative coefficient of GDP per capita on other investment persists, while the coefficient on net foreign assets becomes insignificant.

We repeat the same specification with ratios of gross inflows in 2013-2014 to inflows recorded in 2005-2006 as the dependent variable, but scale financial flows by GDP (Table 3). The results are very similar to our previous findings, with a few exceptions. Most strikingly, real GDP growth recorded during the global financial crisis (2009-2010) is not significant in any of the regressions. We attribute this to the fact that countries that fared better during the financial crisis also achieved a relatively higher level of GDP in 2013-2014, thus mitigating the increase in capital flows relative to the case of unscaled, nominal values of capital flows (as in Table 2). In

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[20]Somewhat counterintuitively a stronger pre-crisis net foreign asset position is associated with lower bond inflows. However, this may reflect factors affecting the supply of bonds available to foreign investors such as a lower level of public and private bond issuance or a larger pool of domestic investors among countries with a higher net foreign asset position.

[21]According to Broner et al. (2014) discrimination may occur in the form of a lower default probability on debt held by domestic creditors or higher compensation of domestic creditors in the event of a default. Moreover, it could arise from regulatory biases or moral suasion.

addition, a larger initial stock of public debt is not significantly associated with total inflows, but continues to be significant for portfolio debt inflows, while the initial net foreign asset position becomes significant for FDI.[22]

4.1.2 Alternative estimations

As a next step we exclude international financial centres from our sample.[23] These countries might drive the results due the large magnitude of capital flows that they receive, as well as the strong correlation of inflows and outflows, reflecting their role as international financial intermediaries (see also Tille and Milesi-Ferretti, 2011; Lane and Milesi-Ferretti, 2011).[24] The results in Table 4 show that our previously obtained findings are robust to excluding financial centres, with the exception of the coefficients on net foreign assets which turn insignificant for total inflows, portfolio debt and other investment. This may be driven by the fact that financial centres in our sample have systematically larger net foreign asset positions than the rest of the sample, while at the same time receiving increased inflows in the post-crisis period.

In Table 5, we include a euro area dummy which is statistically significant with a negative sign for portfolio debt and other investment inflows. This implies that, conditional on all other factors in our empirical model, the decline in capital flows in 2013-2014 compared to 2005-2006 was even sharper for euro area Member States for debt instruments, while the other coefficients remain largely unaffected by the inclusion of this dummy. The negative coefficients on debt flows point to a partial reversal of the strong boost to these flows provided by the introduction of the euro (Lane, 2013a). The sovereign debt crisis and banking sector problems in the euro area – in line with the conjecture by Milesi-Ferretti and Tille (2011) – led to a decline in the substitutability between financial instruments issued by different euro area governments and financial institutions. In the case of FDI and portfolio equity flows, on the other hand, euro area membership is not associated with significantly lower inflows, which highlights that the euro area crisis mainly had lasting repercussions in terms of private and public sector debt flows.

In Table 6, we control for the average level of short-term interest rates (in 2013 and 2014) to gauge the effect of monetary policy on changes in capital inflows. Higher interest rates are associated with increased total inflows, while they are positively correlated with a decline in private sector other investment inflows. Including long-term (ten-year) interest rates on government bonds, we also find a significant coefficient in the case of total inflows (in unreported

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[22]The number of observation increases slightly in Table 3, as some of the cases where countries exceeded our thresholds for being outliers, do not apply when scaling financial flows by GDP.

[23]Our estimations in this paper do not exclude Luxembourg as the Chinn-Ito index for this country is not available. Including Luxembourg (by using the same Chinn-Ito score as is used for other EU Member States) does not alter our results. Similarly, while our baseline regressions include Ireland, dropping Ireland from our sample does not change our results.

[24]We follow the IMF's definition of financial centres and exclude Antigua and Barbuda, Bahamas, Bahrain, Barbados, Belize, Costa Rica, Cyprus, Hong Kong, Ireland, Lebanon, Malta, Mauritius, Panama, Samoa, Seychelles, Singapore, St. Kitts and Nevis, St. Lucia, Switzerland and Vanuatu which were included in at least one of the regressions reported in Table 2.

regressions).[25] These findings suggest that countries offering higher interest rates – particularly in a low yield environment and in the presence of a global financial cycle (Rey, 2013) – attract larger capital inflows.

In Table 7, we include the change between 2005-2006 and 2013 in the aggregate macroprudential policy index constructed by Cerutti et al. (2015). The results indicate that an increase in the stringency of macroprudential policy measures is associated with lower total inflows. This confirms the usefulness of macroprudential policy tools for policy makers wishing to subdue excessive or destabilising capital inflows (Ostry et al. 2010, 2012). Moreover, it is notable that the coefficient on the macroprudential policy index variable is negative and statistically significant for other investment inflows, which suggests a direct impact of macroprudential policy on banks' cross-border operations. In addition, we obtain a negative coefficient in the case of FDI, which might be driven by banks' intra-group cross-border transactions.

In unreported robustness estimations, we test for an array of alternative specifications such as using a constant sample across all types of capital flows or moving the reference period to 2003-2004.[26] In addition, we control for financial remoteness (as applied by Schmitz (2014) to net external positions) and find that more remote countries tend to receive increased FDI inflows in the post-crisis period. This might be explained by a desire for portfolio diversification after the crisis, while before the crisis remote countries tended to have greater difficulty in raising external funding. Moreover, we include a number of alternative variables in our estimations such as fluctuations in the financial cycle, demographic changes, the exchange rate regime, exchange rate movements and the degree of austerity. Our main findings are robust to these alternative specifications, while none of the newly included variables are robustly associated with the changes in capital flows.

4.2 Capital outflows

4.2.1 Benchmark estimations

In Table 8, we repeat our baseline specification, but focus on gross financial (asset) outflows as the dependent variable. In the case of total outflows, GDP growth during the crisis and capital account openness are significant (with positive signs) determinants of changes in asset flows. Thus, economies which were less scarred by the crisis could afford to expand their asset purchases abroad. For FDI asset flows (and portfolio debt) it is striking that the coefficient on GDP per capita exhibits a significant negative sign, indicating that less developed countries expanded their purchases of foreign assets, while more advanced economies shrank their outflows. FDI outflows are also positively affected by country size, growth performance during the crisis, lower public debt levels in the pre-crisis period and deteriorating growth prospects which

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[25]We do not find significant coefficients for reserves held at the central bank which serve as a proxy for the degree of unconventional monetary policy.

[26]The results from all unreported regressions in this paper are available from the authors upon request.

might reflect a desire to expand investment abroad if the domestic economic outlook becomes more gloomy.

Moreover, it is remarkable that a higher level of private credit in the pre-crisis period is associated with increased asset flows of FDI as well as portfolio equity and debt flows. This might indicate that countries with a larger domestic boom-bust cycle or more financial development prior to the crisis have sought more overseas investment opportunities in the post crisis period. Other investment and reserve flows are also positively affected by higher growth during the peak of the crisis, while in the case of other investment a higher pre-crisis level of public debt is associated with lower outflows. The latter finding may be driven by negative feedback loops between sovereign debt and the banking sector (Acharya et al., 2011). In countries experiencing sovereign debt crises recently – triggered by a high level of public debt – the domestic banking sectors often came under pressure due to a large exposure to domestic government bonds. In such an environment domestic banks may reduce their cross-border positions due to strong deleveraging pressures.

Symmetrically to our analysis of inflows, we run estimations where gross outflows in 2013-2014 and 2005-2006 are scaled by GDP (in unreported regressions). Again the results are similar to those reported in Table 8 except for real GDP growth during the global financial crisis (2009-2010) turning insignificant. As in the case of inflows, this indicates that countries with a better growth performance during the height of the crisis reached a relatively higher level of GDP in 2013-2014, thus mitigating the increase in capital flows relative to the case of unscaled, nominal values of capital flows.

4.2.2   Alternative estimations

Regarding monetary policy, we find evidence that countries that implemented more accommodative monetary policies, as reflected in low short-term interest rates, have significantly increased their asset flows of FDI, other investment and reserves compared to the pre-crisis period (see Table 9).[27] In Table 10, we include reserves of other depository corporations at central banks as a proxy for the monetary policy stance and in particular unconventional monetary policy. The results show that countries with looser monetary policy in 2013-14 recorded an increase in total, FDI and other investment outflows compared to the pre-crisis period. Thus, our results suggest a significant role for domestic monetary policy as a driver of financial outflows and consequently monetary policy spillovers.[28]

Indeed, expansionary monetary policy in advanced countries and the associated high pro-

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[27]We do not find a significant impact of long-term (ten-year) interest rates on government bonds (in unreported regressions).

[28]Using alternatively central bank total gross assets (measured in 2013-14, expressed as a ratio to GDP and taken from the IMF's International Financial Statistics) delivers broadly similar results. That is, we again observe a positive and statistically significant coefficient on FDI and other investment. However, central banks' total gross assets are not our preferred measure as the number of observations is more limited.

vision of central bank liquidity may have led to a portfolio rebalancing towards higher yielding foreign assets, for example from emerging markets. Our findings on other investment are in line with Bremus and Fratzscher (2015) who find that expansionary domestic monetary policy fosters the cross-border activities of domestic banks. Somewhat contrary to popular perception, neither monetary policy indicator is found to have a statistically significant effect on changes in portfolio equity or debt outflows. However, it is important to distinguish between global and country-specific factors. Recent papers such as Eller et al. (2016) and Everett (2016) highlight the importance of global factors, including monetary policy in advanced economy for overall and bank-related flows. This may be reconciled by the fact that the Federal Reserve's policy has a uniquely important role in influencing patterns of global portfolio flows (Rey, 2013), while our empirical framework focuses on average partial correlations between national monetary policy and capital flows.[29]

Following Bremus and Fratzscher (2015) and Ichiue and Lambert (2016) we use an indicator for changes in bank capital regulations compiled by Barth et al. (2013). Specifically we include the change between 2006 and 2011 in the bank capital regulatory index, where tighter regulations are represented by higher values. The results displayed in Table 11 show a positive and statistically significant coefficient for the capital regulatory index in the regressions on other investment outflows indicating that countries that increased the stringency of their capital regulations experienced larger other investment outflows. As such, the results appear to be consistent with the regulatory arbitrage hypothesis and the results of Bremus and Fratzscher (2015).[30]

Finally, we test for the role of shifts in commodity trade as countries with additional income, for example by increasing their net oil exports, might increase their overseas investment. To this end, we include changes in the oil trade balance between 2005-2006 and 2013-2014 in our specification. Table 10 shows that changes in the oil trade balance are indeed positively associated with increased net purchases of foreign assets (for total, portfolio equity and debt as well as other investment and reserve flows). The effect is largest and most significant for portfolio debt flows suggesting that those net oil exporters which managed to increase their oil trade surplus, invested heavily in foreign bonds.

We conduct a number of robustness estimations in unreported regressions. As was the case for liability flows, our main results are robust to the exclusion of financial centres. In addition, we test for the role of being a euro area Member State and find negative coefficients for FDI and portfolio debt. Thus, euro area countries not only recorded lower portfolio debt inflows than implied by our benchmark model, but – presumably due to the sovereign debt crisis – they also

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[29]For instance, Falagiarda et al. (2015) demonstrate that the impact on CEE economies of the Federal Reserve 'tapering' announcement was similar in magnitude to that of ECB monetary policy announcements, despite the deep integration between CEE economies and the euro area.

[30]Consistent with both Bremus and Fratzscher (2015) and Ichiue and Lambert (2016) we do not find a significant coefficient on the capital regulatory index in the liabilities regressions.

lowered their net purchases of foreign bonds.[31]

5 Conclusion

This paper highlights a great moderation in international capital flows, as international asset flows have failed to keep pace with the recovery in global trade and output. Although this is a global phenomenon, there are substantial differences across countries and regions. Since the pre-crisis period, capital flows increased to economies with smaller pre-crisis imbalances, increased growth expectations, better crisis performance and lower income. We have linked these cross-country results to potential explanations for the slowdown in global financial integration. Compared to the pre-crisis period, international capital flows are now characterised by the persistently low level of banking flows and by lower flows to advanced economies, particularly to the euro area. These findings are not surprising given the difficulties many advanced countries have experienced in dealing with the legacy of debt, both private and public, and the gradual recovery of banking systems.

Our initial global time-series regression highlighted the changing relation between capital flows and global factors such as growth and risk aversion. The extent to which such a specification can identify the determinants of global gross flows is limited, but our analysis of cross-country determinants helps to explain developments, not just in individual countries, but also by informing our understanding of global factors. The cross-country results point to the exhaustion of some pre-crisis driver of financial globalisation such as euro area financial integration and increasing balance sheets of financial institutions in advanced economies, as conjectured by Milesi-Ferretti and Tille (2011). Moreover, our results using a macroprudential policy index suggest that such policies could be impediments to international capital flows that may have permanent effects. Finally, taking an aggregate view, the great moderation in international capital flows could have a dampening effect on global output growth, as both another cause and a consequence of 'secular stagnation' (Summers, 2014).

Regarding policy implications, Blanchard et al. (2015) provide evidence to support the view of emerging market policy makers that the macroeconomic effect of capital inflows is expansionary. On the other hand, the potentially destabilising effects of capital inflows have been widely documented (Reinhart and Reinhart 2009), even prompting the IMF to revise its position on capital controls (Ostry et al. 2010). Although this may suggest that a slowdown in international capital mobility might not be unambiguously welfare-reducing (see also Coeurdacier et al., 2015), some of the findings in this paper indicate that there is now a greater tendency towards more beneficial types of capital flows. For instance, capital now appears to exhibit a greater tendency to flow 'downhill' to lower income economies that are likely to have relatively

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[31]Our asset side estimations are also robust to using a constant sample across all types of capital flows, moving the reference period to 2003-2004, including the fluctuations in the financial cycle, demographic changes, exchange rate movements and the degree of austerity.

scarce capital. Moreover, the share of FDI in international capital flows has increased as FDI has proven to be relatively robust.[32] Finally, we find a significant role for monetary policy as a driver of financial flows since the crisis, in particular on the asset side. Thus, it remains to be seen if the great moderation in the volatility of international capital flows will be robust to an unwinding or divergence of monetary policies across advanced economies.

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[32]In contrast to other types of flows, Aizenman et al. (2013) find a large and robust relationship between FDI - both inflows and outflows - and growth.
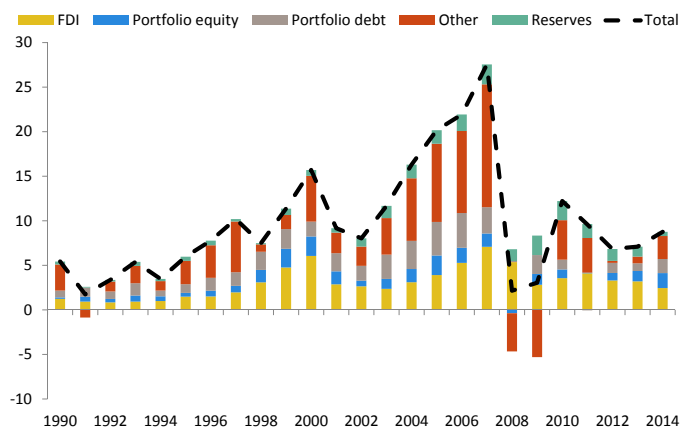
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Figure 1: International capital flows

Figure 2: Global factors: risk aversion and monetary policy
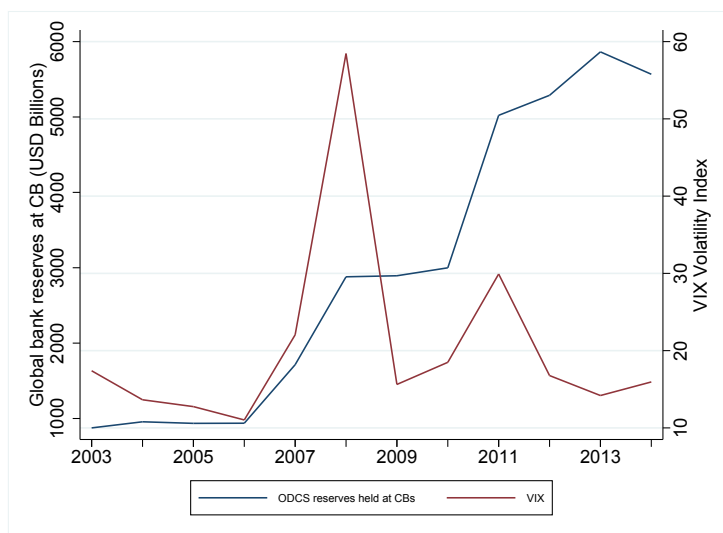
Figure 3: Global factors: money supply and interest rates

Sources: IMF International Financial Statistics.
Notes: Global money supply calculated as the sum of M2 in the United States, euro area and Japan and M4 in the United Kingdom, all converted into US dollars. Global interest rates are measured using the average rate on long-term government bonds in the United States, euro area, Japan and the United Kingdom.

Figure 4: Global factors: macroprudential and regulatory policies
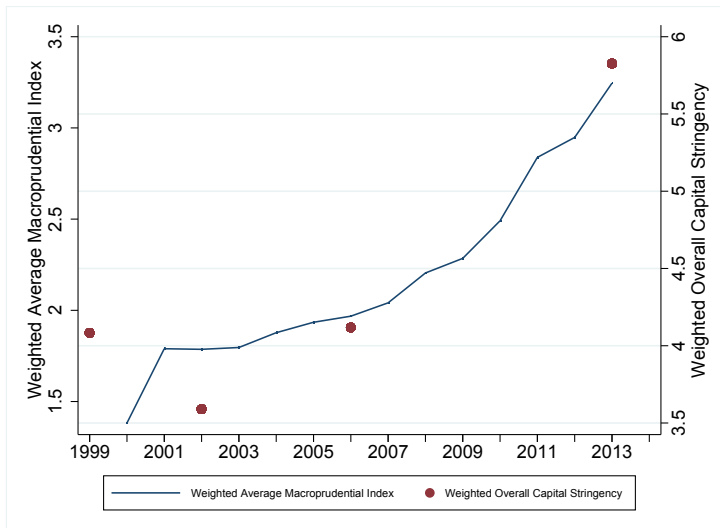
Sources: Barth et al. (2013), Cerutti et al. (2015).
Notes: Macroprudential index ranges from 1 to 12. Capital stringency index ranges from 0 to 7

Figure 5: Global foreign asset holdings
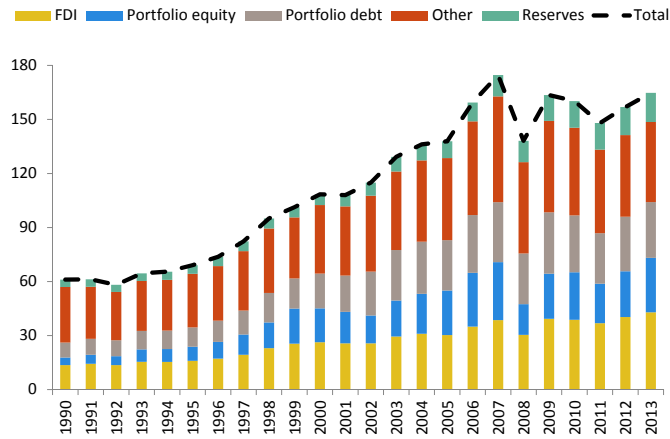
Sources: Updated and extended version of dataset constructed by Lane and Milesi-Ferretti (2007); own calculations
Notes: Foreign asset stocks as percentages of global GDP.

Figure 6: International capital flows
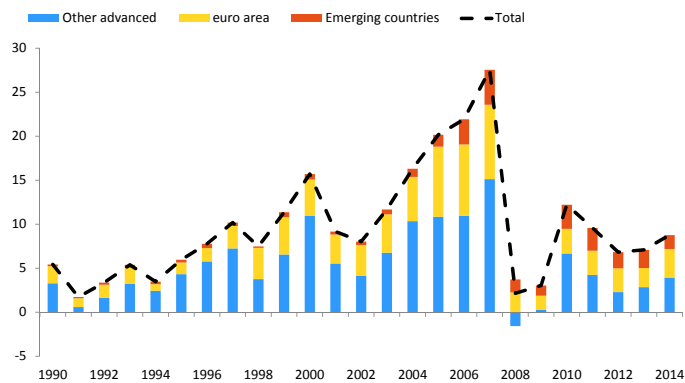
Sources: IMF and ECB Balance of Payments Statistics; own calculations
Notes: Foreign asset flows as percentages of global GDP.

Figure 7: Global developments in GDP, exports and international capital flows
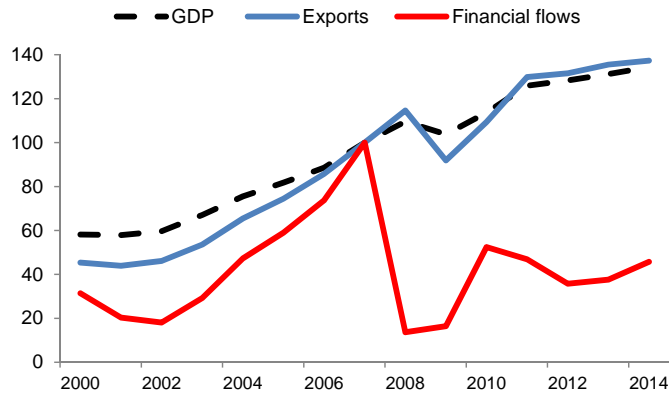
Sources: IMF WEO; own calculations
Notes: Indices, 2007=100, based on nominal USD values.

Figure 8: Volatility of international capital flows
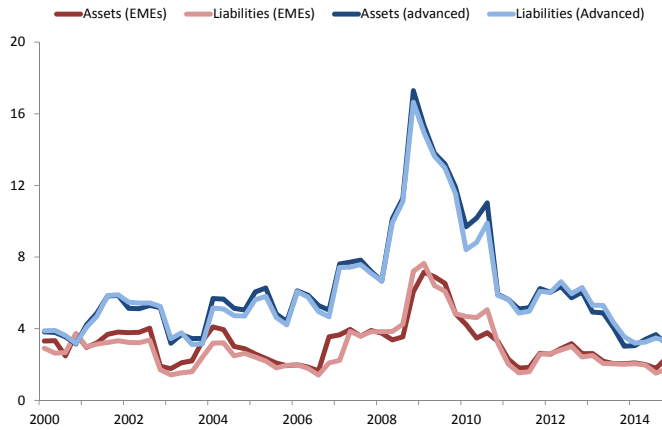
Sources: IMF and ECB Balance of Payments Statistics; own calculations
Notes: Eight-quarter rolling standard deviation of asset and liability flows (as percentages of GDP) for samples of 22 advanced and 16 emerging economies, respectively.

Figure 9: International capital flows: advanced countries

(a) Asset flows
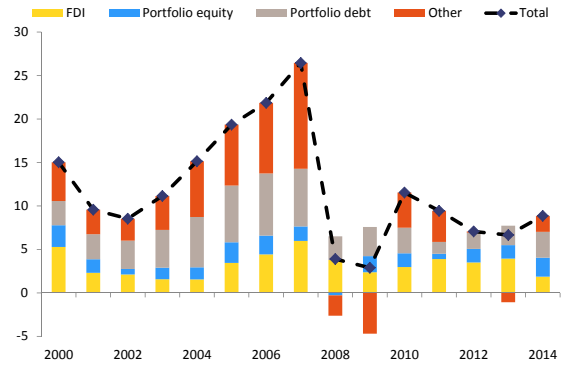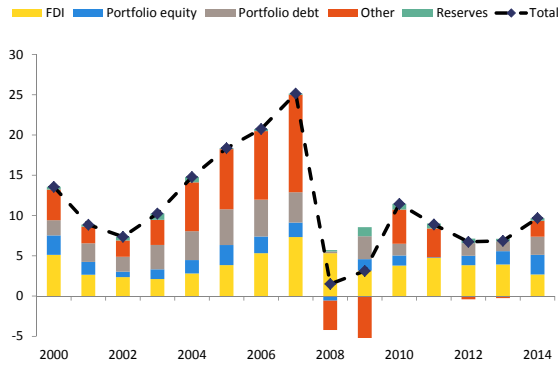
(b) Liability flows

Sources: IMF and ECB Balance of Payments Statistics; own calculations
Notes: As percentages of GDP.

Figure 10: International capital flows: emerging countries

(a) Asset flows
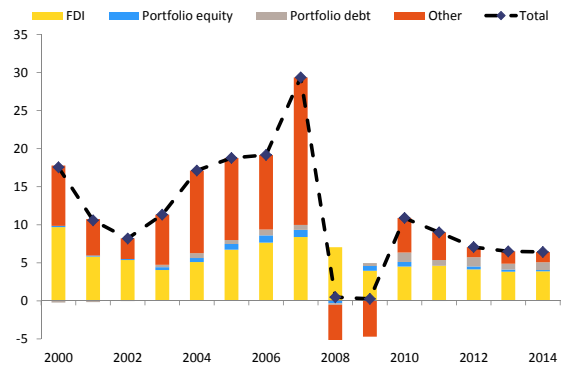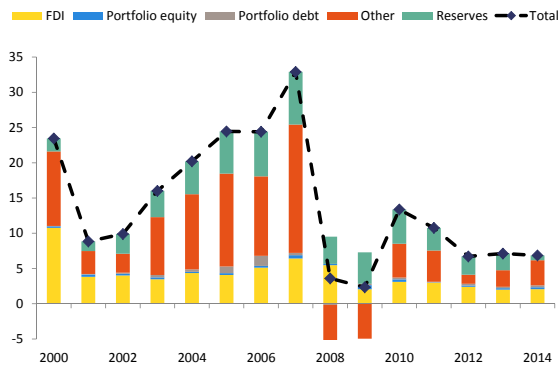
(b) Liability flows

Sources: IMF and ECB Balance of Payments Statistics; own calculations
Notes: As percentages of GDP.

Figure 11: International capital flows: euro area countries

(a) Asset flows
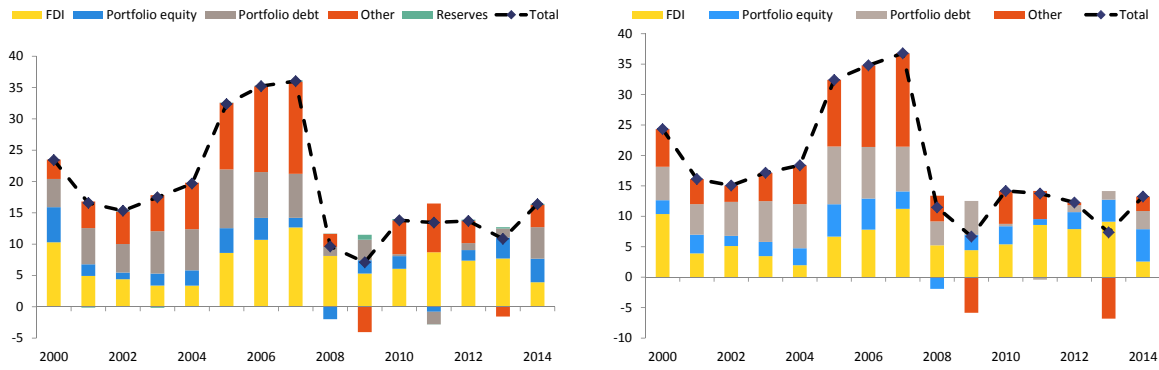
(b) Liability flows

Sources: IMF and ECB Balance of Payments Statistics; own calculations
Notes: As percentages of GDP.

Figure 12: Capital inflows in 2013-14 as percentages of 2005-06 values
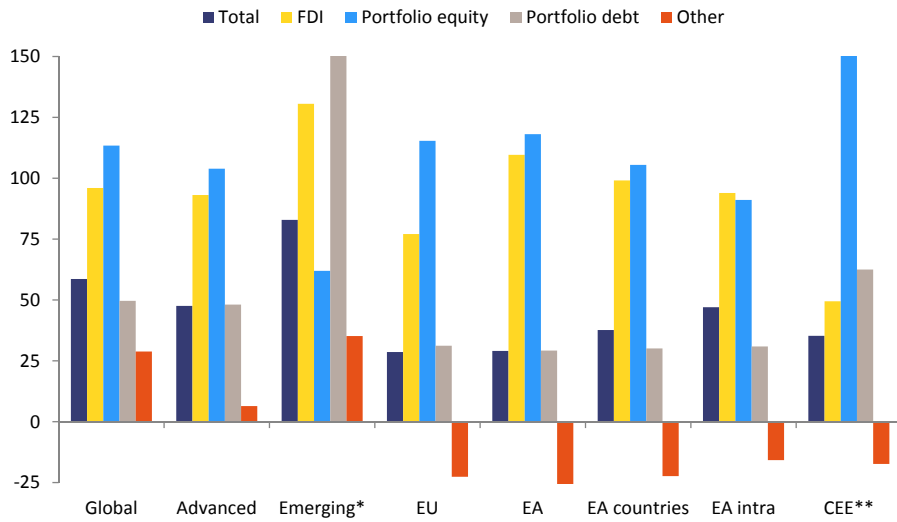
Sources: IMF and ECB Balance of Payments Statistics; own calculations
Notes: *Portfolio debt ratio for emerging economies countries corresponds to 340%. ** Portfolio equity ratio for CEE countries corresponds to 1316%.

Figure 13: Capital inflows and GDP per capita
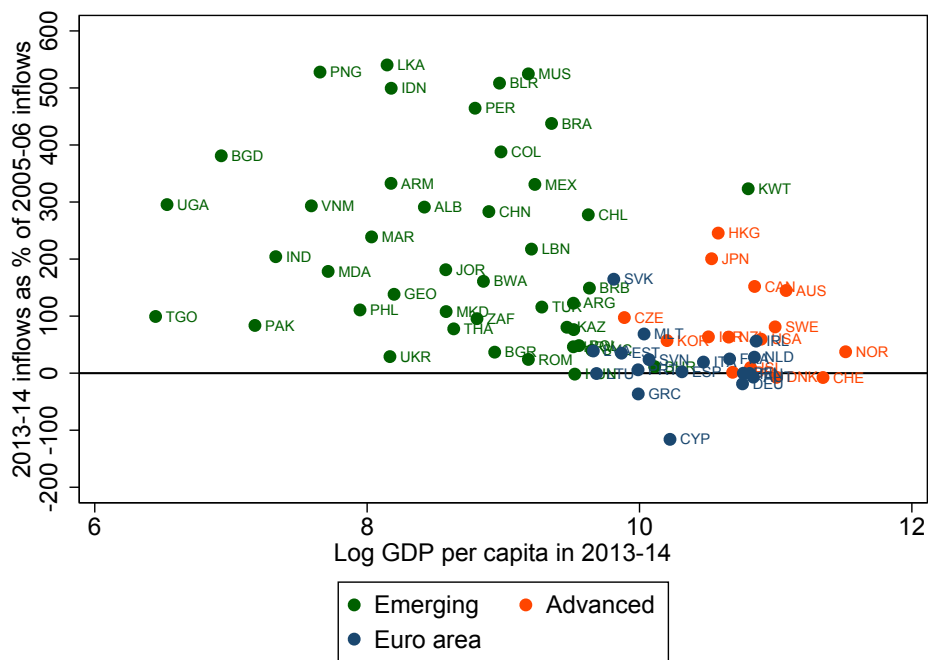
Sources: IMF and ECB Balance of Payments Statistics; own calculations

Table 1: Determinants of quarterly global capital flows, 1997Q4 to 2014Q4

VARIABLES	(1) Total	(2) Total until 2009Q4	(3) FDI	(4) PE	(5) PD	(6) Other
VIX	-0.011***	-0.012***	-0.000	-0.001***	-0.002***	-0.007***
	(0.002)	(0.002)	(0.001)	(0.000)	(0.000)	(0.002)
Growth	3.744**	3.260**	3.349***	-0.032	0.622*	0.851
	(1.423)	(1.467)	(0.753)	(0.155)	(0.327)	(1.285)
Openness	0.345	0.686**	0.889***	-0.096***	-0.072	0.876***
	(0.233)	(0.258)	(0.123)	(0.025)	(0.053)	(0.210)
Observations	69	49	69	69	69	69
R-squared	0.484	0.658	0.587	0.413	0.348	0.418

Notes: The dependent variable is the ratio of quarterly global capital flows (asset and liability flows) to global GDP; the explanatory variables are the VIX, trade openness (global exports and imports divided by GDP) and global GDP growth. Robust standard errors in brackets. * significant at 10% level; ** significant at 5% level, *** significant at 1% level.

Table 2: Foreign inflows: 2013-2014 vs. 2005-2006, benchmark regression

VARIABLES	(1) Total	(2) FDI	(3) PE	(4) PD	(5) Other	(6) Other (private)
GDP per capita (13-14)	-0.53***	-0.34***	-0.19	-0.046	-0.48**	-0.38**
	(0.19)	(0.11)	(0.19)	(0.26)	(0.19)	(0.15)
ln GDP (13-14)	0.18**	0.066	0.13	-0.15	0.10	0.11
	(0.090)	(0.050)	(0.14)	(0.093)	(0.086)	(0.10)
Ch. exp. 5-yr. ahead GDP growth (13-14 vs. 05-06)	0.26**	-0.059	0.16*	-0.17	0.23*	0.13
	(0.12)	(0.055)	(0.094)	(0.16)	(0.13)	(0.13)
GDP growth (09-10)	0.10**	0.039	0.016	0.28***	0.041	-0.026
	(0.041)	(0.032)	(0.056)	(0.055)	(0.052)	(0.042)
Public debt (05-06)	-0.31*	0.15	-0.50	-0.67**	-0.059	0.18
	(0.16)	(0.16)	(0.35)	(0.29)	(0.19)	(0.20)
Private credit (05-06)	-0.27*	0.065	0.052	0.025	-0.21	0.050
	(0.14)	(0.087)	(0.14)	(0.34)	(0.20)	(0.13)
NFA (05-06)	0.41***	0.25	-0.40	-0.30***	0.40**	-0.33
	(0.067)	(0.18)	(0.37)	(0.10)	(0.18)	(0.34)
Ch. WGI score (13-14 vs. 05-06)	0.16	0.18*	0.018	-0.24	0.16	0.16
	(0.14)	(0.096)	(0.096)	(0.16)	(0.13)	(0.13)
Chinn-Ito index (2013)	0.093	-0.045	0.27**	0.30**	-0.16	-0.076
	(0.15)	(0.073)	(0.13)	(0.14)	(0.12)	(0.12)
Observations	77	140	65	66	105	67
R-squared	0.511	0.189	0.156	0.421	0.388	0.235

Notes: The dependent variable is the ratio of capital flows in 2013-14 to capital flows in 2005-06; the explanatory variables are GDP per capita, the logarithm of nominal GDP, the Chinn-Ito index (all as averages in 2013-14), public debt, net foreign assets, domestic credit to the private sector (all as ratios to GDP and averaged over 2005-06), the overall World Bank Governance Indicator, GDP growth forecasts (changes between averages values in 2013-14 and 2005-06) and GDP growth (average over 2009-10). Robust standard errors in brackets. * significant at 10% level; ** significant at 5% level, *** significant at 1% level.

Table 3: Foreign inflows: 2013-2014 vs. 2005-2006, scaled by GDP

VARIABLES	(1) Total	(2) FDI	(3) PE	(4) PD	(5) Other	(6) Other (private)
GDP per capita (13-14)	-0.14	-0.13*	-0.19	-0.25	-0.38**	-0.35**
	(0.14)	(0.071)	(0.23)	(0.18)	(0.15)	(0.14)
ln GDP (13-14)	0.11*	0.0061	-0.028	-0.052	0.078	0.098
	(0.057)	(0.043)	(0.11)	(0.072)	(0.055)	(0.076)
Ch. exp. 5-yr. ahead GDP growth (13-14 vs. 05-06)	0.23**	-0.021	0.14	-0.058	0.18**	0.18**
	(0.099)	(0.035)	(0.091)	(0.10)	(0.080)	(0.086)
GDP growth (09-10)	0.0028	0.0042	-0.043	0.018	-0.033	-0.035
	(0.034)	(0.025)	(0.036)	(0.053)	(0.037)	(0.043)
Public debt (05-06)	-0.12	0.15	0.014	-0.54**	-0.017	-0.11
	(0.11)	(0.13)	(0.19)	(0.21)	(0.12)	(0.15)
Private credit (05-06)	-0.26*	0.0071	0.15	0.051	-0.14	-0.066
	(0.16)	(0.056)	(0.14)	(0.21)	(0.14)	(0.094)
NFA (05-06)	0.26***	0.21*	0.13	-0.19***	0.32***	-0.12
	(0.046)	(0.11)	(0.27)	(0.057)	(0.049)	(0.26)
Ch. WGI score (13-14 vs. 05-06)	-0.017	0.17*	0.10	-0.053	0.096	-0.046
	(0.12)	(0.087)	(0.12)	(0.11)	(0.093)	(0.10)
Chinn-Ito index (2013)	-0.098	-0.043	0.074	0.25**	-0.078	-0.011
	(0.14)	(0.042)	(0.099)	(0.11)	(0.085)	(0.099)
Observations	80	147	70	70	111	70
R-squared	0.350	0.132	0.069	0.226	0.386	0.244

Notes: The dependent variable is the ratio of capital flows in 2013-14 (scaled by GDP) to capital flows in 2005-06 (scaled by GDP); the explanatory variables are GDP per capita, the logarithm of nominal GDP, the Chinn-Ito index (all as averages in 2013-14), public debt, net foreign assets, domestic credit to the private sector (all as ratios to GDP and averaged over 2005-06), the overall World Bank Governance Indicator, GDP growth forecasts (changes between averages values in 2013-14 and 2005-06) and GDP growth (average over 2009-10). Robust standard errors in brackets. * significant at 10% level; ** significant at 5% level, *** significant at 1% level.

Table 4: Foreign inflows: 2013-2014 vs. 2005-2006, excluding OFCs

VARIABLES	(1) Total	(2) FDI	(3) PE	(4) PD	(5) Other	(6) Other (private)
GDP per capita (13-14)	-0.48**	-0.35***	-0.22	-0.11	-0.45**	-0.34**
	(0.22)	(0.13)	(0.22)	(0.32)	(0.20)	(0.14)
ln GDP (13-14)	0.16	0.062	0.14	-0.17	0.054	0.0090
	(0.16)	(0.079)	(0.16)	(0.11)	(0.12)	(0.13)
Ch. exp. 5-yr. ahead GDP growth (13-14 vs. 05-06)	0.30**	-0.082	0.16	-0.040	0.27*	0.17
	(0.15)	(0.071)	(0.098)	(0.23)	(0.14)	(0.13)
GDP growth (09-10)	0.11**	0.041	0.016	0.24***	0.027	-0.0085
	(0.050)	(0.038)	(0.068)	(0.069)	(0.060)	(0.041)
Public debt (05-06)	-0.36*	0.23	-0.58	-0.57*	-0.044	0.19
	(0.21)	(0.21)	(0.40)	(0.32)	(0.22)	(0.19)
Private credit (05-06)	-0.28*	0.053	0.040	0.16	-0.20	0.065
	(0.17)	(0.095)	(0.15)	(0.39)	(0.22)	(0.12)
NFA (05-06)	0.41	0.39	-0.46	-0.23	0.33	-0.15
	(0.52)	(0.42)	(0.43)	(0.62)	(0.43)	(0.42)
Ch. WGI score (13-14 vs. 05-06)	0.16	0.19*	0.0057	-0.15	0.095	0.100
	(0.15)	(0.099)	(0.10)	(0.17)	(0.13)	(0.15)
Chinn-Ito index (2013)	0.12	-0.051	0.28**	0.33**	-0.20	-0.037
	(0.16)	(0.085)	(0.13)	(0.16)	(0.13)	(0.099)
Observations	67	121	61	55	91	59
R-squared	0.464	0.189	0.168	0.338	0.395	0.252

Notes: The dependent variable is the ratio of capital flows in 2013-14 to capital flows in 2005-06; the explanatory variables are GDP per capita, the logarithm of nominal GDP, the Chinn-Ito index (all as averages in 2013-14), public debt, net foreign assets, domestic credit to the private sector (all as ratios to GDP and averaged over 2005-06), the overall World Bank Governance Indicator, GDP growth forecasts (changes between averages values in 2013-14 and 2005-06) and GDP growth (average over 2009-10). The regression excludes offshore financial centre. Robust standard errors in brackets. * significant at 10% level; ** significant at 5% level, *** significant at 1% level.

Table 5: Foreign inflows: 2013-2014 vs. 2005-2006, including euro area dummy

VARIABLES	(1) Total	(2) FDI	(3) PE	(4) PD	(5) Other	(6) Other (private)
GDP per capita (13-14)	-0.50***	-0.31***	-0.21	-0.11	-0.45**	-0.34**
	(0.19)	(0.11)	(0.19)	(0.26)	(0.18)	(0.16)
ln GDP (13-14)	0.18*	0.077	0.12	-0.12	0.12	0.11
	(0.088)	(0.052)	(0.14)	(0.091)	(0.088)	(0.10)
Ch. exp. 5-yr. ahead GDP growth (13-14 vs. 05-06)	0.23*	-0.060	0.15*	-0.18	0.23*	0.11
	(0.12)	(0.055)	(0.092)	(0.16)	(0.13)	(0.13)
GDP growth (09-10)	0.091**	0.027	0.025	0.25***	0.020	-0.039
	(0.044)	(0.036)	(0.059)	(0.058)	(0.057)	(0.046)
Public debt (05-06)	-0.26	0.17	-0.52	-0.66**	0.0045	0.22
	(0.16)	(0.16)	(0.34)	(0.28)	(0.20)	(0.21)
Private credit (05-06)	-0.28**	0.047	0.071	0.091	-0.25	0.032
	(0.13)	(0.091)	(0.14)	(0.33)	(0.20)	(0.13)
NFA (05-06)	0.40***	0.24	-0.37	-0.31***	0.39**	-0.30
	(0.064)	(0.17)	(0.38)	(0.11)	(0.18)	(0.33)
Ch. WGI score (13-14 vs. 05-06)	0.16	0.17*	0.028	-0.27*	0.15	0.15
	(0.14)	(0.097)	(0.097)	(0.16)	(0.13)	(0.14)
Chinn-Ito index (2013)	0.12	-0.021	0.25*	0.38**	-0.13	-0.048
	(0.15)	(0.077)	(0.14)	(0.16)	(0.12)	(0.12)
Euro area Member State	-0.44	-0.50	0.30	-0.91**	-0.65*	-0.38
	(0.28)	(0.31)	(0.43)	(0.43)	(0.38)	(0.33)
Observations	77	140	65	66	105	67
R-squared	0.520	0.202	0.162	0.452	0.400	0.248

Notes: The dependent variable is the ratio of capital flows in 2013-14 to capital flows in 2005-06; the explanatory variables are GDP per capita, the logarithm of nominal GDP, the Chinn-Ito index (all as averages in 2013-14), public debt, net foreign assets, domestic credit to the private sector (all as ratios to GDP and averaged over 2005-06), the overall World Bank Governance Indicator, GDP growth forecasts (changes between averages values in 2013-14 and 2005-06), GDP growth (average over 2009-10) and an euro area dummy. Robust standard errors in brackets. * significant at 10% level; ** significant at 5% level, *** significant at 1% level.

Table 6: Foreign inflows: 2013-2014 vs. 2005-2006, inc. interest rates

VARIABLES	(1) Total	(2) FDI	(3) PE	(4) PD	(5) Other	(6) Other (private)
GDP per capita (13-14)	-0.42*	-0.22	-0.11	-0.48	-0.35	-0.53***
	(0.23)	(0.16)	(0.21)	(0.33)	(0.30)	(0.16)
ln GDP (13-14)	0.14*	0.062	0.16	-0.089	0.032	0.15
	(0.080)	(0.066)	(0.15)	(0.14)	(0.13)	(0.12)
Ch. exp. 5-yr. ahead GDP growth (13-14 vs. 05-06)	0.24*	-0.040	0.32	-0.18	0.23	0.079
	(0.14)	(0.055)	(0.19)	(0.22)	(0.17)	(0.17)
GDP growth (09-10)	0.068	0.030	-0.0033	0.27***	0.025	0.028
	(0.048)	(0.042)	(0.073)	(0.075)	(0.064)	(0.062)
Public debt (05-06)	-0.34**	0.079	-0.38	-0.65	-0.12	0.18
	(0.16)	(0.18)	(0.47)	(0.40)	(0.27)	(0.24)
Private credit (05-06)	-0.14	0.044	-0.040	0.40	-0.22	-0.015
	(0.12)	(0.088)	(0.14)	(0.54)	(0.25)	(0.13)
NFA (05-06)	0.41***	0.23	-0.28	-0.28**	0.38*	-0.40
	(0.069)	(0.19)	(0.44)	(0.13)	(0.22)	(0.36)
Ch. WGI score (13-14 vs. 05-06)	0.13	0.27*	0.034	-0.19	0.15	0.14
	(0.16)	(0.14)	(0.12)	(0.20)	(0.16)	(0.15)
Chinn-Ito index (2013)	0.085	-0.013	0.24	0.46*	-0.044	-0.11
	(0.14)	(0.11)	(0.17)	(0.24)	(0.17)	(0.14)
Short-term int. rate (13-14)	0.088*	0.035	0.011	0.033	0.086	-0.097**
	(0.052)	(0.042)	(0.034)	(0.11)	(0.068)	(0.044)
Observations	61	86	47	49	66	49
R-squared	0.570	0.145	0.130	0.421	0.349	0.341

Notes: The dependent variable is the ratio of capital flows in 2013-14 to capital flows in 2005-06; the explanatory variables are GDP per capita, the logarithm of nominal GDP, the Chinn-Ito index (all as averages in 2013-14), public debt, net foreign assets, domestic credit to the private sector (all as ratios to GDP and averaged over 2005-06), the overall World Bank Governance Indicator, GDP growth forecasts (changes between averages values in 2013-14 and 2005-06), GDP growth (average over 2009-10) and short-term interest rates (average in 2013-14). Robust standard errors in brackets. * significant at 10% level; ** significant at 5% level, *** significant at 1% level.

Table 7: Foreign inflows: 2013-2014 vs. 2005-2006, inc. macroprudential index

VARIABLES	(1) Total	(2) FDI	(3) PE	(4) PD	(5) Other	(6) Other (private)
GDP per capita (13-14)	-0.41**	-0.31**	-0.29	-0.24	-0.59***	-0.35**
	(0.18)	(0.13)	(0.18)	(0.28)	(0.19)	(0.15)
ln GDP (13-14)	0.082	0.10	0.14	-0.13	0.096	0.068
	(0.079)	(0.072)	(0.15)	(0.12)	(0.11)	(0.11)
Ch. exp. 5-yr. ahead GDP growth (13-14 vs. 05-06)	0.43***	0.094	0.18	-0.15	0.46***	0.27*
	(0.15)	(0.10)	(0.11)	(0.31)	(0.15)	(0.15)
GDP growth (09-10)	0.097**	0.055	-0.011	0.27***	0.010	-0.046
	(0.040)	(0.041)	(0.059)	(0.072)	(0.054)	(0.048)
Public debt (05-06)	-0.25	-0.018	-0.41	-0.70*	0.079	0.18
	(0.15)	(0.21)	(0.40)	(0.39)	(0.21)	(0.21)
Private credit (05-06)	-0.26*	-0.00020	0.018	0.078	-0.16	0.022
	(0.15)	(0.082)	(0.14)	(0.38)	(0.22)	(0.13)
NFA (05-06)	0.33***	0.41	-0.38	-0.38***	0.68***	-0.28
	(0.063)	(0.30)	(0.40)	(0.083)	(0.25)	(0.39)
Ch. WGI score (13-14 vs. 05-06)	0.13	0.11	0.011	-0.20	0.076	0.052
	(0.17)	(0.15)	(0.13)	(0.22)	(0.15)	(0.15)
Chinn-Ito index (2013)	-0.016	-0.017	0.29**	0.46**	-0.11	-0.097
	(0.12)	(0.075)	(0.13)	(0.17)	(0.12)	(0.11)
Macroprudential Index (13-14 vs. 05-06)	-0.15*	-0.26**	0.037	-0.030	-0.34**	-0.13
	(0.087)	(0.10)	(0.13)	(0.12)	(0.15)	(0.13)
Observations	69	96	56	49	83	60
R-squared	0.581	0.326	0.145	0.412	0.487	0.268

Notes: The dependent variable is the ratio of capital flows in 2013-14 to capital flows in 2005-06; the explanatory variables are GDP per capita, the logarithm of nominal GDP, the Chinn-Ito index (all as averages in 2013-14), public debt, net foreign assets, domestic credit to the private sector (all as ratios to GDP and averaged over 2005-06), the overall World Bank Governance Indicator, GDP growth forecasts (changes between average values in 2013-14 and 2005-06), GDP growth (average over 2009-10) and the macroprudential policy index (changes between averages values in 2013-14 and 2005-06). Robust standard errors in brackets. * significant at 10% level; ** significant at 5% level, *** significant at 1% level.

Table 8: Foreign asset flows: 2013-2014 vs. 2005-2006, benchmark regression

VARIABLES	(1) Total	(2) FDI	(3) PE	(4) PD	(5) Other	(6) Reserves
GDP per capita (13-14)	-0.19	-0.46***	0.11	-0.44**	-0.18	-0.18
	(0.20)	(0.17)	(0.23)	(0.20)	(0.18)	(0.21)
ln GDP (13-14)	0.035	0.16*	-0.017	-0.14	0.19**	-0.20*
	(0.095)	(0.088)	(0.099)	(0.096)	(0.090)	(0.11)
Ch. exp. 5-yr. ahead GDP growth (13-14 vs. 05-06)	-0.065	-0.24***	-0.13	0.0076	-0.018	0.10
	(0.16)	(0.078)	(0.15)	(0.18)	(0.086)	(0.11)
GDP growth (09-10)	0.13**	0.11**	0.073	0.016	0.080*	0.10*
	(0.056)	(0.047)	(0.048)	(0.068)	(0.042)	(0.053)
Public debt (05-06)	-0.23	-0.46***	-0.22	-0.20	-0.36**	-0.068
	(0.17)	(0.17)	(0.17)	(0.16)	(0.15)	(0.19)
Private credit (05-06)	-0.098	0.26**	0.24*	0.19**	-0.14	0.42
	(0.15)	(0.11)	(0.12)	(0.094)	(0.13)	(0.27)
NFA (05-06)	-0.080	-0.029	-0.19	0.030	-0.0039	0.26
	(0.11)	(0.21)	(0.21)	(0.18)	(0.18)	(0.28)
Ch. WGI score (13-14 vs. 05-06)	-0.037	0.067	0.18	-0.23	0.018	0.033
	(0.099)	(0.16)	(0.17)	(0.22)	(0.15)	(0.14)
Chinn-Ito index (2013)	0.25**	0.042	0.24	0.15	-0.095	0.12
	(0.12)	(0.12)	(0.14)	(0.13)	(0.098)	(0.15)
Observations	77	96	62	69	114	87
R-squared	0.205	0.211	0.228	0.279	0.192	0.185

Notes: The dependent variable is the ratio of capital flows in 2013-14 to capital flows in 2005-06; the explanatory variables are GDP per capita, the logarithm of nominal GDP, the Chinn-Ito index (all as averages in 2013-2014), public debt, net foreign assets, domestic credit to the private sector (all as ratios to GDP and averaged over 2005-06), the overall World Bank Governance Indicator, GDP growth forecasts (changes between averages values in 2013-2014 and 2005-06) and GDP growth (average over 2009-10). Robust standard errors in brackets. * significant at 10% level; ** significant at 5% level, *** significant at 1% level.

Table 9: Foreign asset flows: 2013-2014 vs. 2005-06, inc. interest rates

VARIABLES	(1) Total	(2) FDI	(3) PE	(4) PD	(5) Other	(6) Reserves
GDP per capita (13-14)	-0.17	-1.10***	0.50*	-0.54*	-0.17	-0.20
	(0.18)	(0.26)	(0.29)	(0.27)	(0.28)	(0.22)
ln GDP (13-14)	0.0046	0.25*	0.17	-0.24	0.100	-0.12
	(0.072)	(0.13)	(0.14)	(0.16)	(0.11)	(0.13)
Ch. exp. 5-yr. ahead GDP growth (13-14 vs. 05-06)	0.11	-0.27***	-0.074	0.13	-0.19	-0.12
	(0.19)	(0.089)	(0.13)	(0.22)	(0.14)	(0.12)
GDP growth (09-10)	0.15***	0.012	0.12	-0.043	0.20**	0.17**
	(0.048)	(0.075)	(0.075)	(0.090)	(0.096)	(0.066)
Public debt (05-06)	-0.39	-0.69**	-0.45	-0.29	-0.30	0.17
	(0.25)	(0.26)	(0.33)	(0.30)	(0.29)	(0.24)
Private credit (05-06)	-0.23	0.22**	0.058	0.24*	-0.14	-0.28
	(0.19)	(0.11)	(0.097)	(0.12)	(0.15)	(0.37)
NFA (05-06)	-0.92	0.18	-0.76	0.87	0.74*	-0.21
	(0.62)	(0.35)	(0.69)	(0.59)	(0.38)	(0.37)
Ch. WGI score (13-14 vs. 05-06)	-0.032	0.15	0.10	0.041	0.081	-0.39**
	(0.12)	(0.19)	(0.19)	(0.21)	(0.21)	(0.17)
Chinn-Ito index (2013)	0.20*	0.0082	0.20	0.063	-0.23	0.44***
	(0.12)	(0.17)	(0.18)	(0.20)	(0.17)	(0.14)
Short-term int. rate (13-14)	-0.066	-0.096*	0.028	-0.11	-0.15**	-0.15**
	(0.041)	(0.052)	(0.046)	(0.072)	(0.060)	(0.061)
Observations	49	56	41	43	63	45
R-squared	0.345	0.443	0.371	0.476	0.383	0.413

Notes: The dependent variable is the ratio of capital flows in 2013-14 to capital flows in 2005-06; the explanatory variables are GDP per capita, the logarithm of nominal GDP, the Chinn-Ito index (all as averages in 2013-14), public debt, net foreign assets, domestic credit to the private sector (all as ratios to GDP and averaged over 2005-06), the overall World Bank Governance Indicator, GDP growth forecasts (changes between averages values in 2013-14 and 2005-06), GDP growth (average over 2009-10) and short-term interest rates (average in 2013-14). Robust standard errors in brackets. * significant at 10% level; ** significant at 5% level, *** significant at 1% level.

Table 10: Foreign asset flows: 2013-14 vs. 2005-06, inc. reserves held at central banks

VARIABLES	(1) Total	(2) FDI	(3) PE	(4) PD	(5) Other	(6) Reserves
GDP per capita (13-14)	-0.15	-0.65**	-0.18	-0.23	0.025	-0.092
	(0.17)	(0.25)	(0.24)	(0.24)	(0.15)	(0.24)
ln GDP (13-14)	0.034	0.22**	0.066	-0.21	0.051	-0.21*
	(0.087)	(0.10)	(0.12)	(0.12)	(0.082)	(0.11)
Ch. exp. 5-yr. ahead GDP growth (13-14 vs. 05-06)	-0.14	-0.40***	-0.084	-0.13	0.045	-0.046
	(0.16)	(0.15)	(0.18)	(0.18)	(0.086)	(0.12)
GDP growth (09-10)	0.089*	0.17**	0.093	0.038	0.043	0.088*
	(0.051)	(0.069)	(0.063)	(0.069)	(0.034)	(0.052)
Public debt (05-06)	-0.075	-0.52**	-0.32*	-0.12	-0.46***	0.062
	(0.16)	(0.25)	(0.17)	(0.20)	(0.17)	(0.22)
Private credit (05-06)	-0.14	0.41***	0.18	0.25***	-0.061	0.22
	(0.17)	(0.15)	(0.12)	(0.085)	(0.16)	(0.31)
NFA (05-06)	-0.012	0.067	0.052	0.54	-0.20*	0.49
	(0.051)	(0.37)	(0.32)	(0.49)	(0.11)	(0.40)
Ch. WGI score (13-14 vs. 05-06)	0.013	-0.074	-0.16	-0.0054	0.38**	-0.015
	(0.092)	(0.22)	(0.17)	(0.16)	(0.16)	(0.20)
Chinn-Ito index (2013)	0.12	0.067	0.34*	0.093	-0.036	0.044
	(0.10)	(0.17)	(0.19)	(0.18)	(0.099)	(0.15)
Ch. reserves deposits to GDP (14 vs. 12)	0.022*	0.062***	-0.0077	0.0020	0.047**	0.016
	(0.011)	(0.022)	(0.020)	(0.011)	(0.022)	(0.028)
Observations	61	72	48	56	86	64
R-squared	0.225	0.320	0.254	0.197	0.280	0.186

Notes: The dependent variable is the ratio of capital flows in 2013-14 to capital flows in 2005-06; the explanatory variables are GDP per capita, the logarithm of nominal GDP, the Chinn-Ito index (all as averages in 2013-14), public debt, net foreign assets, domestic credit to the private sector (all as ratios to GDP and averaged over 2005-06), the overall World Bank Governance Indicator, GDP growth forecasts (changes between averages values in 2013-14 and 2005-06), GDP growth (average over 2009-10) and the change in reserves held at the central bank (ratio to GDP, change between 2014 and 2012). Robust standard errors in brackets. * significant at 10% level; ** significant at 5% level, *** significant at 1% level.

Table 11: Foreign asset flows: 2013-14 vs. 2005-06, inc. capital requirements

VARIABLES	(1) Total	(2) FDI	(3) PE	(4) PD	(5) Other	(6) Reserves
GDP per capita (13-14)	-0.0022	-0.47**	0.026	-0.48**	0.037	-0.041
	(0.22)	(0.23)	(0.24)	(0.20)	(0.22)	(0.28)
ln GDP (13-14)	-0.036	0.062	0.087	-0.14	0.16*	-0.17
	(0.100)	(0.095)	(0.11)	(0.091)	(0.092)	(0.15)
Ch. exp. 5-yr. ahead GDP growth (13-14 vs. 05-06)	-0.094	-0.27	-0.14	0.068	-0.048	0.21
	(0.19)	(0.16)	(0.26)	(0.20)	(0.16)	(0.14)
GDP growth (09-10)	0.17**	0.094	0.11*	0.031	0.12*	0.049
	(0.068)	(0.062)	(0.059)	(0.068)	(0.068)	(0.053)
Public debt (05-06)	-0.31	-0.34	-0.33	-0.055	-0.44***	-0.044
	(0.19)	(0.29)	(0.22)	(0.18)	(0.17)	(0.22)
Private credit (05-06)	-0.11	0.35***	0.16	0.12	-0.072	0.52
	(0.15)	(0.13)	(0.11)	(0.090)	(0.15)	(0.33)
NFA (05-06)	-0.11	-0.081	-0.50	0.12	-0.10	-0.061
	(0.12)	(0.31)	(0.34)	(0.28)	(0.098)	(0.27)
Ch. WGI score (13-14 vs. 05-06)	-0.12	0.21	0.024	-0.29	-0.13	-0.33*
	(0.13)	(0.18)	(0.15)	(0.22)	(0.17)	(0.17)
Chinn-Ito index (2013)	0.15	-0.016	0.38**	0.24*	-0.25**	-0.098
	(0.11)	(0.15)	(0.14)	(0.14)	(0.12)	(0.19)
Capital Regulatory Index (11 vs. 06)	-0.019	0.037	0.023	0.045	0.13**	0.068
	(0.046)	(0.046)	(0.048)	(0.056)	(0.058)	(0.073)
Observations	66	76	51	59	80	61
R-squared	0.197	0.260	0.337	0.364	0.326	0.228

Notes: The dependent variable is the ratio of capital flows in 2013-14 to capital flows in 2005-06; the explanatory variables are GDP per capita, the logarithm of nominal GDP, the Chinn-Ito index (all as averages in 2013-14), public debt, net foreign assets, domestic credit to the private sector (all as ratios to GDP and averaged over 2005-06), the overall World Bank Governance Indicator, GDP growth forecasts (changes between averages values in 2013-14 and 2005-06), GDP growth (average over 2009-10) and the change in the capital stringency index (between 2011 and 2006). Robust standard errors in brackets. * significant at 10% level; ** significant at 5% level, *** significant at 1% level.

Table 12: Foreign asset flows: 2013-14 vs. 2005-06, inc. oil trade balance

VARIABLES	(1) Total	(2) FDI	(3) PE	(4) PD	(5) Other	(6) Reserves
GDP per capita (13-14)	-0.13	-0.49***	0.077	-0.35*	-0.18	-0.22
	(0.19)	(0.18)	(0.20)	(0.19)	(0.18)	(0.20)
ln GDP (13-14)	0.033	0.15	-0.0024	-0.21**	0.20**	-0.18*
	(0.093)	(0.10)	(0.11)	(0.096)	(0.090)	(0.11)
Ch. exp. 5-yr. ahead GDP growth (13-14 vs. 05-06)	-0.049	-0.26***	-0.22	0.011	-0.024	0.085
	(0.14)	(0.080)	(0.16)	(0.13)	(0.088)	(0.10)
GDP growth (09-10)	0.15***	0.10*	0.12**	0.049	0.090**	0.11**
	(0.054)	(0.051)	(0.052)	(0.063)	(0.043)	(0.045)
Public debt (05-06)	-0.29*	-0.42**	-0.23	-0.18	-0.37**	-0.037
	(0.16)	(0.19)	(0.18)	(0.16)	(0.15)	(0.19)
Private credit (05-06)	-0.078	0.32**	0.21*	0.23**	-0.21*	0.41
	(0.14)	(0.12)	(0.11)	(0.090)	(0.12)	(0.27)
NFA (05-06)	-0.070	-0.042	-0.096	0.065	-0.012	0.26
	(0.10)	(0.23)	(0.25)	(0.15)	(0.18)	(0.27)
Ch. WGI score (13-14 vs. 05-06)	-0.061	0.078	0.016	-0.24	0.057	0.055
	(0.093)	(0.16)	(0.16)	(0.21)	(0.15)	(0.15)
Chinn-Ito index (2013)	0.23*	0.060	0.27**	0.14	-0.096	0.15
	(0.11)	(0.14)	(0.13)	(0.12)	(0.098)	(0.16)
Ch. Oil trade balance (13-14 vs. 05-06)	0.15***	-0.044	0.11**	0.20***	0.051*	0.079*
	(0.046)	(0.042)	(0.044)	(0.059)	(0.027)	(0.041)
Observations	77	93	60	69	111	85
R-squared	0.288	0.219	0.328	0.406	0.227	0.223

Notes: The dependent variable is the ratio of capital flows in 2013-14 to capital flows in 2005-06; the explanatory variables are GDP per capita, the logarithm of nominal GDP, the Chinn-Ito index (all as averages in 2013-14), public debt, net foreign assets, domestic credit to the private sector (all as ratios to GDP and averaged over 2005-06), the overall World Bank Governance Indicator, GDP growth forecasts (changes between averages values in 2013-14 and 2005-06), GDP growth (average over 2009-10) and the change in the oil trade balance (ratio to GDP, change between 2013-14 and 2005-06). Robust standard errors in brackets. * significant at 10% level; ** significant at 5% level, *** significant at 1% level.

Appendix

A1 Data Sources

Variables	Source
Financial flows (balance of payments)	ECB and IMF (IFS and WEO)
GDP, GDP growth (forecasts)	IMF WEO
GDP per capita	World Bank WDI
Domestic credit to private sector	World Bank WDI
Public Debt	IMF WEO
Foreign assets and liabilities	updated and extended data by Lane and Milesi-Ferretti (2007)
World Governance Indicators	World Bank
Capital Account Openness	Chinn-Ito (2014)
Short- and long-term interest rates	IMF WEO
Reserves at central bank, money supply	IMF IFS
Residential property prices	BIS
Macroprudential index	Cerutti et al. (2015)
Capital stringency index	Barth et al. (2013)
Real effective and nominal exchange rates	ECB and IMF IFS
Demographic Variables	United Nations (2015): World Population Prospects

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