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

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December 30, 2015

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 settled arguably at a 'new normal'. We find that since the pre-crisis period, gross capital inflows increased for economies with smaller pre-crisis external and internal imbalances, lower per capita income, improving growth expectations and a less severe impact of the global financial crisis, while capital flows recovered less in the case of EU countries. On the asset side, countries with a more accommodative monetary policy and a milder impact of the crisis managed to increase gross capital outflows in the post-crisis period.

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

JEL Classification: F12, F15.

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, 2013). 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 (capital inflows) by foreign investors and the domestic purchases of foreign assets (capital outflows) by domestic investors. 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 external assets. Borio and Disyatat (2015) posit that it is conceptually and empirically more appropriate to focus on gross flows rather net flows in open macroeconomy models. Moreover, it is increasingly recognised that capital flows resulting from transactions made by foreign and domestic agents are driven by different factors (Broner et al., 2013; Forbes and Warnock, 2012).

Broner et al. (2013) find that gross capital flows are typically pro-cyclical; thus they collapse during crises, with the retrenchment occurring both in the form of repatriation of investments by foreign residents and capital flight by domestic investors. 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.

However, despite the commonalities observed in international capital flows, there is substantial country heterogeneity of developments since the pre-crisis period.[1] Hence, we investigate why some countries receive or send more capital flows now than before the crisis, while there has been a decline for others. By focusing on the years 2013-14 and thus taking a more long-term perspective with regard to the effects of the global

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

financial crisis on international capital flows, we extend 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 pull-back from countries with worse macro-financial characteristics such as large net external liabilities or credit-fuelled booms which also led to a weaker recovery in capital inflows in 2009. 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. 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.

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 return to large banking flows because they would limit the 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 of supervisory authorities in source countries, have encouraged credit outflows by cross-border banks since the crisis. Milesi-Ferretti and Tille (2011) see more potential for on-going international financial integration of emerging market economies as banks had expanded their cross-border activities less prior to the crisis, while there is still room for increased international portfolio diversification of these economies (see also Schmitz, 2013).

Our paper proceeds as follows: in Section 2 we present stylised facts on how global capital flows have evolved since the outbreak of the global financial crisis and on the cross-country heterogeneity with regard to capital flows. In Section 3, we present our empirical framework and results from the regression-based analysis. Section 4 concludes.

2   Stylised facts about the great moderation in international capital flows

Figure 1 illustrates the sharp spike in global capital flows observed in 2007 and the subsequent steep decline in 2008 and 2009.[2] 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, banking 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 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

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[2]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.

remained well below the pre-crisis level, while foreign reserve flows peaked in 2009-2010 and have since declined markedly. 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 2). 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 3): 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% in the period 2010-14), this is more a reflection of the decline in asset flows of advanced economies rather than substantial increases in flows of emerging markets. Global developments in financial flows differ from the ones observed for output and trade (Figure 4). 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. Figure 4 also illustrates the greater volatility of international capital flows compared to global trade and output.

Since the start of the financial crisis, global capital flows have not only settled at a lower level, but have also exhibited less volatility than in the pre-crisis peak period (Figure 5).[3] Based on eight-quarter rolling standard deviations of asset and liability flows, one can observe a gradual increase in volatility up to 2008, before volatility increases sharply during the peak of the crisis and remains elevated until around 2011. Since then international capital flows have fluctuated significantly less and volatility has declined steadily up to the end of 2014 to lower levels than seen for most of the 2000s. Overall, the decline in both the level and volatility of international capital flows justifies the notion of a great moderation.

Figures 6 to 9 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 6), with the steepest decline occurring in other investment. Portfolio equity flows to advanced economies recovered somewhat more strongly than other types

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[3]Volatility of assets and liabilities is measured for a sample of advanced countries as quarterly data are not consistently available for many emerging countries.

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 7) 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 EU (Figure 8), 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 in the region. The decline in portfolio equity flows – both on the asset and liability side – was relatively steep as reflected in repatriation flows in 2008. Portfolio debt flows to EU countries dried up completely during the peak of the sovereign debt crisis in 2011 and 2012, but slowly recovered since then. In contrast to the global picture, it is also striking that other investment flows of EU countries experienced another retrenchment in 2013, before turning positive in 2014. Focusing on euro area countries, the picture is similar (Figure 9). 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. The recovery in other investment (and the decline in 2013) is partly explained by official sector flows (in particular through the Eurosystem's TARGET2 system and EU/IMF financial assistance programmes).

In Figures 10 and 11, 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 2013-14) as a percentage of the values observed in the 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 10 shows that total inflows, globally and among advanced reach only around 50% of the level recorded in the pre-crisis period and just 25% in the case of EU countries.

In the case of 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, reflecting financial deepening – albeit from low starting levels – in these markets. In the EU (Figure 11), 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-residents to 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 12 shows the same metric (the level of inflows in the post-crisis period defined as 2013-14 compared to the pre-crisis period 2005-06) for total inflows across countries. Notably, this ratio is low or even negative for many of the EU countries, while exceeding pre-crisis levels in many other countries such as Brazil (433%), China (283%), India (204%) and Japan (201%).[4] The United States reaches a value of 60%, while among EU Member States (Figure 13) the lowest ratios – in fact negative, indicating disinvestment by foreign investors – were recorded for Cyprus, Greece and Germany, whereas Slovakia and Luxembourg stand out as countries that have managed to attract more inflows than in the pre-crisis period.[5]

Table 1 shows that despite total capital flows being lower than in the 2005-06 period roughly 50% of the countries for which data are available, received larger capital inflows in 2013-2014 than in 2005-2006. Across categories, this number is largest for FDI (60%), followed by portfolio debt (54%) and equity (45%) and lowest for other investment

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

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

(43%). In fact, for the latter category, 30% of the countries experienced disinvestment by foreigners (outflows) in the period 2013-14.

On the whole, the 'advanced' post-crisis period is characterised by a decline in global volumes of capital flows and lower volatility of cross-border transactions. However, there is also evidence of heterogeneity across countries, with some economies having managed to increase capital flows compared to the pre-crisis period.

3 Empirical analysis

3.1 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 'advanced' post-crisis period (defined as 2013-14) to flows in the pre-crisis period (2005-06).[6] 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 the changes in the level of capital flows. 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 focus on both the asset and liability side and also decompose these total flows into FDI, portfolio equity and debt, other investment, other investment excluding official sector flows and reserves components.[7] 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.[8] We estimate the following benchmark specification with hetereoskedasticity robust standard errors:

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[6]We choose the ratio of flows in 2013-14 to 2005-06 as the dependent variables, as this allows 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 percentages changes/growth rates is equivalent to the ratio-approach.

[7]Excluding official sector flows from other investment might be particularly relevant for euro area countries due to the Eurosystem's TARGET2 flows as well as for countries receiving official financial assistance programme (e.g. by the IMF).

[8]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.

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

The explanatory variables in the baseline specification can be broadly divided into four 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 can be seen as a proxy for the likelihood of subsequent sovereign debt problems, while being exogenous to ensuing capital flow developments. 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.[9] The inclusion of a credit variable follows a number of papers 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), for example as it might 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 bubble, which would lead to stronger disinvestment in the ensuing bust period.

Second, we include contemporaneous values $\mathbf{Y}_i^{1314}$ (i.e. averages over the period 2013 to

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[9]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.

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). 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 opportunities. 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 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) and Bremus and Fratzscher (2015).

Fourth, we employ as a measure of how countries fared at the height of the global crisis 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 may 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 these factors we introduce the level of short-term and long-term interest rates and the size of reserves held at the central bank. The latter variable – measured as the 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. Keister and McAndrews (2009) show that these reserves reflect the size of monetary policy interventions. This is because, 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. Reserves held at the central bank might therefore be a useful indicator to gauge the scale of unconventional monetary policy.

In other regressions we control for being an EU member, include measures of financial remoteness (Schmitz, 2014) and changes in the financial cycle. Regarding the latter, we apply, in line with Borio (2012), the band-pass filter developed by Christiano and Fitzgerald (2003) to the ratio of private credit to GDP.[10] Moreover, we control for demographic changes, indicators of fiscal austerity and exchange rates developments.

3.2 Results

3.2.1 Liability flows

Table 2 shows the results of our baseline specification focusing on gross financial (liability) inflows in 2013-14 (as a ratio to inflows recorded in 2005-06) as the dependent variable. Starting with total liabilities (column 1), the relatively parsimonious list of explanatory variables explains an appreciable proportion in the cross-country variation as reflected in an R-squared of 51%.[11] 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.[12] In addition, it shows

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[10]Ideally, one would include additional variables to measure the financial cycle (such as house prices), but – given the large cross-section of our dataset – this is not feasible.

[11]Apart from excluding countries with negative flows in 2005-06, we exclude outliers for which the ratio of inflows in 2013-14 to 2005-06 is larger than 600% or smaller than -300%. For instance, in the case of total inflows, this applies to five countries.

[12]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.

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that macro-financial imbalances in the pre-crisis period, potentially through their role as predictors of subsequent crises, exert a key impact 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-squared, 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 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 borrow more through 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 managed to increase their portfolio debt inflows, while a larger initial stock of public debt is associated with a decline in bond inflows.[13] The latter might be reconciled with the theoretical model of Broner et al. (2014), as in countries with severe sovereign debt problems (such as the euro area countries under stress during the sovereign debt crisis) the share of public debt held by domestic creditors tends to increase. 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.[14] 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

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[13]Somewhat counterintuitively a stronger pre-crisis net foreign asset position is associated with lower bond inflows.

[14]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.

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. Excluding official sector flows (thereby reducing the sample size substantially), the negative coefficient of GDP per capita on other investment persists, while the coefficient on net foreign assets becomes insignificant.

As a next step we exclude international financial centres from our sample. These might drive the results due the large magnitude of capital flows to these countries as well as the strong correlation in inflows and outflows, reflecting their role as international financial intermediaries (see also Tille and Milesi-Ferretti, 2011).[15] The results in Table 3 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 4, we include an EU dummy variable which is highly statistically significant with a negative sign not only for overall inflows, but also for FDI, portfolio debt and other investment flows. This implies that, conditional on all other factors in our empirical model, the decline in capital flows in 2013-14 compared to 2005-06 was even sharper for EU Member States across most financial instruments. The other coefficients remain largely unaffected by the inclusion of this dummy. Thus, the results indicate that the process of growing financial integration in the EU in the run-up to the financial crisis was halted in the post-crisis period – in line with the conjecture by Milesi-Ferretti and Tille (2011) – thereby leading to more subdued capital flow developments than can be explained by our benchmark model.

In Table 5, 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 also associated 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

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[15]We follow the IMFs 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.

(in unreported regressions).[16] 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 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. In addition, we control for financial remoteness (as applied by Schmitz (2014) to net external positions). Interestingly, more remote countries tend to receive increased FDI inflows in the post-crisis period which 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, 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.

3.2.2 Asset flows

In Tables 6, we repeat our baseline specification, focusing on gross asset flows. In the case of total flows, 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 might reflect a desire to expand investment abroad if the domestic economic outlook becomes cloudy. 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

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[16]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.

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.

Regarding monetary policy, we find evidence that countries that successfully 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 7).[17] In Table 8, 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 and FDI 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. Expansionary monetary policy in advanced countries and the associated high provision of central bank liquidity may have led to a portfolio rebalancing towards higher yielding foreign securities, for example of emerging markets. Our findings are in line with Bremus and Fratzscher (2015) who find that expansionary domestic monetary policy fosters 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. 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.[18]

We conduct a number of robustness estimations in unreported regressions. As for liability flows, our main results are robust to the exclusion of financial centres. In addition, we test for the role of being an EU Member State and find a negative coefficient only in the case of FDI. Thus, EU countries generally received inflows which were lower than implied by our benchmark model, while on the asset side this has been less the case.[19]

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

[18]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.

[19]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.

4   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 less 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 with less flows to advanced economies, particularly 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 the banking systems.

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. Taking an aggregate view, the impact of the great moderation in international capital flows could have a dampening effect on global output growth. On the other hand, the potentially destabilising effects of capital inflows has 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), many 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 scarce capital. Moreover, the share of FDI in asset and liability flows has increased as FDI has proven relatively robust and even increasing in the case of flows to emerging markets.[20] 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 of unconventional monetary policies in advanced economies.

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[20]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
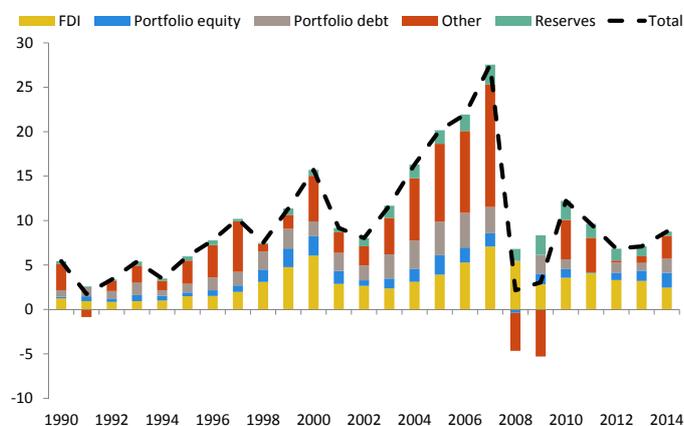
Figure 2: Global foreign asset holdings
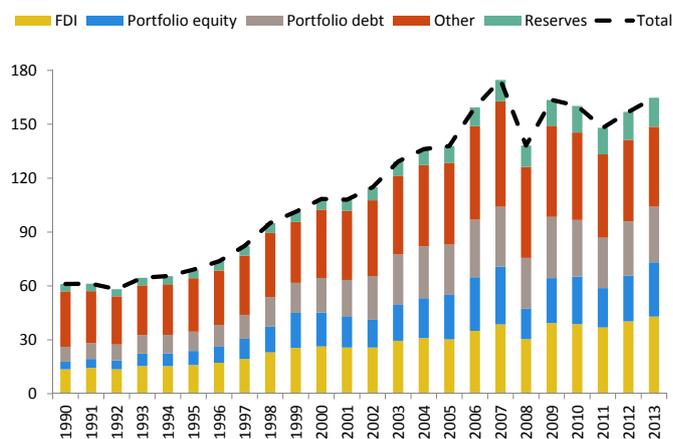
Figure 3: International capital flows
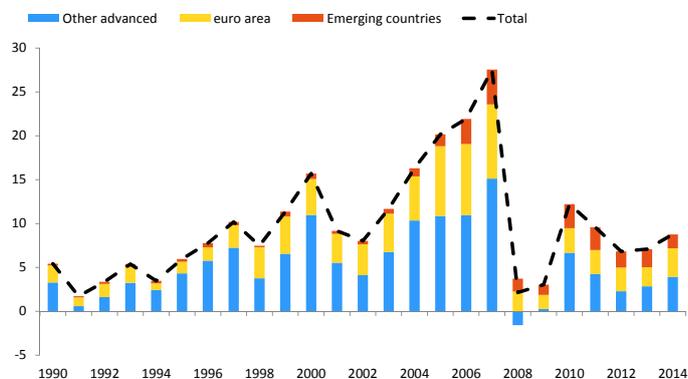
Figure 4: Global developments in GDP, exports and international capital flows
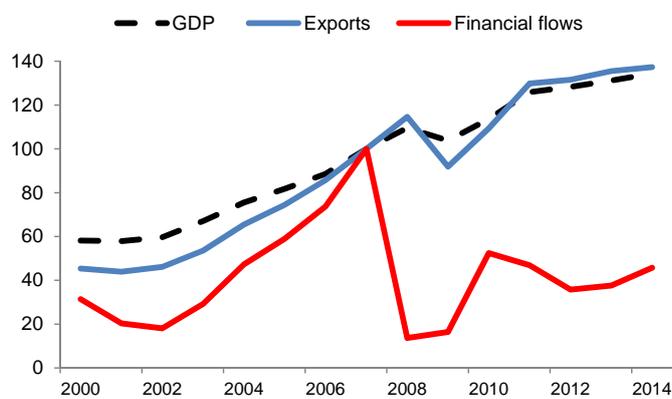
Figure 5: Volatility of international capital flows
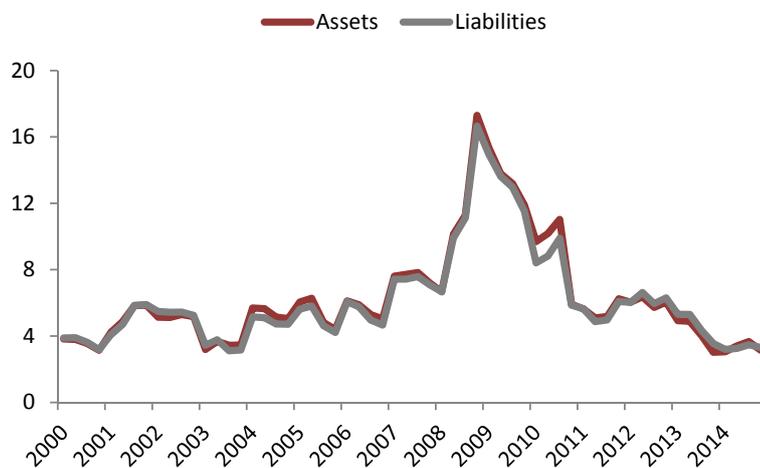
Figure 6: International capital flows: advanced countries

(a) Asset flows   (b) Liability flows
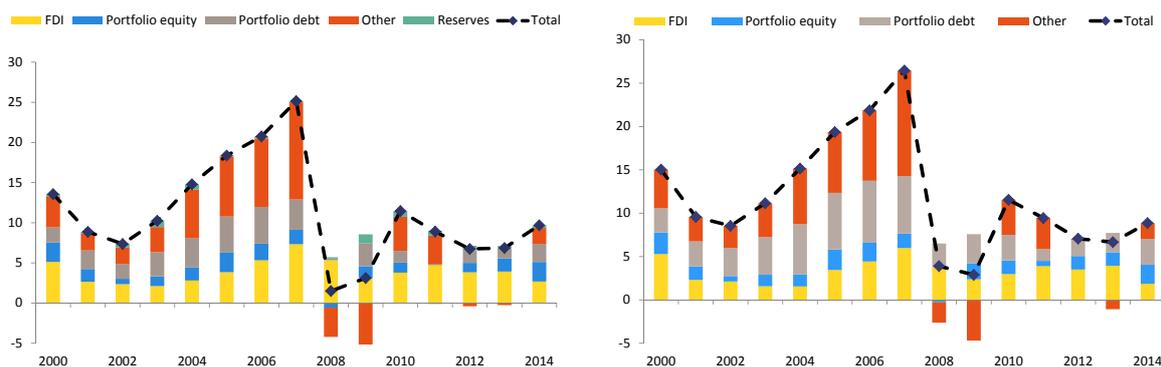
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Figure 7: International capital flows: emerging countries

(a) Asset flows
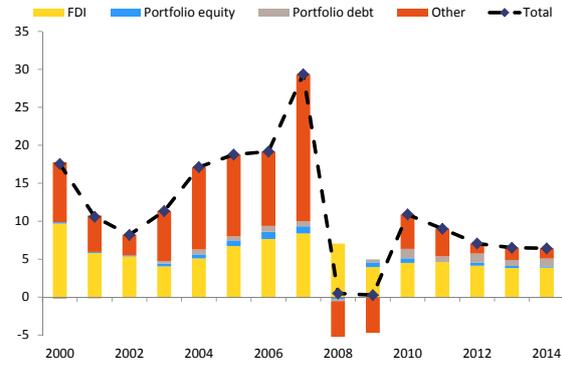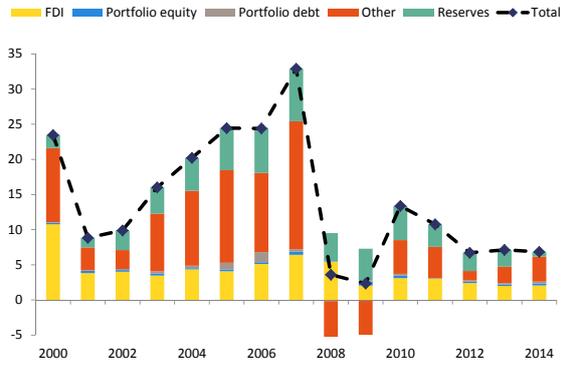
(b) Liability flows

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

Figure 8: International capital flows: EU countries

(a) Asset flows

(b) Liability flows

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

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Figure 9: International capital flows: euro area countries

(a) Asset flows   (b) Liability flows

Figure 10: Capital inflows in 2013-14 as percentages of 2005-06 values
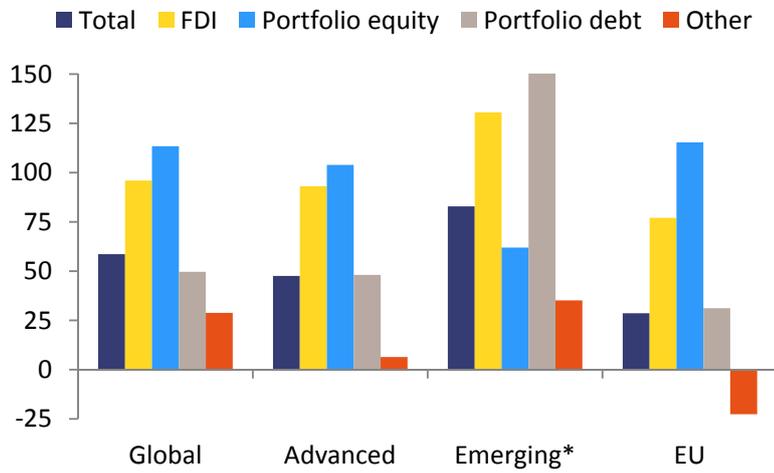
Figure 11: Capital inflows in 2013-14 as percentages of 2005-06 values
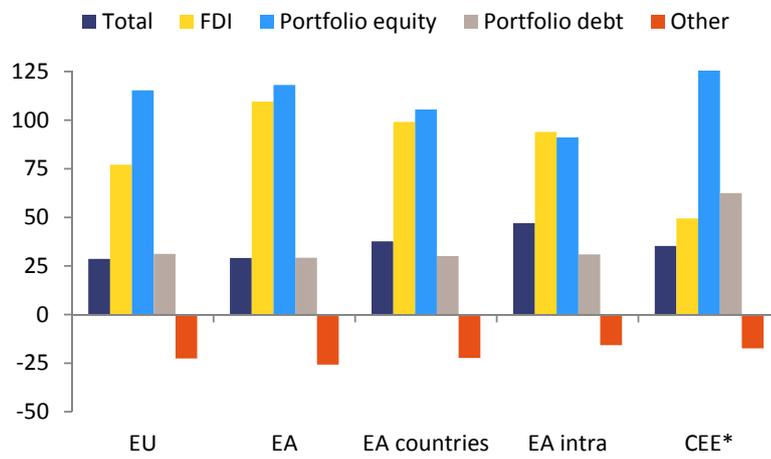
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Figure 12: Total capital inflows in 2013-14 as percentages of 2005-06 values
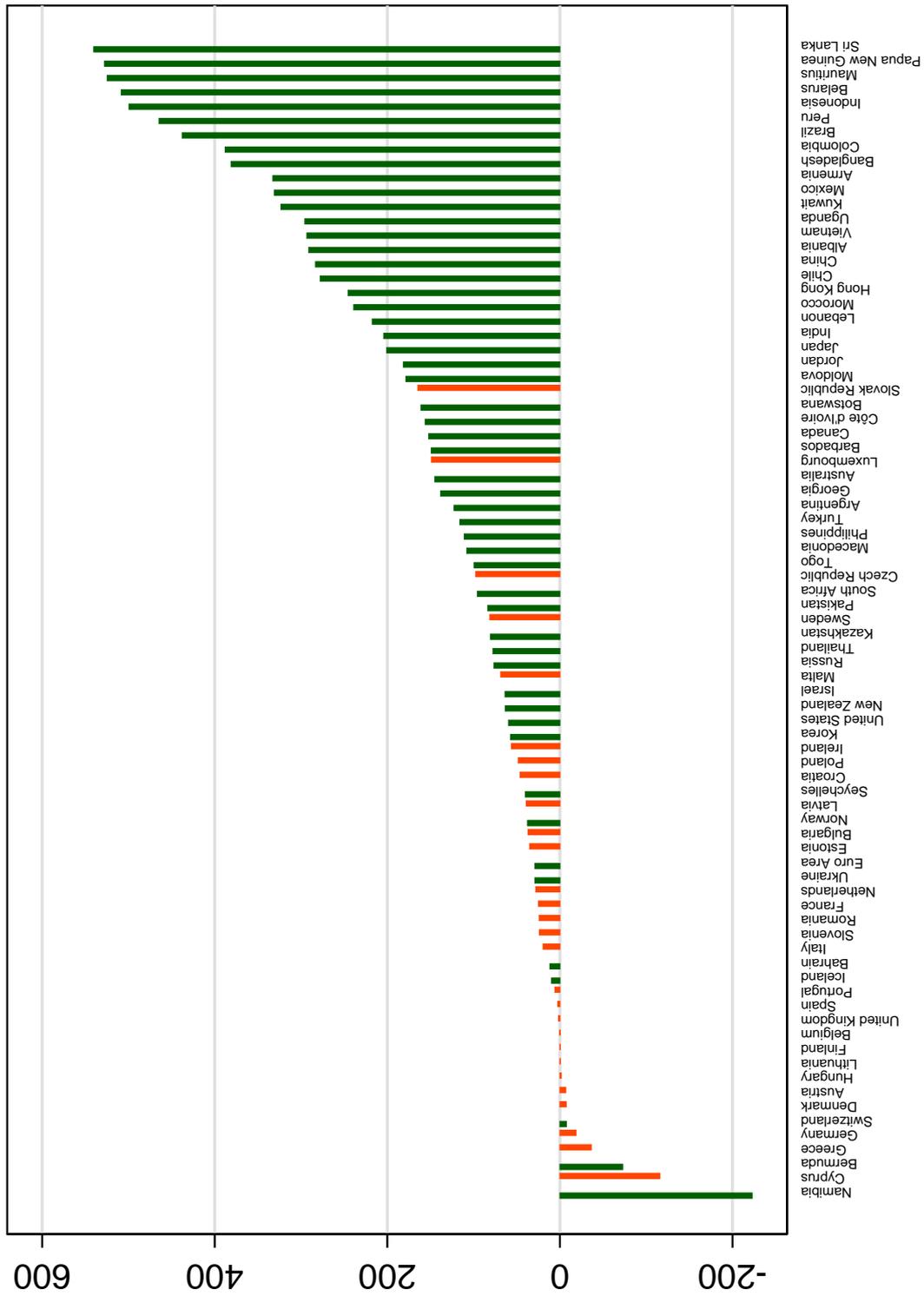
Figure 13: Total capital inflows in 2013-14 as percentages of 2005-06 values, EU countries
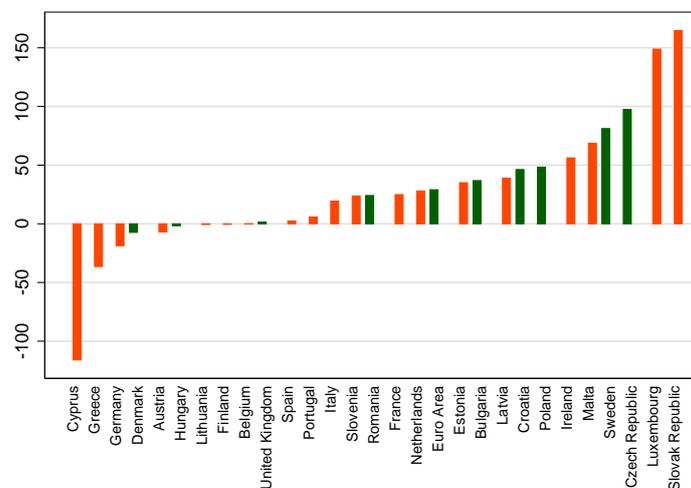
Table 1: Frequency, capital flows in 2013-14 as percentages of 2005-06 flows

Assets					**Liabilities**				
	Obs.	>100	(>0, <100)	<0		Obs.	>100	(>0, <100)	<0
Total	82	35	37	10	Total	86	42	32	12
FDI	121	66	38	13	FDI	176	109	58	9
P. equity	79	36	29	14	P. equity	78	35	26	15
P. debt	83	29	39	15	P. debt	90	49	24	17
Other	144	61	38	42	Other	129	55	37	37
Reserves	143	54	45	44					

Table 2: Foreign liabilities: 2013-14 vs. 2005-06, 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 liabilities: 2013-14 vs. 2005-06, 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). Robust standard errors in brackets. * significant at 10% level; ** significant at 5% level, *** significant at 1% level.

Table 4: Foreign liabilities: 2013-14 vs. 2005-06, including EU dummy

VARIABLES	(1) Total	(2) FDI	(3) PE	(4) PD	(5) Other	(6) Other (private)
GDP per capita (13-14)	-0.51***	-0.29**	-0.19	-0.095	-0.45**	-0.34**
	(0.18)	(0.11)	(0.19)	(0.26)	(0.18)	(0.16)
ln GDP (13-14)	0.18**	0.11**	0.13	-0.11	0.14	0.12
	(0.088)	(0.053)	(0.14)	(0.091)	(0.093)	(0.10)
Ch. exp. 5-yr. ahead GDP growth (13-14 vs. 05-06)	0.17	-0.064	0.16	-0.17	0.22*	0.074
	(0.13)	(0.054)	(0.10)	(0.16)	(0.12)	(0.15)
GDP growth (09-10)	0.068	0.0037	0.022	0.24***	0.0049	-0.053
	(0.045)	(0.038)	(0.065)	(0.060)	(0.061)	(0.050)
Public debt (05-06)	-0.21	0.17	-0.51	-0.68**	0.026	0.25
	(0.17)	(0.15)	(0.34)	(0.28)	(0.20)	(0.22)
Private credit (05-06)	-0.27**	0.037	0.058	0.070	-0.24	0.038
	(0.12)	(0.092)	(0.14)	(0.32)	(0.19)	(0.13)
NFA (05-06)	0.36***	0.18	-0.38	-0.32***	0.34*	-0.35
	(0.064)	(0.16)	(0.41)	(0.10)	(0.18)	(0.34)
Ch. WGI score (13-14 vs. 05-06)	0.18	0.17*	0.021	-0.26*	0.18	0.16
	(0.13)	(0.094)	(0.098)	(0.15)	(0.13)	(0.13)
Chinn-Ito index (2013)	0.20	0.028	0.26	0.41**	-0.095	-0.0086
	(0.15)	(0.079)	(0.16)	(0.16)	(0.13)	(0.13)
EU	-0.83**	-1.02***	0.13	-0.94**	-0.79*	-0.57
	(0.35)	(0.32)	(0.57)	(0.47)	(0.43)	(0.38)
Observations	77	140	65	66	105	67
R-squared	0.539	0.247	0.157	0.459	0.407	0.258

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 EU dummy. Robust standard errors in brackets. * significant at 10% level; ** significant at 5% level, *** significant at 1% level.

Table 5: Foreign liabilities: 2013-14 vs. 2005-06, 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 6: Foreign assets: 2013-14 vs. 2005-06, 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 2013-14), 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 7: Foreign assets: 2013-14 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 8: Foreign assets: 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	-0.75***	-0.16	-0.24	-0.017	-0.086
	(0.17)	(0.25)	(0.23)	(0.23)	(0.15)	(0.24)
ln GDP (13-14)	0.061	0.37***	0.065	-0.21*	0.068	-0.21*
	(0.084)	(0.10)	(0.12)	(0.12)	(0.077)	(0.12)
Ch. exp. 5-yr. ahead GDP growth (13-14 vs. 05-06)	-0.096	-0.18	-0.083	-0.16	0.046	-0.036
	(0.15)	(0.14)	(0.18)	(0.19)	(0.084)	(0.12)
GDP growth (09-10)	0.097*	0.16**	0.096	0.035	0.051	0.10*
	(0.051)	(0.062)	(0.069)	(0.070)	(0.034)	(0.059)
Public debt (05-06)	-0.16	-0.78***	-0.34*	-0.073	-0.46**	0.017
	(0.16)	(0.23)	(0.20)	(0.23)	(0.18)	(0.23)
Private credit (05-06)	-0.17	0.36**	0.19	0.25***	-0.090	0.20
	(0.17)	(0.17)	(0.12)	(0.087)	(0.15)	(0.31)
NFA (05-06)	-0.015	-0.34	0.067	0.56	-0.20*	0.44
	(0.058)	(0.32)	(0.32)	(0.49)	(0.100)	(0.43)
Ch. WGI score (13-14 vs. 05-06)	-0.047	-0.21	-0.18	0.024	0.35**	-0.056
	(0.094)	(0.19)	(0.18)	(0.17)	(0.16)	(0.21)
Chinn-Ito index (2013)	0.095	0.031	0.34*	0.10	-0.042	0.029
	(0.096)	(0.16)	(0.19)	(0.17)	(0.098)	(0.15)
Reserve deposits/GDP (13-14)	0.039*	0.15***	0.0038	-0.019	0.023	0.029
	(0.021)	(0.032)	(0.035)	(0.026)	(0.025)	(0.044)
Observations	61	72	48	56	86	64
R-squared	0.243	0.438	0.252	0.202	0.254	0.191

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 reserves held at the central bank (ratio to GDP, average in 2013-14). 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	IMF IFS
Real effective and nominal exchange rates	ECB and IMF IFS
Demographic Variables	United Nations (2015): World Population Prospects