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International Reserves and Gross Capital Flows: Dynamics During Financial Stress*

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Abstract

This paper explores the role of international reserves as a stabilizer of international capital flows during periods of global financial stress. In contrast with previous contributions, aimed at explaining net capital flows, we focus on the behavior of gross capital flows. We analyze an extensive cross-country quarterly database using event analyses and standard panel regressions. We document significant heterogeneity in the response of resident investors to financial stress and relate it to a previously undocumented channel through which reserves are useful during financial stress. International reserves facilitate financial disinvestment overseas by residents, offsetting the simultaneous drop in foreign financing.

JEL codes: F21, F32, F33

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INTERNATIONAL RESERVES AND GROSS CAPITAL FLOWS. DYNAMICS DURING FINANCIAL STRESS[1]

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ABSTRACT

This paper explores the role of international reserves as a stabilizer of international capital flows during periods of global financial stress. In contrast with previous contributions, aimed at explaining net capital flows, we focus on the behavior of gross capital flows. We analyze an extensive cross-country quarterly database using event analyses and standard panel regressions. We document significant heterogeneity in the response of resident investors to financial stress and relate it to a previously undocumented channel through which reserves are useful during financial stress. International reserves facilitate financial disinvestment overseas by residents, offsetting the simultaneous drop in foreign financing.

KEYWORDS: Gross capital flows, international reserves, systemic crises, capital retrenchment
JEL CODES: F21, F32, F33

1. Introduction

The world economy has, in recent decades, experienced a process of global financial integration, with large increases in cross-border capital flows in both emerging and developed economies. The process has been far from smooth. As shown in Graph 1, where episodes of global financial stress (as defined in section 2) are depicted with an unbroken blue line, cross-border capital flows have been increasing, grinding abruptly to a halt during the 1995-1996, 1998-1999 and 2001-2002 episodes of turmoil. Each time, they resumed soon afterwards, reaching their peak at the onset of the 2008 global economic crisis. After their sharp collapse, financial flows are on a rising trend again. The picture is one of waves of increasing integration followed by episodes of sudden reductions in cross-border flows.[3]

While countries, in particular emerging economies, can benefit from foreign savings, they can also be severely affected by episodes of disruption in cross-border capital flows. In fact, strong capital inflows can lead to exchange rate misalignments, foster credit booms and currency mismatches and are subject to sudden stops, namely sharp reductions in cross-border flows. These can, in turn, trigger strong exchange rate depreciations and even bank runs (see Jeanne, 2010).[4]

[1] We thank F. Broner, M. Bussiere, J. Carrera, M. Lo Duca, E. Fernández-Arias, L. Korhonen, R. Rigobon, P. del Río, A. van Rixtel, and seminar participants at the European Central Bank. Banco de España, Banco Central de Chile, Banque de France, 2011 Royal Economic Society Meetings, 2011 LACEA Meetings, 2011 CEMLA Meetings and the CGFS Workshop on capital flows for their valuable comments. Laura Fernández and Silvia Gutierrez provided superb research assistance. The views in this paper are the authors' and need not coincide with those of Banco de España or the Eurosystem.
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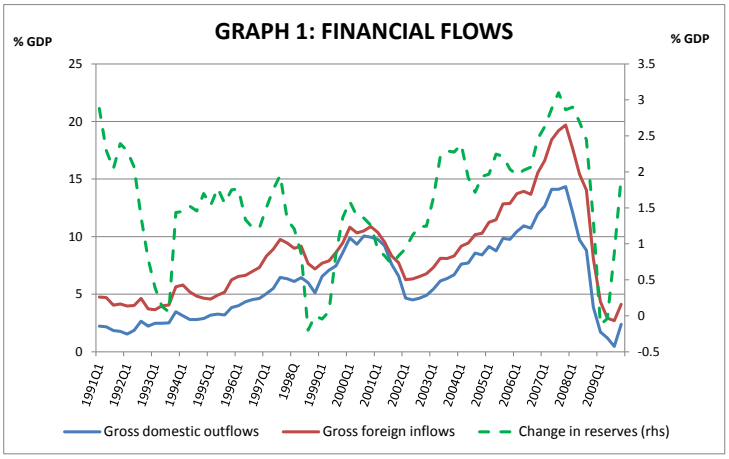
[3] A similar picture emerges from Broner et al. (2011) and Forbes and Warnock (2011).
[4] Bordo et al (2010) use early 20th century data to show that sudden stops can have lasting effects on GDP growth.

Against this background, the challenge for policy makers lies in reaping the benefits of financial integration while managing these risks. Episodes of high capital flows to emerging economies have been managed with an eclectic approach. Macro-prudential policies and capital controls have sometimes been used during the upswing to prevent credit booms and financial instability. Even more often, in particular in the past decade, foreign reserve accumulation by Central Banks has been used to prevent excessive exchange rate misalignments and build up buffers against eventual sudden stops (see Ostry et al., 2011).[5] Graph 1 presents simple country averages of the dynamic behavior of gross capital flows and reserve accumulation. It strongly suggests that reserve accumulation policies have been in place, particularly in the run-up to the last crisis.



Indeed, after the recent crisis, international reserve holdings are skyrocketing again in emerging economies. They exceeded 9 trillion dollars in 2010, well above the 7.5 trillion dollars at the onset of the crisis. Emerging economies' international reserves have climbed from 5 trillion dollars before the crisis to close to 6 trillion dollars. According to Jeanne and Ranciere (2009), leaving aside China, reserve accumulation in emerging economies might largely be explained by precautionary motives, the threat of a reversal on capital inflows.

A striking fact underlining these developments is that, despite a lack of hard evidence, there is a growing consensus among policy makers that holding large stocks of foreign reserves pays off.[6] Moreover, there is mounting evidence that this policy might impose significant externalities and have major costs for the world economy (IMF, 2010). With this paper we aim to provide additional elements to evaluate the advisability of reserve accumulation by analyzing its effect on the behavior of cross-border investors, either domestic or foreign, during periods of systemic financial stress.[7] This is in

[5] Durdu et al. (2009) presents a general equilibrium model of reserve accumulation. It rationalizes the buildup of large stocks of foreign reserves as a precautionary behavior in an environment where credit constraints can lead to sudden capital stops. Caballero and Panageas (2008) compare self-insurance with active liability management and show that the later can provide significant gains to the country.

[6] IMF (2011) analyzes the level of reserves worldwide using a variety of reserve adequacy indicators. According to their preferred metric most countries hold an excessive amount of foreign reserves.

[7] A related strand of the literature, instead of focusing on the benefits of reserve accumulation, studies its determinants. For instance, Bastourre et al (2009), using GMM techniques in a panel of emerging countries, find a U-shaped relationship between reserves and development level. They also find that countries with flexible exchange rate regimes have higher ratios of reserves

contrast to the empirical literature on the issue, which has focused mostly on the impact of reserves on either foreign flows or net capital flows. For instance, Obstfeld (2011) argues that international reserves are held to prevent foreign capital flight and, thus, relate to the countries' international liabilities. By placing our focus also on resident investors, we follow a recent strand of literature that has suggested that international reserves are held at least partly to prevent and mitigate domestic capital flight. Obtsfeld et al. (2008) show that international reserves depend on the economy's M2, which, they argue, can be seen as a proxy of the resources which residents can invest overseas.[8]

The literature has, so far, found contradictory evidence regarding the ability of international reserves to lower substantially the probability of experiencing sudden stop. According to Calvo (2007), sudden stops of capitals are best prevented by orthodox domestic policies and limited balance-sheet vulnerabilities, with international reserves playing an indirect role. Edwards (2007) argues that international reserves play a minor role in avoiding sudden stops. Calvo et al. (2008) suggest that international reserve holdings could both prevent a sudden stop by mitigating exchange rate depreciation and act as a buffer in the event of experiencing such a stop. Along the same lines, IMF (2006) emphasizes that international reserves are a relevant tool for self-insuring against external shocks. In contrast, García and Soto (2004) find a strong negative relationship between the level of international reserves and the probability of sudden stops.

Using net flows can, however, be misleading. Consider a sudden stop episode – a sharp reduction in net financial flows- and the consequent increase in financing needs. Does it reflect a reduction in overseas investment or an increase in investment overseas by residents? Along these lines, a few recent papers show that the underlying drivers of net financial flows are better understood if the data is divided into gross foreign inflows (i.e. financial investment in the country by non-residents) and gross domestic outflows (i.e. financial investment abroad by residents). Rothenberg and Warnock (2011) show that many sudden stop episodes were indeed episodes of resident capital flight and that only a fraction were driven by a contraction of gross foreign inflows. In turn, Forbes and Warnock (2011) show that global factors are important determinants of both resident and foreign sudden stop episodes and that, although domestic macroeconomic characteristics hardly matter, changes in domestic economic growth influence episodes of foreign capital flight. Also closely related to our paper, Broner et al. (2011) and Cowan et al. (2007) argue that a key difference between developed and emerging economies during financial stress lies in the behavior of gross domestic outflows. According to Broner et al. (2011), who study the behavior of gross flows along the business cycle, during crises, foreign investors flee while domestic investors tend to retrench.[9]

We use this "gross approach" to study the impact of international reserve accumulation on the behavior of gross capital flows during periods of global stress. We build an extensive quarterly database on gross

to GDP. Chinn and Ito (2006) present evidence on the absence of a significant relation between international reserves and an economy's degree of financial openness. Broto et al. (2006) shows that a larger stock of reserves reduces the volatility of FDI net flows.

[8] Jeanne and Rancière (2009) suggest that considering the level of M2 helps rationalize high levels of foreign reserves

[9] Broner et al. (2011) further show that the response to crises of the various capital flow components can be very different.

capital flows in which we distinguish the behavior of foreign investors in the economy from that of the economy's resident investors abroad. By looking separately at the domestic and foreign components of capital flows we address the following questions. Do international reserves play a catalytic role vis-à-vis foreign investors? Do they affect the behavior of gross domestic outflows? In light of the literature we perform the analysis measuring reserves in terms of both international financial liabilities (a proxy of the resources that non-residents can pull out of the country) and M2 (a proxy of the resources which residents can pull out of the country).

Our main results suggest that, while the dynamics of gross foreign inflows during global financial stress are not meaningfully affected by the countries' level of international reserves, the dynamics of gross domestic outflows do depend on the level of international reserves. During periods of stress, countries with more international reserves experience larger drops in gross domestic outflows. International reserves make residents more willing to repatriate capitals invested overseas, mitigating the lack of foreign financing. These results hold both in international financial liabilities and M2 terms.

These findings are relevant for at least two reasons. First, by highlighting a previously undocumented benefit of reserve holdings, they contribute to improving the design of the international financial architecture. This beneficial effect on the behavior of resident investors should be an element of any financial safety net designed to limit countries' incentives to accumulate reserves. As such, the exercise also contributes to a growing literature on the dynamic behavior of gross capital flows that decomposes capital accounts into operations by domestic and foreign investors. Broner et al. (2011) show how during financial stress domestic investors reduce the speed at which they accumulate external assets or even reduce their external exposure. This behavior is, however, in contrast to the recurrent phenomenon of domestic capital flight documented by Rothenberg and Warnock (2011) and Forbes and Warnock (2011).[10] By showing that international reserves partly explain the heterogeneous reaction of resident investors, we reconcile these two pieces of evidence. In countries where the Central Bank holds low levels of hard currency, domestic investors are more likely to respond to a crisis with domestic capital flight. Although we do not attempt to model it, this fact points to the existence of potential complementarities between the local Central Bank and domestic investors.[11]

The rest of the paper is structured as follows. Section 2 provides a data description. Section 3 presents the empirical exercise along with our main results and a battery of robustness checks. Finally, section 4 concludes.

2. Data

[10] While our approach is similar to that on Broner et al. (2011), there are significant differences between Rothenberg and Warnock (2011) and Forbes and Warnock (2011) and our exercise. First, these papers focus on extreme changes in the pattern of capital flows, disregarding whether they occur in periods of systemic financial stress. In addition, Rothenberg and Warnock (2011) use contractions in monthly international reserves to classify episodes as either capital flight or true sudden stops, depending on whether the change in reserves is driven by gross domestic outflows or gross foreign inflows.

[11] Possible explanations are that residents are more willing to repatriate assets when are confident about the strength of their currency or about the ability of the authorities to manage financial instability.

We construct a database comprising 63 countries for the period 1991-2009. Countries were selected according to data availability. Given that some relevant developments may last few quarters or that their impact is felt in quarters of different years we use quarterly data. Country selection was most constrained by our interest in using quarterly data.[12] Our final sample, detailed in Annex I, contains 44 developing countries and 19 developed countries.[13] The latter, will, for simplicity, be bundled together in a group defined as "OECD countries". In the rest of this section, we describe the construction of capital flows aggregates; define our crises events, construct measures of reserves, and describe how countries are grouped according to their level of reserves.

Defining gross capital flows aggregates

Data on financial flows, as reported in Balance of Payment data, comes from the *International Financial Statistics* of the *International Monetary Fund*. This source allows for disaggregation between financial inflows by foreigners, investments and disinvestments into the receiving economy, what we call *gross foreign inflows (GFI),* and financial outflows by residents, investments and disinvestments from the economy to overseas, defined here as *gross domestic outflows (GDO)*. Further disaggregation by instruments allows disentangling gross flows as international reserves, foreign direct Investment (FDI) flows, portfolio flows and other investment flows.

Using this information we construct the following aggregates in GDP terms. First, we define a measure of total financial investments by non-residents in the reporting economy (*GFI*, gross foreign inflows), which includes all three categories: FDI, portfolio inflows and other inflows. Second, we define an analogous measure of total financial investments by residents in the reporting economy overseas (*GDO*, gross domestic outflows), excluding central banks' purchases and sales of international reserves.[14] Using these two aggregates we construct a measure of net capital flows, *NF= GFI – GDO*.[15] Finally, we define *short-term gross foreign inflows*, *GFIST*, by adding up portfolio and other investment flows by non-residents in the reporting economy; and *short-term gross domestic outflows*, *GDOST*, using analogous information regarding residents' activity. For all of these variables we construct a four-quarter cumulative version,

$$\tilde{x}_{it} = \sum_{t=-3}^{0} x_{it} \;\; where \;\; x_{it} = \{GFI, GDO, NI, GFIST, GDOST\}$$

The smoothing of the series using the cumulative measure has two important advantages. First, it minimizes the importance of idiosyncratic events. Second, it reduces the importance of dating exactly the quarter in which the episode of global financial stress unfolds. However, it also entails a cost as it smoothes the importance of the shock.

[12] For instance, the large drop on capital flows in the last quarter of 2008 occurred after several quarters of large inflows. Thus, using annual data would hide this sharp contraction.

[13] To avoid their high and volatile flows drive the analysis, we dropped a number of financial centers (Ireland, Iceland, Luxembourg or and Hong-Kong). We also excluded China as it only provides flows information in a semi-annual basis.

[14] Due to the nature of the exercise, our *GDO* measure does not include changes in central banks' international reserves.

[15] *NF* need not coincide with the current account which also includes errors and omissions and exceptional financing items.

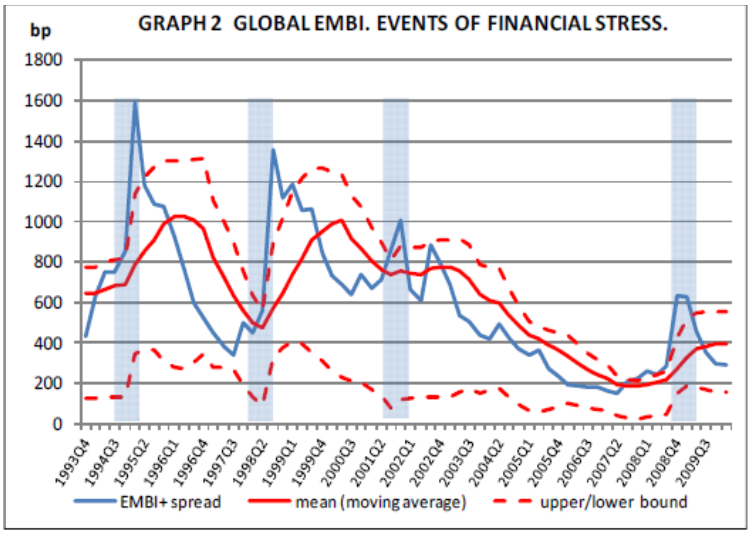
In the econometric part, we follow Broner et al. (2011) and standardize the series by dividing them with their corresponding standard deviation: $\hat{x}_{it} = \frac{\tilde{x}_{it}}{\sigma_{\tilde{x}_i}}$. This is done to reduce the impact on the estimation of the most volatile countries.

Event identification

As in Calvo et al. (2008), we use the Global EMBI+ Index to identify periods of global financial stress in EMs. We define periods of global financial stress as those quarters in which the Global EMBI+ spread fulfils the following two conditions. First, it jumps two standard deviations over its eight-quarter moving average. Additionally, it reaches the maximum in a four-quarter window. More precisely:

$$EVENT_t = \begin{cases} 1 & if \quad EMBI_t > moving\_mean_t^{EMBI} + 2sd_t^{EMBI} \quad and \quad EMBI_t = \max(EMBI_{t-4}, ..., EMBI_{t+4}) \\ 0 & otherwise \end{cases}$$

As shown in Graph 2, this methodology returns four events: the first quarter of 1995, the third quarter of 1998, the fourth quarter of 2001 and the fourth quarter of 2008. The graph shows the evolution of the EMBI spread, its time-varying mean and a two standard deviation window around this mean. The quarters identified as events are shadowed.



While the EMBI-index unquestionably proxies episodes of financial stress in emerging economies, Global EMBI fluctuations could simply reflect economic developments in large EMs, so that the events identified need not be truly systemic. Fortunately, the events identified correspond with episodes which, with a narrative approach, could be said as having impacted emerging economies as a whole seriously and can, therefore, be considered as global.[16]

Grouping countries according to their reserve level

[16] Events identified with the EMBI correspond, roughly, to the Tequila, Russian, Argentinean and Lehman crises. We also identified events using other global indicators. For instance, applying the same filter to the VIX, the events identified are 98Q3, 02Q3, and 08Q4; using the MOBE index, the events identified are 92Q4, 98Q4, 02Q3 and 08Q4.

There are two broad approaches to assess international reserves adequacy: model-based techniques and rules-of-thumb. Models of optimal reserves provide an assessment of reserves adequacy taking into account various costs and benefits. Unfortunately, this approach is not tractable when working with a large panel of countries as calibration of the model's parameters is very data-demanding (Jeanne and Rancière, 2005). Therefore, we rely on rules-of-thumb.

One of the most popular adequacy rules is the Guidotti-Greenspan rule, according to which reserves should cover short-term external liabilities (maturing in less than one year). Other rules look at reserves as a fraction of foreign currency liabilities, short term external debt, imports or monetary aggregates. There is not agreement on which is the best measure, as different measures provide different insights.[17] Given this lack of agreement and given our focus on the distinct behavior of resident and foreign investors, in this paper we look at the level of reserves relative to two distinct measures.

First we define a measure of the total resources which foreigners can pull out of the country –foreign liabilities, as collected by the IMF's International Investment Position data. Additionally, we look at a the level of reserves relative to the domestic monetary aggregate M2, which proxies the resources which residents can invest overseas, and takes into account the risk of experiencing a capital flight from residents (see Obstfeld et al., 2008). Hence, we define the following variables:

$$RX_t = R_t / X_t \quad \text{where} \quad X_t = \{IFL_t, M2_t\}.$$

R_t stands for international reserves, IFL_t represents the foreign liabilities of the country and $M2_t$ stand for the country M2 monetary aggregate. Then, RX_t is a measure of reserves relative to either total resources invested in the country by non-residents or total resources of residents which could be invested abroad. The $RIFL_{it}$ rule measures the level of reserves relative to potential outflows (disinvestments in the country) from non-resident. In turn, $RM2_{it}$ measures the level of reserves relative to potential outflows from residents (investment overseas by residents).

Using these reserve ratios, we group our sample countries as follows. Given that their higher degree of development implies a limited reliance on international reserves, we group OECD countries aside. Additionally, we classify non-OECD economies within one of three groups according to their level of reserves at the onset of each period of global financial stress. Given the lack of consensus on what an "adequate" level of reserves is we follow a pragmatic approach. We create a "low reserves" group (*LR*) that comprises those countries with the 20% lowest reserves, a "high reserves" group (*HR)* with observations with the 20% highest reserves; and a "medium reserves" group (*MR)* comprising the remaining observations:

$$LR_{it} = \begin{Bmatrix} 1 & if & \mathrm{RX_{it}} < percentile_{20}^{RIG} \\ 0 & & otherwise \end{Bmatrix}$$

[17] See IMF (2011) for a recent analysis of some of the most popular rules-of-thumb.

$$MR_{it} = \begin{Bmatrix} 1 & if & RX_{it} \in (percentile_{20}^{RIG}, percentile_{80}^{RIG}) \\ 0 & & otherwise \end{Bmatrix}$$

$$HR_{it} = \begin{Bmatrix} 1 & if & RX_{it} > percentile_{80}^{RIG} \\ 0 & & otherwise \end{Bmatrix}$$

Note that this method classifies countries relative to other countries, so that there are always a similar number of countries in each of the groups. Table 1 shows some descriptive statistics for each of the groups and episodes. The table underlines an upward trend in reserves, especially since the late nineties. Table 2 presents the correlation of our two measures of reserves, with each other, but also with two variables which are likely to affect reserve accumulation, namely, the credit rating and the exchange rate regime. [18]

Table 2: Correlations Matrix

	R/IFL	R/M2	Exchange rate	S&P rating
R/IFL	1			
R/M2	0.57	1.00		
Exchange rate regime	-0.24	-0.31	1	
S&P rating	-0.17	-0.32	0.25	1.00

Source: Authors' calculations using IMF's and S&P's data. In order to calculate the correlations the following numerical values were assigned. The lowest rating (SD) was assigned a value 0, while the highest rating (AAA) was assigned a value 20. In turn, the most flexible exchange rate regimes were assigned a value 3 and the fixed exchange rate regimes a value 1.

The Table shows relatively low correlations. This suggests that *RILF* and *RM2* might provide different insights. Additionally, although we formally test it, the low correlation between our reserve indicators and both exchange rate regime and credit rating indicators suggest that the results we obtain cannot be solely explained by the relation of reserves with any of these two indicators.

3. International reserves during periods of stress

In this section we apply a set of econometric techniques, event analyses and panel data regressions, to understand to what extent the behavior of gross capital flows can be affected by the reserve policy of the corresponding Central Bank. As a first step, we study the average behavior of our capital flows measures around periods of financial stress and within each reserve group.[19] Graphs 3 to 5 in the Appendix show the dynamics of the series four quarters before and after the event, with the quarter of the event being defined as *t=o*.

Graph 3 shows that, for OECD countries, net financial flows remain roughly flat around the events of financial stress. Within non-OECD countries, there are differences depending on the level of reserves. They fall substantially in the low reserves group, but are more stable in medium and high reserves

[18] Exchange rates regimes are classified using the Reinhart and Ilzetki (2008) classification. See Appendix for details.
[19] Unless stated differently, the results are shown using reserves relative to international financial liabilities.

groups. The dynamics of gross financial flows are shown in Graph 4, where the green solid line represents *GFI* and the dashed blue line *GDO*.[20] Gross financial inflows plunge around periods of financial stress for all four groups. Conversely, gross financial outflows contract substantially in OECD countries and high-reserves non-OECD countries but not in medium-reserve and low-reserve countries. In line with Rothenberg and Warnock (2011), it is a combination of reduced external financing and increased capital expatriation what underlies the reduction of net flows. Gross short-term foreign and domestic flows, shown in Graph 5, have similar dynamics.

After gaining some intuition about the behaviour of our series we move to assess the statistical relevance of these movements by means of an event analysis. We will then test, using a panel data model, if any of the relations found can be understood in a causal sense.

Event Analysis

In this section we analyze the dynamics of gross flows within each reserve group using an event analysis as in Broner et al. (2011). In particular, we investigate whether, depending on the relative level of reserves at the onset of the event, financial flows present a different behavior around events of financial stress. We estimate the following model:

$$(1) \quad \hat{x}_{it} = \alpha + \theta_i + \rho_i t + \sum_{j=-4}^{4} \beta_j \, EVENT_{t+j} + \varepsilon_{it}$$

The capital flow variable $\hat{x}_{it}$ is regressed on θ_i, (country dummies); $\rho_i t$ (country-specific time trends), a constant α and a set of dummies, $EVENT_{t+j}$, constructed to have unit value whenever we are *j* periods away from a systemic crisis. Using this set of dummies we can measure the behavior of financial flows in the four quarters before and after our events of financial stress. The β_j coefficients associated with these dummies collect deviations against the mean behavior outside the event window under analysis, where this mean behavior is net of country-specific and common time trends, and country fixed effects. Besides the point estimates, we further compare the behavior of capital flows before and after the event by using Wald tests. We check whether capital flow dynamics are significantly different in the previous four quarters than in the subsequent four quarters.

We estimate equation (1) separately for OECD countries and non-OECD countries. When estimating the model in the sub-sample of non-OECD countries, we combine our $EVENT_{t+j}$ indicators with a set of reserve group dummies which indicate the group of reserves (*k*) to which countries belong at the onset of the financial stress event. After including these new indicators, which we denote by $EVENT^k_{t+j}$, the model we estimate looks like follows:

$$(2) \quad \hat{x}_{it} = \alpha + \theta_i + \rho_i t + \sum^{k} \sum_{j=-4}^{4} \beta_j^k \, EVENT^k_{t+j} + \mu_k + \varepsilon_{it} \quad with \ \mathrm{k} = \{\mathrm{LR}, \mathrm{MR}, \mathrm{HR}\}$$

[20] Note that the difference between gross financial inflows and gross financial outflows does not render net financial flows, as each series is standardized by its own standard deviation.

From equation (2) we obtain different a set β_j^k of coefficients for each of reserves group. Note that we have included reserve group dummies, μ_k, to ensure the desired interpretation of the coefficients β_j^k. Again, the coefficients represent deviations against the mean behavior out of the window under analysis net of country-specific and common time trends, country effects and also reserve group effects.

The results are presented in Tables 3 to 5. [21] As shown in Table 3, net flows (*NF*) remain flat around the events for OECD countries, while they become significantly lower than the average for non-OECD countries shortly after the event. This diverging behavior is confirmed by Wald test presented in the bottom of the table. However, as shown in columns 2 to 4, there are differences in the behavior of *NF* depending on the reserves group. On the one hand, high-reserve countries do not experience a fall in *NF*. This is shown both by the absence of significant coefficients and by the Wald test, which does not reject the hypothesis of equal behavior of *NF* before and after the event. On the other hand, in the low reserves group –and less so, in the medium reserves group- net financial flows are significantly lower in some of the quarters after the event, change that is confirmed by the corresponding Wald tests.

Table 4 shows the results for *GFI* (gross foreign inflows) and *GDO* (gross domestic outflows). Again, the behavior of *GFI* and *GDO* is very similar for OECD and non-OECD countries as a whole. *GFI* and *GDO* are significantly above normal times before the events of financial stress and significantly below after them. The Wald tests confirm this change in the dynamics of *GFI* and *GDO* after the event. While these results suggest a generalized retrenchment of both foreign and domestic capital, when the dynamics of *GFI* and *GDO* for each group of countries is considered, the conclusions are rather different. The dynamics of *GFI* remains very similar no matter the level of reserves; gross foreign inflows tend to fall – more or less immediately- after a financial shock as shown by the Wald tests that reject the identity of coefficients before and after the shock. The picture, however, changes for *GDO*. In high and medium reserve countries, *GDO* are significantly lower in the quarters after the event of financial stress and Wald tests reject the identity of behavior of *GDO* before and after the shock. On the contrary, in low reserve countries, gross domestic outflows become significantly higher after the shock. Finally, Table 5 shows the results for short term gross inflows (*GFIST*) and short-term gross domestic outflows (*GDOST*) with very similar conclusions. There is a generalized contraction in *GFIST* while *GDOST* fall in all country groups but in the low reserves one, where they even become significantly higher than before the financial shock.

We certainly do not claim any causality through these results. Moreover, our division on reserve groups could be masking an alternative differentiation. Although our next step is to control for additional factors that could explain the observed behavior of both reserves and gross capital flows within a panel data model, we close this section running an event analysis where countries are divided according to their exchange rate regime. We use this specific variable as one would expect that countries with fixed

[21] The results are qualitatively similar if we use reserves in terms of M2. The results are available under request.

or quasi-fixed exchange rate regimes will need more international reserves than countries with a flexible exchange rate. Table 6 presents statistics on the number of observations of the various exchange rate regimes comprised within each reserve group. Both fixed and flexible regimes are significantly present in all of our reserve groups.

Table 6. Reserve quantiles and Exchange rate regimes

Reserves over IFL

	Low reserves	Medium reserves	High reserves	Total
Peg	149	452	191	792
Managed	262	748	246	1,256
Flexible	209	515	98	822
Total	620	1,715	535	2,870

Reserves over M2

	Low reserves	Medium reserves	High reserves	Total
Peg	101	600	91	792
Managed	259	717	264	1,240
Flexible	247	440	146	833

Tables 7 and 8, in the Appendix, shows the results of the event analysis when emerging countries are divided in three exchange rate regime groups. One with fixed exchange rate countries, another one with managed exchange rate and a final group containing flexible exchange rate countries. The results show that the behavior of gross flows in fixed exchange rate countries is rather similar to the one observed for high and medium reserve countries. Comfortingly, we do not observe a clear similarity between the behavior of gross flows in low reserves countries and in flexible exchange rate countries, implying that diving countries according to their level of international reserves or their exchange rate regime provides different information.[22]

To sum up, gross capital flows dynamics around periods of financial stress are relatively similar for OECD countries and non-OECD countries with high reserves. As regards *GFI*, there is a reduction common to all four groups under analysis. However, we found interesting heterogeneity in the response of residents in non-OECD countries. In medium and especially low reserves countries the reduction in *GFI* is not compensated by a similar reduction of *GDO*. Indeed, for low reserves countries, instead of retrenching, domestic outflows become even higher than in normal times. As just argued, while this is robust evidence of the existence of significant differences in gross flows behavior in our various country groups, it does not preclude that this co-movement is due to other economic factors. That is, we cannot claim causality. We address this issue in the following section where we asses if this relation is robust to the inclusion of other economic factors likely to affect the behavior of both international reserves and gross capital flows. Given our focus on the role of reserves, in what follows we will focus on non-OECD countries only.

A panel data approach

[22] Indeed, as shown in Bastourre et al. (2009), is far from clear that fixed rate countries accumulate more reserves

In this section we test the robustness of our previous findings by considering a number of determinants of the behavior of gross capital flows through a panel data analysis. As there is no agreed benchmark where to study the determinants of gross capital flows, we extend the analysis in Cowan et al. (2007) and Broner et al. (2011). Our baseline model includes the country's credit rating, the growth rate of GDP, the current account, the exchange rate regime, the VIX and the EMBI spread as controls. More specifically, we estimate the following equation:

$$(3) \quad \hat{x}_{it} = \alpha + \theta_i + \rho_i t + \delta y_{it-1} + \in_{it}$$

As explanatory variables we include a constant, α; country fixed-effects θ_i; country-specific time trends, $\rho_i t$, and a vector y_{it-1} that collects the set of (pre-determined) economic controls. We further augment this model to include $EVENTP_t$, a binary variable taking value 1 in the quarter of the financial shock and in each of the four subsequent quarters and zero otherwise, among the economic controls in y_{it-1}.[23]

When then extend the model to include our reserve group indicators, HR, MR and LR, and their interactions with the $EVENTP_t$ indicator, defined as $\tilde{z}_H$, $\tilde{z}_M$ and $\tilde{z}_L$, respectively.

$$(4) \quad \hat{x}_{it} = \alpha + \theta_i + \rho_i t + \delta y_{it-1} + \partial_H HR + \partial_M MR + \beta_H \tilde{z}_H + \beta_M \tilde{z}_M + \beta_L \tilde{z}_L + \in_{it}$$

The simultaneous introduction of reserves indicators, the stress indicator and the interaction of both allows us to interpret the β coefficients as the specific relation between reserves and $\hat{x}_{it}$ during periods of financial stress.

We conduct further robustness tests.[24] First, given that our construction of the reserve groups was done in a somehow arbitrary way, we modify our model and introduce our continuous measures of international reserve holdings, *RIFL* and *RM2*.[25] Finally, emerging economies are viewed as an asset-class. This, as argued by Forbes and Warnock (2011), makes contagion highly likely. To correct for the potential biases that the presence of cross-sectional correlation could create, we modify our estimation procedure and use the Driscoll-Kraay estimator.[26]

Main results from the panel analysis

Table 9 shows the results for gross foreign inflows (*GFI*) and gross domestic outflows (*GDO*) using our low, medium and high reserves grouping. Tables 10 and 11 provide the results for *GFI* and *GDO* using the continuous measures of reserves. Finally, Table 12 shows the results for short-term gross foreign inflows (GFIST), and short-term gross domestic outflows (GDOST) using the continuous reserve

[23] We chose four quarters so as to match the window analyzed in the event analysis.

[24] All of our results regarding international reserves are insensitive to the inclusion of additional macroeconomic variables. For that reason we present only the result with the larger set of additional controls.

[25] As discussed below, given the results obtained using the dummy indicators, we include also a quadratic term to control for potential non-linear effects.

[26] Additionally, in order to assess to what extent the results are driven by the most recent global crisis, we also estimated the model excluding it. The results, unreported but available under request, were qualitatively identical.

indicators. For all the specifications we report the regressions results for reserves measured both in terms of foreign liabilities and in terms of domestic monetary aggregates (M2).

Table 9 shows that in the benchmark model (*columns 1* and *2*), *GFI* is positively associated to higher ratings and GDP growth, and negatively correlated with the current account and the EMBI Index. There is no significant correlation with either the VIX or the exchange rate regime indicators. As regards gross domestic outflows, only GDP growth, which affects positively *GDO,* and the EMBI and VIX indices, both affecting negatively gross domestic outflows, have a significant relation with the behavior of resident investors. These results, which highlight the pro-cyclicality of gross flows, are similar to those in Broner et al. (2011).[27] Interestingly, when the model is expanded to include our crisis indicator, $EVENTP_t$, the results remain unaffected.[28] The coefficient associated with the crisis indicator is, as expected negative and highly significant. Finally, columns 3 and 4 provide the result when the model is further augmented to include our reserve-group indicators and their interacting with the crisis dummy.[29] Column 3 presents the results when reserves are measured as a percentage of foreign liabilities and column 4 contains the results when reserves are measured in terms of M2. Focusing on the coefficients regarding the interaction of reserves and crises, there are two results that must be highlighted. First, GFO is not significantly affected by reserves, no matter if they are measured in terms of M2 or foreign liabilities. Second, there is seems to be a non-linear effect of reserves on gross domestic flows. Only for those countries in the intermediate level of reserves during periods of stress we observe a significant and negative coefficient. This result indicates that in medium reserve countries there is a significant reduction on the pattern of wealth accumulation abroad by residents.

As a result of this non-linearity, but also motivated by our understanding that our grouping strategy, while necessary for conducting the event analysis, was to some extent arbitrary, we modify the model to include a continuous measure of reserves. We do so by including both a linear and non-linear (quadratic) terms. The results using the continuous measures are shown in Tables 10 and 11. They present very similar coefficients for all of our macroeconomic controls both for *GFI* (Table 10) and for *GDO* (Table 11). Only when we modify the estimation technique and correct for potential cross-sectional correlation do the baseline results change (see columns DK5 and DK6 in Tables 10 and 11). As regards *GFI* (Table 10), once we control for cross-sectional correlation, the exchange rate regime indicators become significant. In turn, the estimates for GDO (Table 11) show that the current account affects significantly the behavior of domestic investors while the GDP growth stops having a significant effect.

The results for the continuous reserve indicators are the following. For gross foreign inflows, once again we hardly find any evidence of reserves affecting their behavior. Only when a non-linear term is added

[27] Our results are also in line with those in Forbes and Warnock (2011) who, focusing on extreme movements on gross flows, find that while global factors strongly affect both residents and foreigners' behavior, domestic macroeconomic factors are most related to foreign capital flows.

[28] Only the significance of the EMBI index for *GDO* falls.

[29] As the reserve dummies were included to guarantee a correct interpretation of the interaction between the dummies and our stress indicator we abstain from discussing those results

and reserves are measured in terms of foreign liabilities we find that having very large reserves seem to accompany a relatively smaller drop in external financing. This result is present both for our fixed effects estimation and when we use the Driscoll-Kraay correction. In turn, the results for domestic outflows (Table 11) confirm the results using the reserve grouping. We find a significant non-linear effect of reserves to *GDO*. Moreover, the negative-linear and positive-quadratic coefficients indicate that while there is a beneficial effect of accumulating reserves (negative linear term), this effect vanishes for too high values (negative-quadratic term). Comfortingly, this result is robust to measuring reserves in terms of M2 or foreign liabilities. It is also robust to using a fixed effect estimator or a model that corrects for cross-country correlation.[30]

Finally, as shown in Table 12, the effects of reserve accumulation are stronger for short term capital flows. For short term domestic outflows we find the same non-linear relation that we documented for *GDO*. As regards short term foreign inflows, when measuring reserves in terms of foreign liabilities we find a non-linear relation which is exactly the opposite of the one we find for domestic flows. This can be interpreted as indicating that it takes a lot of reserve accumulation to really see a positive effect on foreign investors' behavior vis-à-vis the economy. An additional remarkable result is that domestic short term outflows do not seem to have a cyclical behavior.

To sum up, our panel estimation results confirm the significance of the various channels identified through the event analysis. These results show that international reserves might be relevant during financial stress in a somewhat unexpected way. While they do not seem to strongly affect the behavior of foreign investors, they help reduce financial investment overseas by residents, compensating somewhat the fall of investment from overseas.

4. Conclusions

In this paper we characterize the dynamics of gross capital flows around periods of global financial stress and relate them to the countries' holdings of international reserves. In contrast to previous contributions focusing on net flows, we delve into gross capital inflows and outflows.

Our event analysis highlights differences across countries in financial flow dynamics around periods of global financial stress. In OECD countries foreign inflows and domestic outflows contract in a systemic way. Conversely, in non-OECD countries, while financial inflows do fall no matter what the level of reserves, domestic outflow dynamics change depending on international reserve holdings. In high-reserve countries domestic outflows are significantly lower during financial stress while in low-reserve countries there is no such retrenchment, and we even find signs of capital flight. This led us to

[30] To gauge the economic significance of these results one needs to define a level of reserves and de-standardize the obtained coefficients. Using the corresponding standard deviations for inflows (2.7) and outflows (2.3), the economic significance of the coefficient for the median level of reserves (19% of foreign liabilities) is the following. A higher percentage point of reserves in terms of foreign liabilities is associated with a 1% of GDP reduction in outflows and a around 0.15% of GDP increase on inflows. We consider these to be sizable effects.

hypothesize, in line with Obtsfeld et al. (2008), that reserves play a catalytic role also vis-à-vis resident investors.

We further assess the robustness of these results using panel data model where additional controls can be added. In line with Cowan et al. (2007) and Broner et al. (2011), our results suggest that capital flows are pro-cyclical. Our results suggest that country-specific variables are less important in explaining gross domestic outflows than global factors. This finding is closely related to Forbes and Warnock (2011), who show that domestic capital flight seems to be driven by global factors, while capital flight is also significantly affected by domestic macroeconomic factors. Thus, our panel results provide evidence on the robustness of the evidence obtained through the event analysis: international reserves are associated with a higher propensity of resident investors to repatriate capital invested abroad during periods of global stress. Cowan et al. (2007) and Broner et al. (2011) document that, on average, domestic capital retrenches during crises, a result in contrast to the notion of recurrent domestic capital flight documented in Forbes and Warnock (2011) and Rothenberg and Warnock (2011). Our results show that taking into account the stock of reserves held by the Central Bank is one way to reconcile these two sets of results. Countries with low reserves are more likely to see their residents place their capital abroad during crises. The opposite happens when a country's Central Bank has an abundant stock of reserves. We believe this is an important result that should be considered when modeling international capital flows.

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Appendix

Data description

Financial flows:

Data comes from IMF's International Financial Statistics (IFS). The variables used to compute gross financial outflows are Direct Investment Abroad (line 78 bdd), Portfolio Investment Assets (line 78 bfd), Other Investment Assets (line 78 bwd) and Changes in reserves (line 79 dbd). On the other hand, gross financial inflows include Direct Investment in the Reporting Economy (line 78 bed), Portfolio Investment Liabilities (line 78 bgd) and Other Investment Liabilities (line 78 bid).

International financial liabilities & M2:

We construct data on international financial liabilities mixing the updated version of the External Wealth of Nations Mark II database (Lane and Millesi-Ferretti, 2007) with data from IFS. We consider the first source more reliable for earlier dates. Data, on an annual basis, was interpolated to obtain quarterly figures. In terms of IFS coding, the variables employed are International financial liabilities (line 79 lad) and reserve assets (line 79 akd). We measure of M2 as the sum of lines 34 and 35, from International Financial Statistics.

Data on financial spreads and credit ratings

We use the JP Morgan Emerging Market Bond Index (EMBI) Global (less liquid but more diversified than the EMBI+), which is a traditional, market-capitalization-weighted index. The credit ratings were obtained from Standard & Poor's.

Countries under study:

OECD countries: Australia; Austria; Canada; Denmark; Finland; France; Germany; Greece; Italy; Japan; Netherlands; New Zealand; Norway; Portugal; Spain; Sweden; Switzerland; UK; US.[31]

Non-OECD countries: Argentina; Armenia; Azerbaijan; Bangladesh; Belarus; Bosnia-Herzegovina; Brazil; Bulgaria; Cambodia; Colombia; Croatia; Czech Rep; Chile; Ecuador; Estonia; Georgia; Hungary; India; Indonesia; Israel; Jordan; Kazakhstan; Korea; Latvia; Lithuania; Macedonia; Malaysia; Mexico, Moldova; Morocco; Pakistan; Peru; Philippines; Poland; Romania; Russian Federation; Singapore; Slovak Rep.; Slovenia; South Africa; Thailand; Turkey; Uruguay; Venezuela.

Exchange rate regime:

Exchange rates regimes are classified using the Reinhart and Ilzetki (2008) classification. This classification takes four values, from 1 to 4, being 1 the most fixed regimes and 4 the most flexible. We regroup them in three groups: a "fixed exchange rate regime" group comprising observations with a value 1; a "managed exchange rate regime group", comprising observations with values 2 and 3; a "flexible exchange rate regime", comprising observations with a value 4.

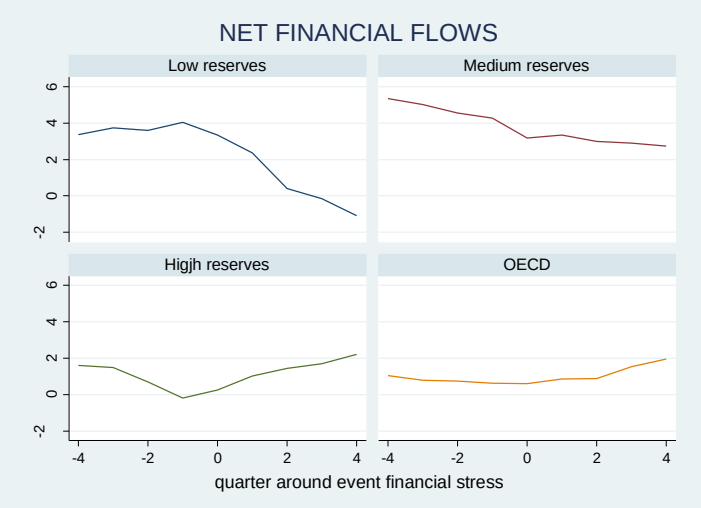
[31] Given their recent adherence to the club and different level of development, we excluded Chile, Mexico, and Korea from the OECD group.

Table 1

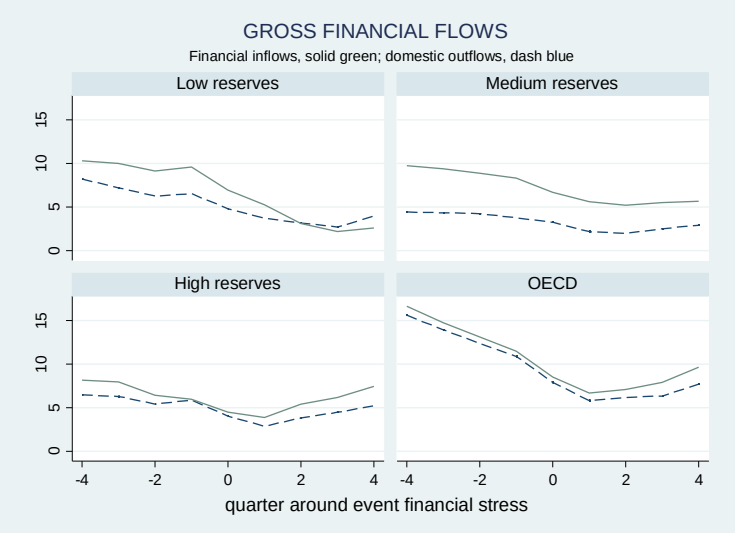
		Reserves to financial liabilities			Reserves to M2		
		Mean	**Min**	**Max**	**Mean**	**Min**	**Max**
1995Q1	**Low reserves**	4.84	2.62	9.39	10.59	3.29	16.19
	Medium reserves	17.52	10.21	29.06	28.31	16.39	39.91
	High reserves	35.33	29.16	49.83	64.71	51.43	87.28
	OECD[1]	10.28	2.01	31.51	12.46	1.48	33.09
1998Q3	**Low reserves**	6.17	2.41	10.39	12.24	2.66	18.96
	Medium reserves	17.22	11.21	23.06	37.96	21.28	63.36
	High reserves	31.07	23.44	41.74	103.27	67.02	162.35
	OECD[1]	8.71	0.90	32.16	12.89	1.39	33.44
2001Q4	**Low reserves**	7.86	3.62	10.69	14.89	6.85	19.81
	Medium reserves	17.56	10.84	25.69	39.61	21.40	63.95
	High reserves	33.42	28.72	41.37	88.35	65.60	117.83
	OECD[1]	6.77	0.75	29.08	14.45	0.97	35.75
2008Q4	**Low reserves**	9.93	1.36	13.42	20.76	12.97	23.50
	Medium reserves	23.65	13.65	39.32	37.83	25.23	54.37
	High reserves	53.24	40.00	76.24	69.25	57.99	80.80
	OECD[1]	5.08	0.13	31.11	11.54	0.71	33.21

Sources: IFS and authors' calculations.

Graph 3



Graph 4



Graph 5

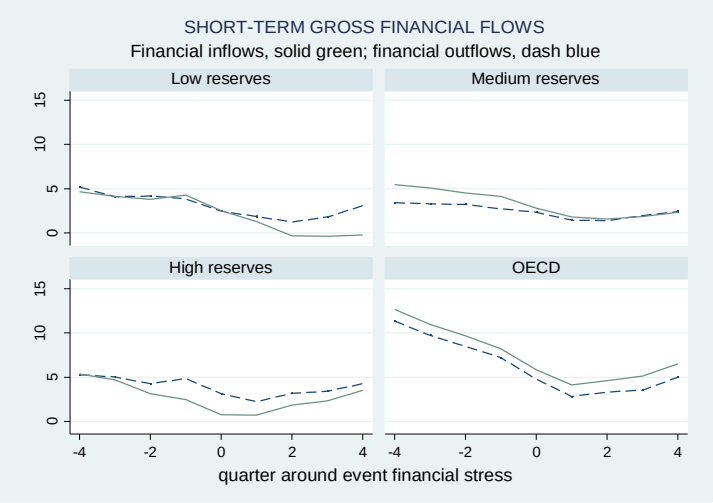


Table 3
Event analysis. Net flows

	(1) Non OECD	(2) High reserves	(3) Medium reserves	(4) Low reserves	(5) OECD
Quarter t-4	**0.347*** **	**0.348***	**0.386*** **	0.219	0.035
	[0.093]	[0.183]	[0.097]	[0.277]	[0.098]
Quarter t-3	0.062	0.030	0.064	0.100	-0.024
	[0.116]	[0.319]	[0.116]	[0.289]	[0.109]
Quarter t-2	-0.013	-0.057	-0.043	0.155	-0.021
	[0.140]	[0.357]	[0.152]	[0.269]	[0.125]
Quarter t-1	-0.061	-0.147	-0.102	0.211	-0.041
	[0.133]	[0.345]	[0.144]	[0.261]	[0.139]
Quarter Event	-0.173	-0.132	-0.228	0.018	-0.037
	[0.135]	[0.348]	[0.154]	[0.200]	[0.149]
Quarter t+1	-0.091	0.016	-0.115	-0.117	-0.054
	[0.113]	[0.262]	[0.142]	[0.223]	[0.123]
Quarter t+2	**-0.158***	0.047	-0.156	-0.438	-0.074
	[0.091]	[0.227]	[0.113]	[0.273]	[0.128]
Quarter t+3	**-0.201** **	0.042	**-0.208** **	**-0.540** **	0.038
	[0.086]	[0.167]	[0.100]	[0.263]	[0.140]
Quarter t+4	**-0.218** **	-0.065	**-0.185***	**-0.527** **	0.117
	[0.083]	[0.155]	[0.100]	[0.240]	[0.126]
Observations	2028	2028	2028	2028	1350
R-squared	0.27	0.27	0.27	0.27	0.34
Number of countries	45	45	45	45	21
Wald Test	7.207	0.0202	6.635	3.928	0.0295
Sig	0.0102	0.888	0.0134	0.0537	0.865

The regressions include country-trends, country dummies and year dummies. Robust standard errors in brackets. *** p<0.01, ** p<0.05, * p<0.1.

Wald test is a Wald test of the change in the dynamics in the dependent variable. The null hypothesis is no difference between the sum of the four coefficients β(j) before and after the event. A rejection of the null hypothesis implies a significant change in the dynamics of the series under

Results in columns (2)-(4) were obtained from a unique regression. To facilitate the comprehension of the results we present them in different columns.

Table 4
Event analysis. Gross Flows

	Foreign					Domestic				
	(1)	(2)	(3)	(4)	(5)	(1)	(2)	(3)	(4)	(5)
	Non OECD	High reserves	Medium reserves	Low reserves	OECD	Non OECD	High reserves	Medium reserves	Low reserves	OECD
Quarter t-4	**0.388*** **	**0.407** **	**0.366*** **	**0.443***	**0.410*** **	0.107	0.155	-0.016	**0.472***	**0.420*** **
	[0.079]	[0.163]	[0.087]	[0.243]	[0.086]	[0.078]	[0.156]	[0.085]	[0.273]	[0.082]
Quarter t-3	0.017	0.028	-0.001	0.064	**0.246** **	-0.055	-0.031	-0.096	0.085	**0.281*** **
	[0.100]	[0.305]	[0.108]	[0.247]	[0.097]	[0.083]	[0.195]	[0.099]	[0.209]	[0.093]
Quarter t-2	-0.047	-0.192	-0.062	0.122	0.066	-0.061	-0.146	-0.034	-0.048	0.082
	[0.116]	[0.257]	[0.139]	[0.255]	[0.084]	[0.092]	[0.152]	[0.112]	[0.249]	[0.080]
Quarter t-1	-0.090	-0.245	-0.147	0.217	-0.117	-0.112	-0.180	-0.146	0.103	-0.098
	[0.120]	[0.278]	[0.143]	[0.209]	[0.106]	[0.098]	[0.204]	[0.117]	[0.261]	[0.082]
Quarter Event	**-0.282** **	-0.335	**-0.308** **	-0.161	**-0.467*** **	**-0.176** **	**-0.420** **	-0.168	0.136	**-0.418*** **
	[0.116]	[0.300]	[0.136]	[0.248]	[0.114]	[0.086]	[0.169]	[0.112]	[0.195]	[0.096]
Quarter t+1	**-0.380*** **	**-0.591** **	**-0.350*** **	-0.284	**-0.249***	**-0.429*** **	**-0.781*** **	**-0.464*** **	0.197	**-0.205***
	[0.092]	[0.236]	[0.109]	[0.299]	[0.120]	[0.088]	[0.188]	[0.106]	[0.168]	[0.104]
Quarter t+2	**-0.401*** **	**-0.433** **	**-0.361*** **	-0.490	**-0.250** **	**-0.381*** **	**-0.685*** **	**-0.483*** **	**0.438** **	**-0.204***
	[0.076]	**[0.192]**	[0.082]	[0.303]	[0.109]	[0.096]	[0.189]	[0.125]	[0.164]	[0.101]
Quarter t+3	**-0.385*** **	-0.369**	**-0.335*** **	**-0.555** **	-0.170	**-0.329*** **	**-0.681*** **	**-0.376*** **	**0.362**	**-0.205** **
	[0.075]	[0.163]	[0.105]	[0.247]	[0.118]	[0.093]	[0.138]	[0.120]	[0.229]	[0.096]
Quarter t+4	**-0.333*** **	-0.298	**-0.276** **	**-0.528** **	-0.161	**-0.267*** **	**-0.486** **	**-0.372*** **	**0.408** **	**-0.253** **
	[0.076]	[0.191]	[0.108]	[0.231]	[0.101]	[0.092]	[0.199]	[0.123]	[0.185]	[0.100]
Observations	2196	2196	2196	2196	1350	2073	2073	2073	2073	1350
R-squared	0.29	0.29	0.29	0.29	0.41	0.33	0.34	0.34	0.34	0.41
Number of countries	45	45	45	45	21	45	45	45	45	21
Wald Test	25.86	3.881	14.59	4.577	17.70	12.05	21.04	7.940	0.834	15.73
Sig	0.0000	0.0552	0.0004	0.0380	0.0004	0.0012	0.0000	0.0072	0.3660	0.0008

The regressions include country-trends, country dummies and year dummies. Robust standard errors in brackets. *** p<0.01, ** p<0.05, * p<0.1.
Wald test is a Wald test of the change in the dynamics in the dependent variable. The null hypothesis is no difference between the sum of the four coefficients β(j) before and after the event. A rejection of the null hypothesis implies a significant changes in the dynamics of the series under scrutiny. Results in columns (2), (3) and (4) were obtained from a unique regression. To facilitate the comprehension of the results we present them in different columns.

Table 5
Event analysis. Gross flows, short-term

	Foreign					Domestic				
	(1) Non OECD	(2) High reserves	(3) Medium reserves	(4) Low reserves	(5) OECD	(1) Non OECD	(2) High reserves	(3) Medium reserves	(4) Low reserves	(5) OECD
Quarter t-4	**0.312*** **	**0.392** **	**0.311*** **	0.264	**0.238*** **	0.067	0.111	-0.065	**0.464***	**0.265*** **
	[0.075]	[0.192]	[0.087]	[0.207]	[0.078]	[0.076]	[0.148]	[0.090]	[0.237]	[0.085]
Quarter t-3	-0.117	-0.182	-0.115	-0.064	0.093	-0.085	-0.062	-0.171	0.210	0.105
	[0.091]	[0.333]	[0.098]	[0.223]	[0.080]	[0.081]	[0.191]	[0.109]	[0.191]	[0.100]
Quarter t-2	-0.170	-0.343	-0.157	-0.065	-0.060	-0.064	-0.164	-0.123	0.256	-0.082
	[0.105]	[0.314]	[0.130]	[0.227]	[0.098]	[0.100]	[0.147]	[0.120]	[0.281]	[0.090]
Quarter t-1	-0.202	-0.418	-0.241	0.095	**-0.221***	-0.114	-0.153	**-0.237***	0.367	**-0.262** **
	[0.122]	[0.348]	[0.148]	[0.194]	[0.115]	[0.108]	[0.204]	[0.123]	[0.273]	[0.093]
Quarter Event	**-0.402*** **	**-0.633** **	**-0.394** **	-0.226	**-0.514*** **	-0.162	**-0.428** **	**-0.223***	**0.385***	**-0.568*** **
	[0.120]	[0.283]	[0.148]	[0.218]	[0.115]	[0.100]	[0.178]	[0.123]	[0.202]	[0.095]
Quarter t+1	**-0.496*** **	**-0.724*** **	**-0.484*** **	-0.332	**-0.325** **	**-0.357*** **	**-0.800*** **	**-0.453*** **	**0.536*** **	**-0.328*** **
	[0.102]	[0.231]	[0.121]	[0.269]	[0.127]	[0.102]	[0.195]	[0.106]	[0.163]	[0.096]
Quarter t+2	**-0.477*** **	**-0.593*** **	**-0.440*** **	**-0.483***	**-0.341*** **	**-0.343*** **	**-0.721*** **	**-0.478*** **	**0.606*** **	**-0.278** **
	[0.086]	[0.204]	[0.094]	[0.270]	[0.117]	[0.103]	[0.210]	[0.130]	[0.151]	[0.111]
Quarter t+3	**-0.466*** **	**-0.566*** **	**-0.410*** **	**-0.536** **	**-0.315** **	**-0.275*** **	**-0.721*** **	**-0.342*** **	**0.534** **	**-0.261** **
	[0.081]	[0.180]	[0.107]	[0.237]	[0.113]	[0.097]	[0.152]	[0.123]	[0.251]	[0.109]
Quarter t+4	**-0.389*** **	**-0.433***	**-0.320*** **	**-0.544** **	**-0.353*** **	**-0.215** **	**-0.484** **	**-0.345*** **	**0.581** **	**-0.329*** **
	[0.076]	[0.218]	[0.099]	[0.210]	[0.103]	[0.093]	[0.207]	[0.122]	[0.217]	[0.107]
Observations	2196	2196	2196	2196	1350	2122	2122	2122	2122	1350
R-squared	0.25	0.25	0.25	0.25	0.41	0.28	0.31	0.31	0.31	0.40
Number of countries	45	45	45	45	21	45	45	45	45	21
Wald test	22.31	3.572	13.87	3.119	15.53	6.257	20.25	3.587	1.110	7.797
Sig	0.0000	0.0654	0.0006	0.0843	0.0008	0.0162	0.0000	0.0648	0.298	0.0112

The regressions include country-trends, country dummies and year dummies. Robust standard errors in brackets. *** p<0.01, ** p<0.05, * p<0.1.
Wald test is a Wald test of the change in the dynamics in the dependent variable. The null hypothesis is no difference between the sum of the four coefficients β(j) before and after the event. A rejection of the null hypothesis implies a significant changes in the dynamics of the series under scrutiny. Results in columns (2), (3) and (4) were obtained from a unique regression. To facilitate the comprehension of the results we present them in different columns.

Table 7

Event analysis by exchange rate regime. Gross Flows

	Foreign					Domestic				
	(1) Non-OECD	(2) PEG	(3) MANAGED	(4) FLEXIBLE	(5) OECD	(1) Non-OECD	(2) PEG	(3) MANAGED	(4) FLEXIBLE	(5) OECD
Quarter t-4	**0.381*** **	**0.382***	**0.385*** **	**0.376*** **	**0.410*** **	0.062	**0.445*** **	-0.095	-0.078	**0.420*** **
	[0.077]	[0.203]	[0.120]	[0.136]	[0.086]	[0.077]	[0.163]	[0.109]	[0.113]	[0.082]
Quarter t-3	**0.307*** **	0.322	**0.337*** **	0.251	**0.246** **	-0.010	**0.348** **	-0.124	-0.178	**0.281*** **
	[0.092]	[0.224]	[0.119]	[0.185]	[0.097]	[0.080]	[0.151]	[0.106]	[0.128]	[0.093]
Quarter t-2	**0.201***	0.239	**0.275** **	0.053	0.066	-0.074	0.098	-0.128	-0.158	0.082
	[0.105]	[0.210]	[0.125]	[0.227]	[0.084]	[0.091]	[0.148]	[0.123]	[0.172]	[0.080]
Quarter t-1	0.116	0.208	0.144	-0.011	-0.117	**-0.174***	-0.098	-0.228	-0.165	-0.098
	[0.109]	[0.172]	[0.122]	[0.252]	[0.106]	[0.097]	[0.179]	[0.143]	[0.178]	[0.082]
Quarter Event	**-0.258** **	-0.18	-0.181	-0.449	**-0.467*** **	**-0.402*** **	**-0.530*** **	**-0.365** **	-0.341*	**-0.418*** **
	[0.110]	[0.158]	[0.122]	[0.282]	[0.114]	[0.093]	[0.166]	[0.144]	[0.199]	[0.096]
Quarter t+1	**-0.294*** **	**-0.311** **	-0.188	**-0.446***	**-0.249***	**-0.423*** **	**-0.670*** **	**-0.494*** **	-0.151	**-0.205***
	[0.092]	[0.140]	[0.122]	[0.253]	[0.120]	[0.084]	[0.177]	[0.120]	[0.179]	[0.104]
Quarter t+2	**-0.353*** **	**-0.388** **	**-0.274** **	**-0.451** **	**-0.250** **	**-0.411*** **	**-0.629*** **	**-0.494*** **	-0.127	**-0.204***
	[0.073]	[0.180]	[0.113]	[0.198]	[0.109]	[0.096]	[0.215]	[0.120]	[0.208]	[0.101]
Quarter t+3	**-0.350*** **	**-0.331***	**-0.239***	**-0.533*** **	-0.17	**-0.345*** **	**-0.484** **	**-0.446*** **	-0.108	**-0.205** **
	[0.071]	[0.171]	[0.129]	[0.165]	[0.118]	[0.096]	[0.191]	[0.130]	[0.193]	[0.096]
Quarter t+4	**-0.298*** **	**-0.355***	-0.162	**-0.458*** **	-0.161	**-0.317*** **	-0.217	**-0.434*** **	-0.24	**-0.253** **
	[0.070]	[0.185]	[0.132]	[0.154]	[0.101]	[0.091]	[0.203]	[0.125]	[0.176]	[0.100]
Observations	2336	2336	2336	2336	1350	2201	2201	2201	2201	1350
R-squared	0.33	0.33	0.33	0.33	0.41	0.32	0.33	0.33	0.33	0.41
Number of id	46.00	46.00	46.00	46.00	21.00	46.00	46.00	46.00	46.00	21.00
Country-trend Dummies	No	No	No	No	No	No	No	No	No	No
Country Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Number of countries	46	46	46	46	21	46	46	46	46	21
Test -1	47.46	7.408	19.24	31.48	17.7	10.59	10.15	6.529	0.00287	15.73
Sig	0.0000	0.0092	0.0001	0.0000	0.0004	0.0022	0.0026	0.0141	0.9570	0.0008

The regressions include country-trends, country dummies and year dummies. Robust standard errors in brackets. *** p<0.01, ** p<0.05, * p<0.1. Test-1 is a Wald test of the change in the dynamics in the dependent variable. The null hypothesis is no difference between the sum of the four coefficients β(j) before and after the event. A rejection of the null hypothesis implies a significant changes in the dynamics of the series under scrutiny. Exchange rate regimes in emerging economies are classified with the Ilzetzki, Reinhart, and Rogoff (2008) classification: " peg " includes countries with a regime equal to 1; "managed" includes countries with regimes equal to 2 and 3: "flexible", countries with regimes equal to 4. Results in columns (2) ,(3), and (4) were obtained from a unique regression. To facilitate the comprehension of the results we present them in different columns.

Table 8
Event analysis by exchange rate regime. Gross flows, short-term

	Foreign					Domestic				
	(1) Non-OECD	(2) PEG	(3) MANAGED	(4) FLEXIBLE	(5) OECD	(1) Non-OECD	(2) PEG	(3) MANAGED	(4) FLEXIBLE	(5) OECD
Quarter t-4	**0.335*** **	0.296	**0.397*** **	**0.283***	**0.238*** **	0.017	**0.363** **	-0.122	-0.115	**0.265*** **
	[0.075]	[0.187]	[0.115]	[0.145]	[0.078]	[0.074]	[0.143]	[0.111]	[0.099]	[0.085]
Quarter t-3	**0.215** **	0.114	**0.333*** **	0.128	0.093	-0.097	**0.230***	**-0.197***	**-0.263** **	0.105
	[0.091]	[0.201]	[0.119]	[0.185]	[0.080]	[0.075]	[0.124]	[0.108]	[0.116]	[0.100]
Quarter t-2	0.102	0.066	**0.276** **	-0.136	-0.06	-0.113	0.021	-0.187	-0.125	-0.082
	[0.099]	[0.177]	[0.117]	[0.220]	[0.098]	[0.088]	[0.147]	[0.119]	[0.177]	[0.090]
Quarter t-1	0.025	0.063	0.153	-0.209	**-0.221***	**-0.213** **	-0.185	**-0.282** **	-0.13	**-0.262** **
	[0.110]	[0.132]	[0.116]	[0.247]	[0.115]	[0.093]	[0.171]	[0.138]	[0.186]	[0.093]
Quarter Event	**-0.358*** **	**-0.317*** **	-0.202	**-0.638** **	**-0.514*** **	**-0.421*** **	**-0.624*** **	**-0.371** **	-0.3	**-0.568*** **
	[0.110]	[0.109]	[0.128]	[0.273]	[0.115]	[0.096]	[0.141]	[0.150]	[0.220]	[0.095]
Quarter t+1	**-0.381*** **	**-0.294***	**-0.210***	**-0.702*** **	**-0.325** **	**-0.371*** **	**-0.638*** **	**-0.487*** **	-0.016	**-0.328*** **
	[0.102]	[0.160]	[0.125]	[0.249]	[0.127]	[0.092]	[0.163]	[0.131]	[0.195]	[0.096]
Quarter t+2	**-0.414*** **	**-0.417** **	**-0.311** **	**-0.566*** **	**-0.341*** **	**-0.366*** **	**-0.588*** **	**-0.455*** **	-0.075	**-0.278** **
	[0.087]	[0.167]	[0.135]	[0.208]	[0.117]	[0.103]	[0.218]	[0.131]	[0.213]	[0.111]
Quarter t+3	**-0.442*** **	**-0.372** **	**-0.346** **	**-0.634*** **	**-0.315** **	**-0.312*** **	**-0.465** **	**-0.386*** **	-0.107	**-0.261** **
	[0.080]	[0.169]	[0.144]	[0.161]	[0.113]	[0.094]	[0.202]	[0.137]	[0.170]	[0.109]
Quarter t+4	**-0.389*** **	-0.316	**-0.277** **	**-0.604*** **	**-0.353*** **	**-0.267*** **	-0.186	**-0.398*** **	-0.149	**-0.329*** **
	[0.074]	[0.197]	[0.134]	[0.145]	[0.103]	[0.095]	[0.211]	[0.128]	[0.178]	[0.107]
Observations	2336	2336	2336	2336	1350	2259	2259	2259	2259	1350
R-squared	0.26	0.27	0.27	0.27	0.41	0.27	0.28	0.28	0.28	0.4
Number of countries	46	46	46	46	21	46	46	46	46	21
Wald test	41.72	4.307	19.32	20.9	15.53	5.301	7.329	2.892	0.128	7.797
Sig	0.0000	0.0437	0.0001	0.0000	0.0008	0.0260	0.0096	0.0959	0.7220	0.0112

The regressions include country-trends, country dummies and year dummies. Robust standard errors in brackets. *** p<0.01, ** p<0.05, * p<0.1. *Wald test* is a Wald test of the change in the dynamics in the dependent variable. The null hypothesis is no difference between the sum of the four coefficients β (j) before and after the event. A rejection of the null hypothesis implies a significant changes in the dynamics of the series under scrutiny. Exchange rate regimes in emerging economies are classified with the Ilzetzki, Reinhart, and Rogoff (2008) classification: " peg " includes countries with a regime equal to 1; "managed" includes countries with regimes equal to 2 and 3: "flexible", countries with regimes equal to 4. Results in columns (2) ,(3), and (4) were obtained from a unique regression. To facilitate the comprehension of the results we present them in different columns.

Table 9

Panel estimation. FE. Discrete analysis. Gross flows

	Foreign				Domestic			
	1	2	3	4	1	2	3	4
Current account	**-0.098*** **	**-0.099*** **	**-0.105*** **	**-0.104*** **	-0.007	-0.008	0.001	0.001
	[0.012]	[0.012]	[0.014]	[0.015]	[0.014]	[0.015]	[0.014]	[0.013]
Dummy peg	0.272	0.296	0.266	0.229	-0.257	-0.220	-0.144	-0.196
	[0.297]	[0.293]	[0.294]	[0.298]	[0.255]	[0.255]	[0.219]	[0.231]
Dummy managed exchange rate	0.176	0.189	0.175	0.176	-0.176	-0.155	-0.047	-0.111
	[0.189]	[0.196]	[0.204]	[0.204]	[0.187]	[0.187]	[0.176]	[0.175]
Sovereign rating	**0.097*** **	**0.100*** **	**0.094*** **	**0.096*** **	-0.006	-0.004	0.011	-0.003
	[0.026]	[0.026]	[0.026]	[0.029]	[0.032]	[0.032]	[0.030]	[0.034]
GDP real growth	**0.051*** **	**0.048*** **	**0.038*** **	**0.034*** **	**0.022** **	**0.018** **	0.006	0.002
	[0.009]	[0.010]	[0.010]	[0.011]	[0.008]	[0.008]	[0.007]	[0.007]
EMBI global	**-0.001*** **	**-0.001*** **	**-0.001*** **	**-0.001*** **	**-0.001*** **	-0.000	-0.000	**-0.000***
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
VIX	-0.003	-0.002	-0.003	-0.004	**-0.019*** **	**-0.017*** **	**-0.018*** **	**-0.019*** **
	[0.004]	[0.004]	[0.004]	[0.004]	[0.006]	[0.006]	[0.006]	[0.006]
Dummy stress		**-0.202** **				**-0.266*** **		
		[0.088]				[0.097]		
Dummy low reserves to FL, in stress			-0.097				-0.084	
			[0.200]				[0.182]	
Dummy medium reserves to FL, in stress			-0.103				**-0.213** **	
			[0.091]				[0.104]	
Dummy high reserves to FL, in stress			-0.148				-0.091	
			[0.146]				[0.194]	
Dummy high reserves to FL			0.138				**-0.567** **	
			[0.186]				[0.230]	
Dummy medium reserves to FL			0.086				-0.204	
			[0.113]				[0.133]	
Dummy low reserves to M2, in stress				-0.103				-0.068
				[0.149]				[0.176]
Dummy medium reserves to M2, in stress				-0.080				**-0.190***
				[0.088]				[0.105]
Dummy high reserves to M2, in stress				-0.250				0.020
				[0.181]				[0.195]
Dummy high reserves to M2				**0.422***				-0.044
				[0.218]				[0.212]
Dummy medium reserves to M2				**0.290*** **				0.143
				[0.105]				[0.143]
Observations	1846	1846	1754	1747	1846	1846	1754	1747
R-squared	0.32	0.32	0.37	0.36	0.32	0.32	0.37	0.36
Number of countries	42	42	41	41	42	42	41	41

The regressions include country-trends, country dummies and year dummies. Robust standard errors in brackets. *** p<0.01, ** p<0.05, * p<0.1.

Table 10

Panel estimation. Continuous measures. Gross foreign flows

	FE 1	FE 2	FE 3	FE 4	DK 5	DK 6
Current account	**-0.110*** **	**-0.111*** **	**-0.109*** **	**-0.109*** **	**-0.094*** **	**-0.089*** **
	[0.013]	[0.014]	[0.016]	[0.016]	[0.006]	[0.008]
Dummy peg	0.246	0.241	0.291	0.289	**0.336*** **	**0.302** **
	[0.306]	[0.306]	[0.318]	[0.319]	[0.123]	[0.129]
Dummy managed exchange rate	0.139	0.130	0.168	0.172	0.053	0.087
	[0.204]	[0.203]	[0.218]	[0.221]	[0.092]	[0.079]
Sovereign rating	**0.087*** **	**0.086*** **	**0.100*** **	**0.101*** **	**0.106*** **	**0.109*** **
	[0.028]	[0.029]	[0.027]	[0.028]	[0.012]	[0.012]
GDP real growth	**0.035*** **	**0.034*** **	**0.027***	**0.027***	**0.033*** **	**0.024** **
	[0.013]	[0.013]	[0.014]	[0.014]	[0.010]	[0.010]
EMBI global	**-0.001*** **	**-0.001*** **	**-0.001*** **	**-0.001*** **	**-0.001** **	**-0.001** **
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
VIX	-0.002	-0.001	-0.003	-0.003	0.000	-0.001
	[0.004]	[0.004]	[0.004]	[0.004]	[0.006]	[0.006]
Dummy stress	0.086	-0.263	-0.095	-0.146	-0.146	0.027
	[0.172]	[0.303]	[0.149]	[0.296]	[0.229]	[0.256]
Reserves to FL, stress	-0.010	0.026			0.022	
	[0.007]	[0.023]			[0.016]	
Reserves to FL^2, stress		**-0.001***			**-0.001** **	
		[0.000]			[0.000]	
Reserves to FL	**0.019** **	0.015			-0.025	
	[0.009]	[0.021]			[0.015]	
Reserves to FL^2		0.000			**0.001** **	
		[0.000]			[0.000]	
Reserves to M2, stress			0.001	0.003		-0.003
			[0.003]	[0.014]		[0.009]
Reserves to M2^2, stress				-0.000		0.000
				[0.000]		[0.000]
Reserves to M2			**0.017*** **	0.013		-0.009
			[0.005]	[0.011]		[0.007]
Reserves to M2^2				0.000		**0.000** **
				[0.000]		[0.000]
Observations	1809	1809	1805	1805	1809	1805
R-squared	0.54	0.54	0.53	0.53		
Country-trend Dummies	Yes	Yes	Yes	Yes	No	No
Number of countries	40	40	40	40	40	40

The regressions include country dummies and year dummies. Robust standard errors in brackets. *** p<0.01, **
Columns FE1-FE4 are fixed effect estimations; columns DK5 and DK6 use the Driskoll-Kraay estimator, which corrects for potential cross-sectional dependence.

Table 11

Panel estimation. Continuous measures. Gross domestic flows

	FE1	FE2	FE3	FE4	DK5	DK6
Current account	0.006	0.007	0.004	0.005	**0.016****	**0.016****
	[0.014]	[0.013]	[0.013]	[0.013]	[0.007]	[0.007]
Dummy peg	-0.113	-0.105	-0.252	-0.241	0.030	-0.072
	[0.205]	[0.204]	[0.210]	[0.206]	[0.155]	[0.176]
Dummy managed exchange rate	-0.019	-0.009	-0.098	-0.091	-0.127	**-0.204****
	[0.178]	[0.178]	[0.172]	[0.175]	[0.084]	[0.084]
Sovereign rating	0.026	0.026	-0.001	-0.002	**0.038****	0.020
	[0.030]	[0.027]	[0.031]	[0.031]	[0.019]	[0.019]
GDP real growth	0.004	0.004	0.001	0.001	-0.006	-0.006
	[0.008]	[0.007]	[0.007]	[0.007]	[0.006]	[0.007]
EMBI global	**-0.000***	**-0.000***	**-0.000***	**-0.000***	-0.000	-0.000
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
VIX	**-0.016*****	**-0.017*****	**-0.018*****	**-0.017*****	**-0.016*****	**-0.015*****
	[0.006]	[0.006]	[0.006]	[0.006]	[0.006]	[0.006]
Dummy stress	-0.107	0.354	0.050	**0.583***	**0.434****	**0.760*****
	[0.205]	[0.234]	[0.149]	[0.325]	[0.202]	[0.261]
Reserves to FL, stress	-0.000	**-0.046****			**-0.050*****	
	[0.009]	[0.020]			[0.012]	
Reserves to FL^2, stress		**0.001****			**0.001*****	
		[0.000]			[0.000]	
Reserves to FL	**-0.034*****	-0.026			-0.024	
	[0.012]	[0.027]			[0.015]	
Reserves to FL^2		-0.000			-0.000	
		[0.000]			[0.000]	
Reserves to M2, stress			**-0.005***	**-0.034***		**-0.040*****
			[0.003]	[0.017]		[0.011]
Reserves to M2^2, stress				**0.000***		**0.000*****
				[0.000]		[0.000]
Reserves to M2			-0.009	-0.005		**-0.014*****
			[0.006]	[0.016]		[0.004]
Reserves to M2^2				-0.000		0.000
				[0.000]		[0.000]
Observations	1719	1719	1715	1715	1719	1715
R-squared	0.39	0.39	0.37	0.38		
Country-trend Dummies	Yes	Yes	Yes	Yes	No	No
Number of groups	41	41	41	41	41	41

The regressions include country dummies and year dummies. Robust standard errors in brackets. *** p<0.01, ** Columns FE1-FE4 are fixed effect estimations; columns DK5 and DK 6 use the Driskoll-Kraay estimator, which corrects for potential cross-sectional dependence.

Table 12

Panel estimation. Continuous measures. Gross short-term flows

	Foreign				Domestic			
	FE 1	**FE 1**	**DK 3**	**DK 4**	**FE 1**	**FE 1**	**DK 3**	**DK 4**
Current account	**-0.107*** **	**-0.102*** **	**-0.089*** **	**-0.081*** **	0.017	0.015	**0.020*** **	**0.019*** **
	[0.017]	[0.019]	[0.008]	[0.009]	[0.015]	[0.014]	[0.007]	[0.007]
Dummy peg	0.395	0.428	**0.617*** **	**0.571*** **	-0.247	**-0.394***	0.044	-0.059
	[0.269]	[0.259]	[0.124]	[0.128]	[0.203]	[0.201]	[0.163]	[0.189]
Dummy managed exchange rate	0.192	0.230	**0.180***	**0.213** **	-0.109	-0.198	-0.122	**-0.205** **
	[0.197]	[0.211]	[0.098]	[0.083]	[0.185]	[0.180]	[0.086]	[0.090]
Sovereign rating	**0.074*** **	**0.094*** **	**0.099*** **	**0.107*** **	0.029	0.000	0.023	0.002
	[0.025]	[0.022]	[0.012]	[0.012]	[0.024]	[0.028]	[0.018]	[0.018]
GDP real growth	**0.040*** **	**0.035** **	**0.038*** **	**0.032*** **	0.002	-0.001	-0.005	-0.004
	[0.014]	[0.015]	[0.009]	[0.010]	[0.008]	[0.007]	[0.007]	[0.007]
EMBI global	**-0.001*** **	**-0.001*** **	**-0.001*** **	**-0.001*** **	-0.000	-0.000	-0.000	-0.000
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
VIX	-0.004	**-0.006***	-0.002	-0.003	**-0.021*** **	**-0.020*** **	**-0.019*** **	**-0.018*** **
	[0.004]	[0.004]	[0.005]	[0.005]	[0.006]	[0.006]	[0.005]	[0.005]
Dummy stress	-0.313	-0.306	-0.212	-0.097	**0.436***	**0.637***	**0.457** **	**0.824*** **
	[0.281]	[0.261]	[0.193]	[0.295]	[0.239]	[0.342]	[0.171]	[0.273]
Reserves to FL, stress	0.029		**0.025** **		**-0.050** **		**-0.051*** **	
	[0.021]		[0.011]		[0.022]		[0.015]	
Reserves to FL^2, stress	**-0.001** **		**-0.001*** **		**0.001***		**0.001*** **	
	[0.000]		[0.000]		[0.000]		[0.000]	
Reserves to FL	0.031		-0.014		-0.036		-0.018	
	[0.024]		[0.012]		[0.026]		[0.013]	
Reserves to FL^2	-0.000		**0.000** **		0.000		-0.000	
	[0.000]		[0.000]		[0.000]		[0.000]	
Reserves to M2, stress		0.011		0.003		**-0.037***		**-0.043*** **
		[0.012]		[0.010]		[0.019]		[0.014]
Reserves to M2^2, stress		-0.000		-0.000		0.000		**0.000*** **
		[0.000]		[0.000]		[0.000]		[0.000]
Reserves to M2		**0.023***		-0.001		-0.008		**-0.016*** **
		[0.012]		[0.008]		[0.016]		[0.005]
Reserves to M2^2		-0.000		0.000		-0.000		0.000
		[0.000]		[0.000]		[0.000]		[0.000]
Observations	1809	1805	1809	1805	Yes	Yes	No	No
R-squared	0.51	0.50			1730	1726	1730	1726
Country-trend Dummies	Yes	Yes	No	No	0.33	0.31		
Number of countries	40	40	40	40	41	41	41	41

The regressions include country dummies and year dummies. Robust standard errors in brackets. *** p<0.01, ** p<0.05, * p<0.1.Columns FE1 and FE2 are fixed effect estimations; columns DK3 and DK 4 use the Driskoll-Kraay estimator, which corrects for potential cross-sectional dependence.