

Non-bank Financial Intermediation and Capital Flows: Evidence from Emerging Market Economies¹

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Abstract

We look at the interplay of non-bank financial intermediation (NBFIs) and capital flows in emerging market economies (EMEs). We examine whether gross capital flows to twenty-four EMEs, including seven Latin American economies, are related to foreign bond holdings of non-bank financial intermediaries, over and above local and global factors. We estimate panel data models that account for cross-country correlation, using quarterly data from the dataset by Arslanalp and Tsuda (2014) in the 2004-2021 period. We discriminate flows by sectors (total, government, corporate and banking), include time and country fixed effects, and employ several definitions of our variable of interest: as a categorical variable, capturing countries with the largest share of foreign nonbank investors, or as a direct measure of their participation. We also carry out event studies around the occurrence of the global financial crisis and the covid-19 crisis. Preliminary results suggest that: NBFIs are “pipe” factors driving flows (in addition to “push” and “pull” ones), whose impact changes over time and depending on the type of flow; in some cases, foreign NBFIs magnify the impact of global factors on capital inflows, while they weaken the pull of local factors; and NBFIs amplified outflows in the market turmoil of 2020.

JEL classification codes: C23, E44, F32, G23

Keywords: non-bank financial intermediation, capital flows, panel data models

This version: November 2022

¹ Paper prepared for presentation at the LVII annual meeting of the Asociación Argentina de Economía Política, 16–18 November 2022, Universidad Nacional de Córdoba. We wish to thank Santiago García Verdú for valuable insights. All views are the authors’ own and do not necessarily represent those of the Central Bank of Argentina (BCRA).

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I. Introduction

Financial intermediation carried out outside banks has grown substantially since the global financial crisis. Non-bank financial intermediaries' assets currently account for about half of global financial assets, from around 42% in 2008. Financial stability conditions need to be progressively assessed on the basis of non-bank financial intermediation (NBFI): credit risk is increasingly borne by investors and less by banks' balance sheets (Financial Stability Board, 2021).

At the same time, capital flow volatility continues to be a hallmark of international markets, as the turmoil at the start of the covid-19 pandemic attests (Financial Stability Board, 2021, 2022). While the analysis of capital flow determinants has been traditionally based on "pull" and "push" factors, recent focus has turned to "pipe" factors (Carney, 2019). The latter are related to the structure of financial markets, the way in which it amplifies or dampens cross-border flows –hence the analogy of pipes through which flows circulate. Pipes include the amplifying effect of NBFI.

We look at the interplay of NBFI and capital flows in emerging market economies (EMEs). We examine whether capital inflows and outflows to EMEs, including seven Latin American economies, are related to foreign bond holdings of non-bank financial intermediaries, in addition to domestic growth and global risk aversion. We estimate panel data models that account for cross-country correlation, using quarterly data from the dataset by Arslanalp and Tsuda (2014) in the 2004-2021 period. We include time and country fixed effects, domestic and global macroeconomic controls, and employ several definitions of our variable of interest: either as a direct measure of foreign non-bank investors' holdings of government bonds in each country, or as categorical variable, that captures those countries with the largest share of such investors. We also carry out two event studies around the occurrence of the global financial crisis (2008) and the covid-19 crisis (2020).

Our preliminary results suggest that: NBFI are "pipe" factors driving flows (in addition to "push" and "pull" ones), whose impact changes over time and depending on the type of flow; in some cases, foreign NBFI magnifies the impact of global factors on capital inflows, while they weaken the pull of local factors; and NBFI amplified outflows in the market turmoil of 2020. For instance, in 2007-2012 we find some evidence that countries with the highest NBFI foreign bond holdings post higher outflows as risk aversion increases, and this is due to flows to government. While in 2012-2017, some evidence suggest a similar finding for corporate flows.

We contribute to the literature by: a) fleshing out the specific contribution of NBFI as a "pipe" factor in EMEs; b) assessing gross capital flows, rather than net ones, as has been customary; c) discriminating flows by type (portfolio, total) and institutional sector (government, corporate, banking); d) assessing NBFI and capital flow dynamics during the global financial crisis and after it, in particular at the outbreak of the covid-19 crisis.

We use models that are suitable to a macroeconomic panel, with many time periods in relation to individuals. Hence, cross-correlation is a much likelier source of bias to be dealt with than lagged dependent variables. We account for such correlation in our estimates. These appear somewhat consistent with those those of quantile regression methods that have been used to deal with "pipe" determinants of capital flows (Ramos Francia et al, 2021).

The rest of the paper is organized as follows. Section II draws out the main features of NBFIs, its possible relation to “pipe” factors, and what other studies have found. Section III describes the evolution of NBFIs and capital flows to EMEs in recent years. Section IV presents our econometric models and their results. Section V focuses on the global financial crisis and the Covid-19 episode of “dash-for-cash” through event studies. Section VI concludes.

II. NBFIs, procyclicality and capital flows

Following the reforms after the global financial crisis, non-bank financial intermediation has grown more than banking, representing 48,3% of global financial assets in 2020 (Financial Stability Board, 2021; Figure 1). NBFIs include insurance companies, pension funds, investment funds, captive financial institutions and money lenders, central counterparties, broker-dealers, finance companies, trust companies and structured finance vehicles. Out of those, the FSB defines a narrow measure of intermediaries that may pose bank-like financial stability risks. Investment funds account for 75% of such narrow measure, including money market funds, fixed income funds, mixed funds, credit hedge funds, and real estate funds. Moreover, open-ended funds more than double the amount of assets managed during the previous decade. Hedge funds also doubled its size between 2012 and 2019, managing almost USD 5,6 trillion dollar and based on two main jurisdictions.

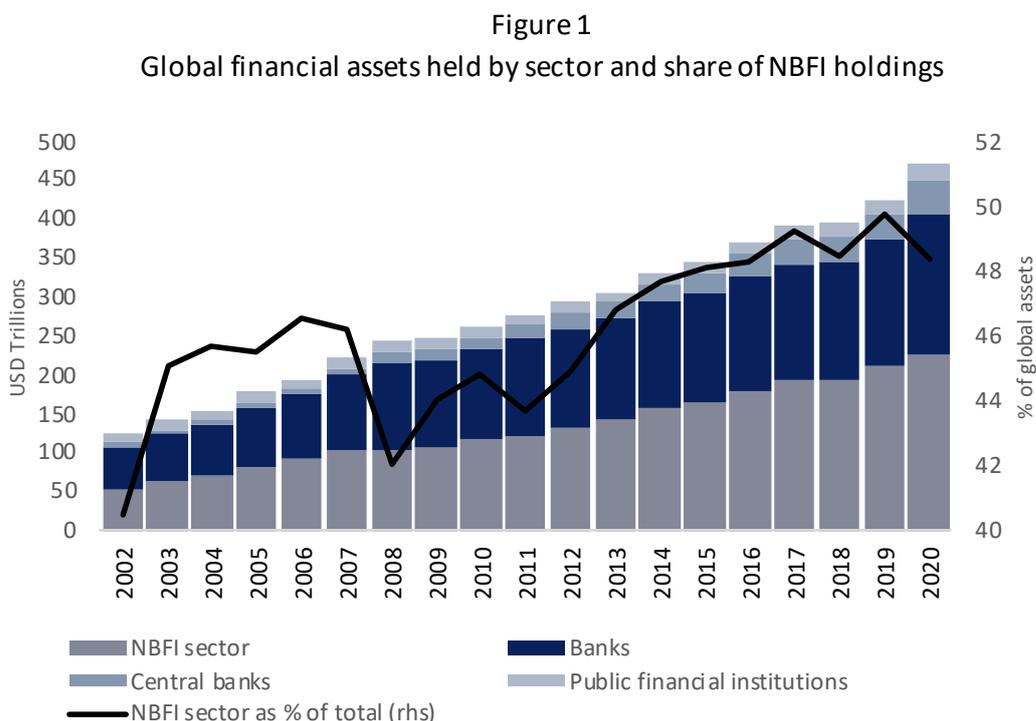


Figure 1 shows the evolution of total global financial assets held by sector and the share of the NBFI sector as a percentage of total financial assets. Source: FSB

Liquidity and maturity mismatches are the key financial stability risks posed by NBFIs. On the asset side, funds invest in a variety of papers, many of which are typically long term

and increasingly illiquid. But on the liability side, fund clients may demand their shares in the very short term. A mismatch arises, typical of any financial intermediary that actually produces liquidity. Regulators are used to dealing with this when it comes to banks, but much less used when funds are involved.

The liquidity mismatch puts pressure on asset managers, as was the case in the “dash for cash” of March 2020 --the global financial turmoil that took place at the outbreak of the Covid-19 pandemic. At that moment, there were specific measures to backstop funds’ liquidity; but generally, NBFIs count on much less backstops than banks do. They are also closely interconnected, and connected to the rest of the financial system.

Moreover, funds and asset managers tend to be more volatile and more procyclical than other intermediaries. On the one hand, pressure on liquidity can make them more prone to “fire sales” when investors wish to liquidate their shares at the same time. And by design, funds that track certain global or regional indices will sell the corresponding underlying assets when those indices are down, or buy them when they are up, making swings more pronounced --the so-called “benchmark effect” (Raddatz et al., 2017). This way, for example, advanced economies’ money market funds typically show procyclical behavior that may exacerbate financial markets volatility and affect the risk appetite of global investors, generating portfolio reallocation and affecting EMEs as an asset class. Spillovers are also linked to other funds that invest in EMEs and are prone to generate abrupt portfolio flow reversals.

It is only natural, then, to look at how NBFIs might shape capital flows, as done by recent studies. Brandao-Marques et al. (2022) analyze the effect of the higher share of mutual funds on capital flow volatility; they emphasize how open-ended funds involve the risk of early and quick liquidation, forcing managers to sell underlying assets. They find that bond funds, including open-ended ones, and irrespective of whether they are in local or foreign currency, are more sensitive to global financial shocks; and that bond flows engage more in momentum trading, which is also more sensitive to global factors.

In turn, Converse et al. (2020), find that among investment funds, exchange-traded funds (ETFs) growth increased the transmission of shocks from the global financial cycle to EMEs: flows to ETFs are more responsive to global financial conditions than other mutual funds, and less to local conditions; and in countries with higher ETF market capitalization, portfolio flows and equity returns are more sensitive to global factors. They point to investors’ liquidity preference and poor information on fundamentals as the likely causes. Along similar lines, according to Cerutti et al. (2019), countries that rely more on global mutual funds receive gross inflows that are more sensitive to global factors. Also, local markets liquidity and inclusion in benchmark indices increase such sensitivity.

Benchmark-driven investments are frequently pointed out as sources of “mechanistic” procyclicality together with flows’ higher dependence on global drivers. Raddatz et al. (2017) show that 70% of mutual fund investments are driven by benchmarks, leading to higher synchronization of portfolio flows among countries included in them vis-a-vis countries not included. Arslanalp et al. (2020) examine benchmark-driven flows to local currency bond markets: countries enjoy benefits of being included in benchmarks, such as higher liquidity and access to more diverse funding sources; but they may be outweighed by costs, such as higher responsiveness to global financial conditions and, more generally, to common factors among EMEs included in benchmark indices.

Indeed, recent research suggests that driving forces behind capital flows go beyond well-established global (“push”) and local (“pull”) factors, to include structural features of markets (“pipe” factors). García López and Stracca (2021) highlight that inclusion in an international bond or equity index illustrates how a change in “pipes” alters the sensitivity of capital flows to different drivers. Index inclusion might reduce flows’ sensitivity to domestic factors in the recipient country while increasing their sensitivity to global trends.

Some of these works assess capital flows dynamics through quantile regressions, in line with the “Value at risk” and “Growth at risk” methodologies, analyzing how different factors determine the probability of large inflows or outflows (“tail risks”), such as Ramos Francia et al. (2021) and Eguren et al (2020). Evidence for Latin America suggests the relevance of all three: push, pull and pipe factors (Ramos Francia et al., 2021). Thus, a rise in risk aversion as reflected by the VIX index (push factor) significantly increases bond flows at risk, while a rise in the term premium of interest rates (pull factor) only marginally changes them –this is consistent with the growing notion of capital flows being driven by a global financial cycle. But “pipe” factors are also significant: an increase in the share of government bonds denominated in local currency that are held by non-resident investors, for the most part increases bond flows at risk as well. In other words, bond outflows are bigger when foreign investors are large holders, but so are bond inflows.

All in all, the literature indicates that higher NBFIs are related to: a) higher sensitivity of capital flows to the global financial cycle; b) generally lower sensitivity to domestic factors; c) in some cases, higher sensitivity to domestic growth. While a) and b) mean higher responsiveness to push factors and lower to pull ones, c) may entail that local factors are intensified by pipes, in line with findings by Ramos Francia et al (2021): e.g. in “good times” (either global or local), NBFIs fund flow more abundantly. In other words, findings in line with a) and b) are about *financial* procyclicality (flows following the global financial cycle), while those in keeping with c) involve domestic *macroeconomic* procyclicality (flows following the local business cycle).

In what follows, we propose our own take on the issue. Our contribution includes: looking at a larger sample of EMEs than recent macroeconomic studies on “pipes” (twenty-four EMEs compared to seven or thirteen); differentiating the relationship between NBFIs and gross capital flows across different periods, regions (Latin America, EMEs) and sectors (total, government, corporate, banks). Since we consider foreign NBFIs and capital flows, our work is also related to the literature on the impact of foreign bondholders on domestic markets (see Baumann Fonay (2022), for Latin America). We also perform event studies around two crisis periods in order to identify the possible role of NBFIs in them, including the recent “dash for cash” at the outbreak of Covid-19.

III. Capital flows and NBFIs: a look at the data

How have NBFIs holdings of government debt evolved over time? We use Arslanalp and Tsuda’s (2014) estimates of foreign NBFIs holdings of EMEs’ total government debt, updated until 2021 (see Annex I for details). NBFIs include insurance companies, pension funds, and investment funds (mutual funds, exchange-traded funds, sovereign wealth funds, among others). The mean ratio of foreign NBFIs holding and EMEs’ government has increased from around 15% in the early 2000s to close to 25% in the late 2010s. This growth has been far from uniform: the ratio shows some stability until 2009-2010 when it falls and then goes on to rise substantially until 2015, only to recede somewhat around 2020.

While Foreign NBFH holdings of government debt differ markedly across EMEs (Figure 2, Panels a to d), the general rising pattern holds across most countries in the sample. The average holdings of debt ranges from 1-3% in India and Egypt to over 40% in Uruguay; and it has meant more than half of debt holdings at times in Lithuania, Peru and Uruguay. Still, average foreign NBFH holdings have increased from 2004-2009 to 2010-2021 in 18 out of 24 countries in the sample (Table 1). These trends are in keeping with generally larger foreign bond holdings of government debt.

Table 1
NBFH holdings of government debt. Summary Statistics

Country	Mean	Std. Deviation	Coef. Variation	Max	Min	Change	Average	
							2004-09	2010-21
Argentina	26%	0,0469	0,183371	35%	12%	-6%	26%	25%
Brazil	9%	0,0191	0,203703	14%	7%	-44%	9%	9%
Bulgaria	16%	0,0993	0,607414	41%	2%	-38%	17%	16%
Chile	17%	0,0675	0,390489	39%	7%	101%	15%	18%
China	0%	0,0047	1,179504	2%	0%	238%	0%	0%
Colombia	23%	0,0679	0,298261	33%	14%	32%	18%	25%
Egypt	3%	0,0327	0,978225	11%	0%	17853%	1%	4%
Hungary	23%	0,0563	0,244733	35%	14%	31%	18%	25%
India	1%	0,0061	0,912481	2%	0%	3422%	0%	1%
Indonesia	17%	0,1204	0,713868	33%	0%	76775%	2%	24%
Latvia	17%	0,0962	0,577392	34%	0%	168%	10%	20%
Lithuania	30%	0,1470	0,485322	55%	8%	-5%	13%	39%
Malaysia	18%	0,0466	0,2599	26%	9%	60%	12%	21%
Mexico	32%	0,0852	0,262446	46%	19%	0%	24%	37%
Peru	34%	0,0951	0,276519	54%	15%	233%	24%	40%
Philippines	12%	0,0131	0,112285	14%	8%	-20%	11%	12%
Poland	23%	0,0795	0,344989	36%	12%	-7%	15%	27%
Romania	17%	0,1213	0,704534	38%	0%	180%	7%	22%
Russia	18%	0,0350	0,195123	26%	12%	8%	18%	18%
South Africa	25%	0,0973	0,392024	39%	10%	140%	13%	31%
Thailand	9%	0,0555	0,640407	16%	0%	894%	2%	12%
Turkey	19%	0,0653	0,345271	29%	8%	128%	12%	22%
Ukraine	27%	0,0663	0,247349	41%	13%	7%	31%	25%
Uruguay	44%	0,0617	0,140605	56%	30%	38%	40%	46%

Table 1 shows the summary statistics for our measure of NBFH holdings of government debt by country. The source of the data is Arslanalp & Tsuda (2014).

Figure 2
Foreign NBFIs holdings of government debt

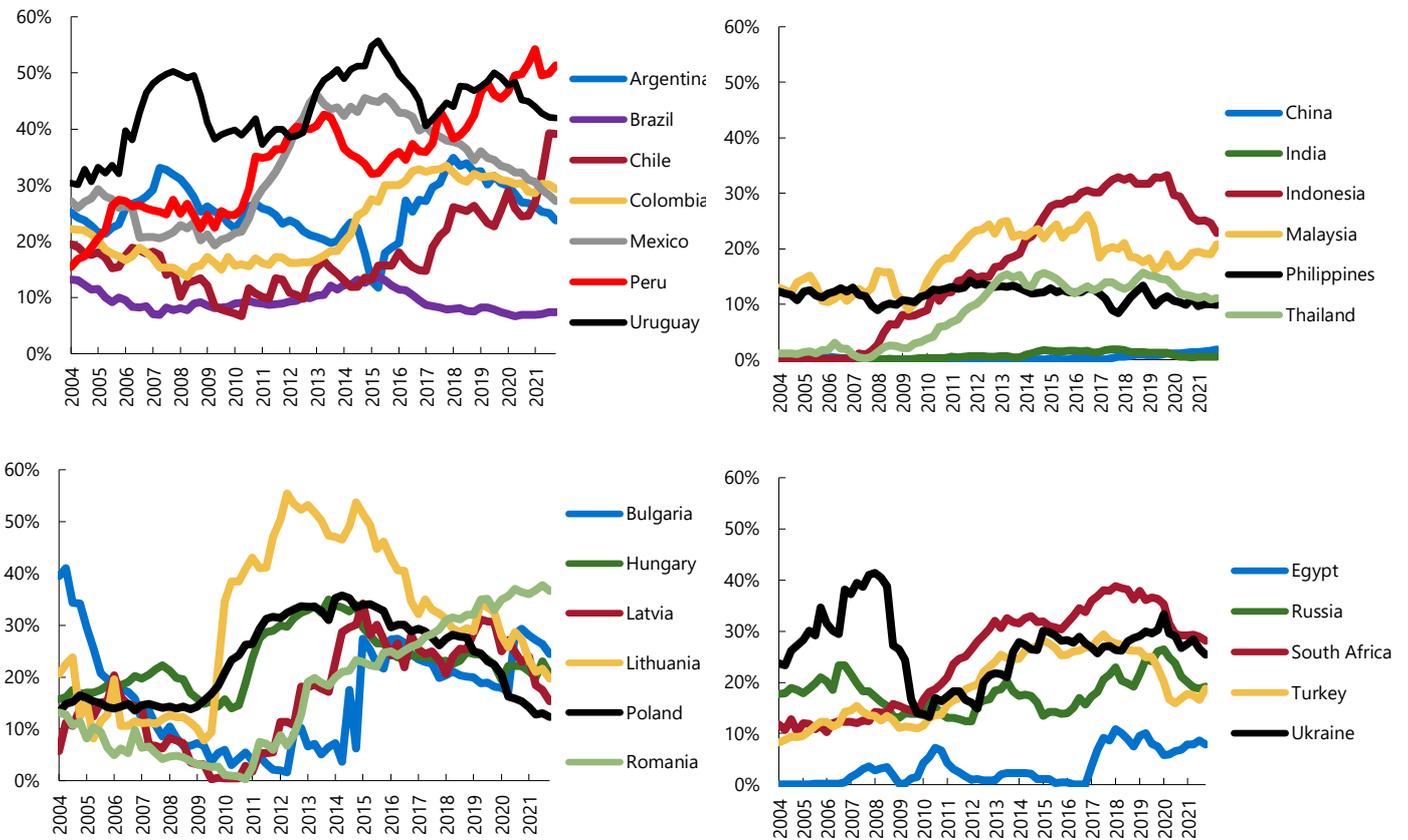


Figure 2 shows the evolution of the share of foreign NBFIs holdings of government debt by country. Source: Arslanalp & Tsuda (2014)

In turn, capital flows to EMEs in the sample follow a by this time well-known pattern. We consider gross flows: changes in countries' external liabilities (that is, liabilities owed by residents to non-residents), but not in external assets (those held by residents and owed to them by non-residents); see Annex I for details on sources, Annex II for descriptive statistics. Total flows reach a local peak around 2007 only to plummet in 2008-09, recovering subsequently but then decreasing again at the time of the European debt crisis and, more notoriously, the so-called "taper tantrum" episode and its aftermath. They recover once again, only to ebb somewhat from 2018 (the EME sudden stop with epicenter in Turkey, Argentina and South Africa) to 2020 (with the "dash-for-cash" at the onset of the pandemic). Dynamics in total flows are basically related to corporate and bank flows, whereas government flows show lower peak-trough volatility, except in the 2020 episode (Figure 3).

All things considered, descriptive statistics point to a larger role of NBFIs in the global financial system and as holders of EMEs government debt since the global financial crisis; and how their expansion as debtholders coincides with capital inflows since 2010, as well as with their higher volatility

Figure 3
Capital Inflows - Total and by institutional sector

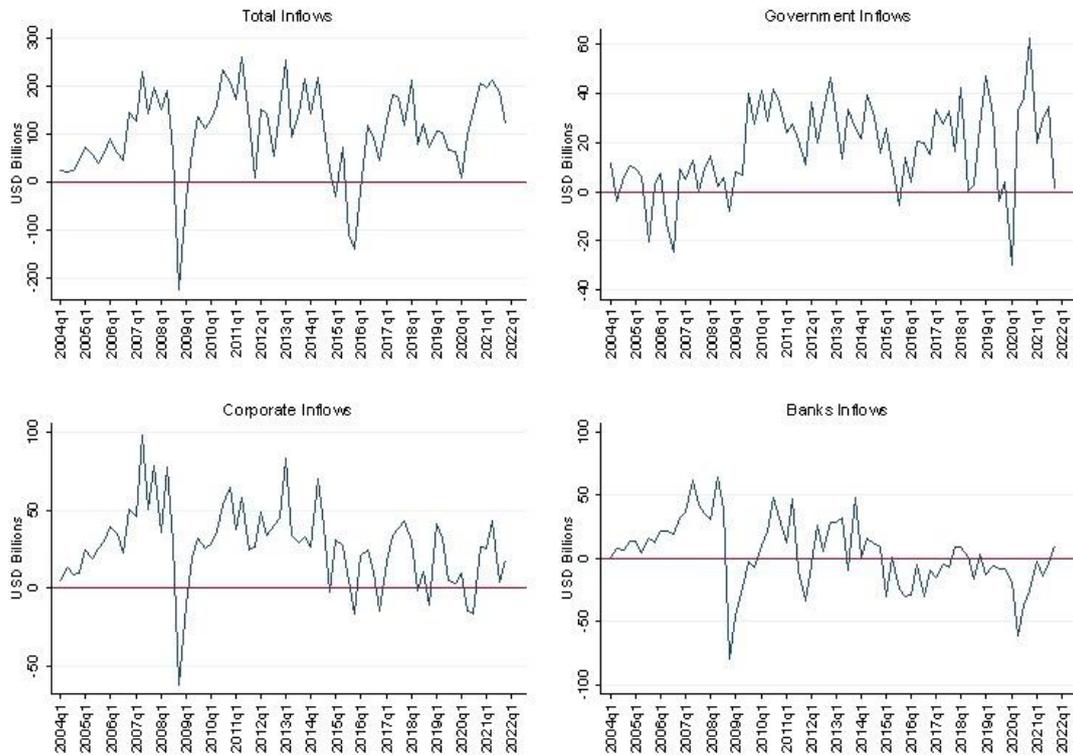


Figure 3 shows the quarterly evolution of total capital inflows for our sample of emerging market economies over 2004-2021. It also provides the evolution of total inflows by institutional sector: government, corporate and banks. Our measure of total inflows consists of the sum of Portfolio Debt, Portfolio Equity and Other Investments. Source: IMF Balance of Payments database.

IV. Econometric approach

IV.1 Model specifications

We intend to assess the relationship between foreign NBFIs and capital inflows. To this end, we estimate the determinants of gross inflows using methods applied in the gross capital flows literature. We include variables typically associated with push and pull factors as regressors, and then evaluate the extent to which those determinants are shifted when considering different degrees of NBFIs participation.

Since NBFIs directly affect portfolio debt flows, we are particularly concerned with the determinants of these flows and the extent to which these differ from those factors shaping total capital inflows, both to the economies as a whole and to sectors considered separately. We assess how NBFIs shift the relation of portfolio debt to push and pull factors, and compare it with the shifts in the relation of total inflows to push and pull factors.

Thus, we estimate separate regressions for each dependent variable y_{it} (total inflows, inflows to each sector, and inflows through different asset types, normalized by quarterly

GDP) sequentially, including lagged regressors to control for domestic and global factors. For each dependent variable we estimate the following regressions, using quarterly data from the first quarter of 2004 to the fourth quarter of 2021 (see Annex II for descriptive statistics of dependent variables and regressors).

1. A baseline model for the NBFi effect, where we include basic push and pull factors, a measure of NBFi, interaction terms between this measure and those factors, as well as country fixed-effects. We estimate the following model:

$$y_{it} = \beta_0 + \beta_1 vix_{t-1} + \beta_2 growth_{it-1} + \beta_3 NBFi_{it-1} + \beta_4 NBFi_{it-1} * vix_{t-1} + \beta_5 NBFi_{it-1} * growth_{it-1} + \sum_{i=1}^N \alpha_i C_i + e_{it} \quad \text{Eq. 1}$$

Where vix accounts for the VIX index at the end of quarter t , $growth_{it}$ represents the quarterly GDP growth rate for country i in period t , $NBFi_{it}$ measures the share of foreign nonbank investors holding of sovereign debt, $NBFi_{it} * vix_t$ is an interaction term between high foreign nonbank share and the VIX index, $NBFi_{it} * growth_{it}$ is the interaction term between foreign nonbank share and domestic growth, $\sum_{i=1}^N \alpha_i C_i$ represent country fixed-effects, and e_{it} is the error term.

2. Three extended versions of the model which sequentially add year fixed-effects, controls for the global financial and business cycles (proxies for global interest rate and global growth), domestic macroeconomic and financial controls (current account balance, country risk spread as measured by the JP Morgan's EMBI index, annual inflation, reserve assets). Our final version of the model includes the following regressors

$$y_{it} = \beta_0 + \beta_1 vix_{t-1} + \beta_2 growth_{it-1} + \beta_3 NBFi_{it-1} + \beta_4 NBFi_{it-1} * vix_{t-1} + \beta_5 NBFi_{it-1} * growth_{it-1} + \beta_6 global r_{t-1} + \beta_7 global growth_{t-1} + \beta_8 CAB_{it-1} + \beta_9 EMBI_{it-1} + \beta_{10} Inflation_{it-1} + \beta_{11} reserve assets_{it-1} + \sum_{i=1}^N \alpha_i C_i + \sum_{t=1}^T \beta_t T_t + e_{it} \quad \text{Eq. 2}$$

Where $global r_t$ stands for a proxy of global interest rate (following Forbes & Warnock, 2012), $global growth_t$ represents the world GDP growth estimated on the basis of the IMF World Economic Outlook Database, CAB_{it} is country i 's Current Account Balance to GDP, $EMBI_{it}$ represents the JP Morgan's EMBI index for country i at the end of period t , $Inflation_{it}$ represents interannual CPI inflation and $reserve assets_{it}$ stands for central bank reserve assets. Finally, $\sum_{t=1}^T \beta_t T_t$ are the year fixed-effects.

Estimation method. We know gross capital flows to emerging economies to be highly correlated across countries (Broner et al., 2013; Davis et al., 2019). As a consequence, we aim to fit a linear cross-sectional time-series model assuming the disturbances to be heteroskedastic and contemporaneously correlated across countries. Additionally, our data conforms to the "long panel" form, with large T and relatively smaller number of individuals. Thus, we consider the disturbances to be autocorrelated within panels, with a different

autocorrelation parameter for each panel. We organize this in terms of the following equation

$$y_{it} = X_{it}\beta + u_{it} \quad \text{Eq. 3}$$

where $i = 1, \dots, N$ is the number of countries, $t = 1, \dots, T$ is the number of periods and we allow u_{it} to be autocorrelated within each panel. That is, we consider $u_{it} = \rho_i u_{it-1} + e_{it}$, where e_{it} may be both heteroskedastic and contemporaneously correlated across panels.

Since we aim to capture this within-panel autocorrelation, estimates are obtained by means of a Prais-Winsten regression, with each ρ_i being computed from the residuals of an OLS regression across all panels. The data is subsequently transformed to remove the effects of the AR(1) process.

NBFI measures. On the basis of the share of sovereign debt held by foreign nonbank investors, we build two broad type of measures of NBFI participation: a continuous and a categorical one.

- i. For the continuous variable, we directly take the share of foreign nonbank investors measured as a percentage of total sovereign debt.
- ii. For the categorical variable, we compute deciles of the (country) shares of foreign NBFI holdings of total government debt within each quarter; and subsequently build three measures of “high NBFI” share according to whether a given country falls within the 10, 20 or 30% of the sample with higher NBFI share in a given quarter. We evaluate whether having a high share of NBFI right before a certain period is linked to inflows’ behaviour.

Using NBFI as defined in i) gives us the average relationship of foreign NBFI and capital flows. However, a natural concern is whether countries with the highest NBFI holdings show particularly noticeable flows when compared to the rest of the sample: this underscores the use of NBFI as defined in ii). Thus, going from i) to ii) means focusing on part of high-NBFI countries in contrast with the rest of the sample. This can be regarded as a way of dealing with behavior in the upper deciles of the NBFI distribution. Finally, as results show a differential behavior of the relationship of NBFI and flows over time, we run separate regressions for two specific events: the 2008 global financial crisis and the “dash for cash” at the outbreak of the pandemic, in section V we describe this focus on specific periods.

IV.2 Results

We are interested in the possible impact of NBFI on capital inflows during the whole sampling period, but also during the global financial crisis (GFC) of 2008/9 and the post-GFC period. In order to evaluate this, we split the sample period in shorter time windows around each episode for both definitions of NBFI.

IV.2.a NBFI holdings as a continuous variable

We first look at the behavior of portfolio debt flows (table 2). For the whole 2004-2021 period, NBFI holdings are negatively associated to inflows (the first coefficient reported in each model): as they increase, they involve lower inflows and higher outflows,

on average. NBFH holdings also seem associated to less sensitivity to global risk aversion (the second coefficient reported) --although this is not significant in the fullest specification (column 4). This result seems driven by government debt flows (columns 5-8; columns 9-12 refer to corporate flows, and 13-16 to bank flows).

But the behavior differs by periods. In 2004-2009, NBFH holdings behave procyclically: they are linked to lower debt inflows as risk aversion increases, and higher inflows as domestic growth increases (though the latter does not apply to the fullest specification). Once again, this is driven by government debt flows. In 2010-2021, the association between foreign NBFH and flows appears stronger, keeping the negative sign (ie higher NBFH linked to lower inflows and higher outflows). Still, somewhat paradoxically, NBFH holdings seem to make inflows less sensitive to global risk aversion (their interaction with VIX carries a positive sign), which shows also in the case of government flows.

Using this variable allows us to consider regional differences: when we focus on Latin America (Table 3), we find that for the whole period (2004-2021), NBFH *per se* is not significantly associated to debt inflows, but it makes them more reactive to the VIX index. The interaction coefficient is negative and significant, meaning that as risk aversion increases, countries with higher foreign NBFH holdings tend to experience lower inflows or higher outflows. This result is linked to government debt holdings, and is also found during 2004-2009.

Turning to total flows and the whole EME sample (Table 4), NBFH holdings tend to remain linked to lower inflows but *less* sensitivity to global risk aversion. This appears driven by government flows and, to a lesser extent, corporate ones. Interestingly, though, when models are estimated since 2015, there is some indication that total flows to EMEs are more sensitive to the VIX as foreign NBFH holdings increase, and that the latter accentuate the response to local growth -that is, suggestions of procyclical behavior of NBFH flows. Moreover, the negative association between foreign NBFH and flows intensifies during 2010-21.

Total flows to Latin American countries do seem to change over the different time periods considered (Table 5): after 2010, countries with higher foreign NBFH receive lower inflows as VIX increases (columns 3 and 4), whereas those coefficients are not significant in 2004-2009. In turn, higher NBFH seems linked to higher responsiveness of flows to local growth in 2004-2009. The opposite applies to corporate flows after 2010. Meanwhile, government flows are lower as VIX increases in countries with higher NBFH in 2004-2009.

Table 3 Portfolio debt flows to 7 Latin American countries, 2004-2021. NBFI as continuous variable.																
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
	OLS - AR(1)	OLS - AR(1)	OLS - AR(1)	OLS - AR(1)	OLS - AR(1)	OLS - AR(1)	OLS - AR(1)	OLS - AR(1)	OLS - AR(1)	OLS - AR(1)	OLS - AR(1)	OLS - AR(1)	OLS - AR(1)	OLS - AR(1)	OLS - AR(1)	OLS - AR(1)
	Total Inflows				Gov. Inflows				Corporate Inflows				Bank Inflows			
VARIABLES	Post-2000	Post-2000	Post-2000	Post-2000	Post-2000	Post-2000	Post-2000	Post-2000	Post-2000	Post-2000	Post-2000	Post-2000	Post-2000	Post-2000	Post-2000	Post-2000
LNBF1	0.0959 (0.171)	0.00515 (0.164)	-0.143 (0.170)	-0.00481 (0.150)	-0.0250 (0.164)	-0.169 (0.169)	-0.224 (0.184)	-0.101 (0.164)	0.0433 (0.0444)	0.0352 (0.0511)	-0.0145 (0.0558)	-0.00435 (0.0539)	0.0227 (0.0225)	0.0366 (0.0248)	0.0237 (0.0261)	0.0222 (0.0270)
LNBF1*VIX	-0.00630 (0.00592)	-0.00822 (0.00564)	-0.0167** (0.00716)	-0.0144** (0.00660)	-0.00603 (0.00576)	-0.00727 (0.00563)	-0.0169** (0.00722)	-0.0138** (0.00669)	0.000418 (0.00157)	3.92e-05 (0.00147)	-0.000109 (0.00202)	-0.000127 (0.00199)	-0.000416 (0.000929)	-0.000125 (0.000878)	0.000567 (0.00117)	0.000774 (0.00117)
LNBF1*Growth	-0.902 (1.355)	-0.444 (1.252)	1.760 (1.614)	0.193 (1.519)	-0.840 (1.319)	-0.0292 (1.305)	2.532 (1.693)	1.113 (1.624)	0.177 (0.337)	0.250 (0.389)	0.0658 (0.552)	-0.103 (0.545)	-0.376** (0.186)	-0.492*** (0.184)	-0.548** (0.244)	-0.603** (0.246)
Observations	485	485	427	427	485	485	427	427	485	485	427	427	485	485	427	427
R-squared	0.055	0.124	0.160	0.320	0.070	0.119	0.152	0.325	0.157	0.267	0.301	0.307	0.062	0.145	0.158	0.165
Number of countrycode	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7
VARIABLES	2004-2009	2004-2009	2004-2009	2004-2009	2004-2009	2004-2009	2004-2009	2004-2009	2004-2009	2004-2009	2004-2009	2004-2009	2004-2009	2004-2009	2004-2009	2004-2009
LNBF1	0.290 (0.481)	0.641 (0.459)	0.587 (0.465)	0.602 (0.411)	0.588 (0.476)	0.837* (0.465)	0.842* (0.469)	0.820* (0.424)	-0.130 (0.0909)	-0.0355 (0.0814)	-0.0451 (0.0774)	-0.0447 (0.0777)	-0.155** (0.0708)	-0.164** (0.0749)	-0.183** (0.0745)	-0.165** (0.0774)
LNBF1*VIX	-0.0388*** (0.0111)	-0.0320*** (0.00937)	-0.0309*** (0.00950)	-0.0332*** (0.00925)	-0.0401*** (0.0107)	-0.0352*** (0.00999)	-0.0352*** (0.0101)	-0.0367*** (0.00990)	-0.00145 (0.00170)	-0.00141 (0.00152)	-0.00134 (0.00137)	-0.00135 (0.00128)	0.00293* (0.00168)	0.00332** (0.00158)	0.00361** (0.00160)	0.00376** (0.00159)
LNBF1*Growth	1.502 (2.995)	-4.503 (3.179)	-4.172 (3.241)	-4.778 (2.977)	-0.674 (2.857)	-5.193 (3.258)	-5.100 (3.305)	-5.427* (3.106)	1.334* (0.726)	0.257 (0.677)	0.298 (0.641)	0.179 (0.626)	0.872 (0.615)	0.661 (0.655)	0.757 (0.646)	0.554 (0.669)
Observations	161	161	161	161	161	161	161	161	161	161	161	161	161	161	161	161
R-squared	0.295	0.407	0.402	0.519	0.355	0.440	0.431	0.530	0.208	0.299	0.299	0.347	0.098	0.155	0.172	0.192
Number of countrycode	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7
VARIABLES	Post-2010	Post-2010	Post-2010	Post-2010	Post-2010	Post-2010	Post-2010	Post-2010	Post-2010	Post-2010	Post-2010	Post-2010	Post-2010	Post-2010	Post-2010	Post-2010
LNBF1	-0.0312 (0.192)	-0.00318 (0.197)	-0.283 (0.213)	-0.182 (0.154)	-0.173 (0.179)	-0.243 (0.200)	-0.382* (0.222)	-0.235 (0.163)	0.0789 (0.0616)	0.122* (0.0689)	0.0249 (0.0765)	0.0344 (0.0698)	0.0303 (0.0325)	0.0688** (0.0349)	0.0829** (0.0383)	0.0782** (0.0375)
LNBF1*VIX	0.00337 (0.00630)	0.00255 (0.00601)	0.000725 (0.00890)	0.00892 (0.00614)	0.00591 (0.00585)	0.00536 (0.00574)	0.00503 (0.00844)	0.0123** (0.00617)	-0.000346 (0.00185)	-0.000419 (0.00171)	-0.00121 (0.00279)	-0.00119 (0.00276)	-0.00166 (0.00113)	-0.00166 (0.00109)	-0.00224 (0.00175)	-0.00223 (0.00173)
LNBF1*Growth	-0.456 (1.474)	-0.265 (1.317)	0.700 (1.756)	0.627 (1.398)	0.00751 (1.408)	0.320 (1.350)	1.769 (1.823)	1.229 (1.445)	0.0310 (0.369)	0.0881 (0.460)	-0.0297 (0.751)	0.0142 (0.752)	-0.808*** (0.236)	-0.824*** (0.237)	-0.877*** (0.334)	-0.730** (0.349)
Observations	324	324	266	266	324	324	266	266	324	324	266	266	324	324	266	266
R-squared	0.078	0.139	0.160	0.471	0.062	0.088	0.106	0.458	0.168	0.273	0.314	0.331	0.110	0.183	0.211	0.222
Number of countrycode	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7
VARIABLES	Post-2015	Post-2015	Post-2015	Post-2015	Post-2015	Post-2015	Post-2015	Post-2015	Post-2015	Post-2015	Post-2015	Post-2015	Post-2015	Post-2015	Post-2015	Post-2015
LNBF1	-0.280 (0.321)	-0.255 (0.332)	-1.311*** (0.436)	-0.671** (0.293)	-0.455 (0.305)	-0.426 (0.317)	-1.275*** (0.425)	-0.656** (0.291)	0.179** (0.0909)	0.189** (0.0868)	0.0841 (0.0960)	0.102 (0.106)	0.0769* (0.0459)	0.0404 (0.0430)	-0.0581 (0.0559)	-0.0452 (0.0615)
LNBF1*VIX	0.0102 (0.00893)	0.0105 (0.00896)	0.0304** (0.0147)	0.0335*** (0.0105)	0.00869 (0.00869)	0.00913 (0.00866)	0.0254* (0.0150)	0.0303*** (0.0109)	0.000569 (0.00148)	0.000459 (0.00139)	-0.000934 (0.00374)	-0.00131 (0.00391)	0.00129 (0.000931)	0.00148 (0.000979)	0.00571** (0.00229)	0.00539** (0.00229)
LNBF1*Growth	0.269 (2.385)	1.011 (2.288)	16.56*** (5.724)	7.120* (4.240)	0.502 (2.267)	0.943 (2.197)	16.84*** (5.282)	7.548* (4.056)	0.185 (0.401)	0.268 (0.431)	0.159 (1.229)	-0.346 (1.371)	-0.391 (0.259)	-0.0739 (0.256)	-0.522 (0.490)	-0.635 (0.568)
Observations	184	184	126	126	184	184	126	126	184	184	126	126	184	184	126	126
R-squared	0.071	0.116	0.245	0.731	0.076	0.095	0.260	0.729	0.147	0.226	0.274	0.289	0.106	0.159	0.198	0.201
Number of countrycode	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7
Country FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Year FE	NO	YES	YES	YES	NO	YES	YES	YES	NO	YES	YES	YES	NO	YES	YES	YES
GFC Controls	NO	NO	YES	YES	NO	NO	YES	YES	NO	NO	YES	YES	NO	NO	YES	YES
Domestic Risk Controls	NO	NO	NO	YES	NO	NO	NO	YES	NO	NO	NO	YES	NO	NO	NO	YES
R2-Overall	0.0553	0.124	0.160	0.320	0.0697	0.119	0.152	0.325	0.157	0.267	0.301	0.307	0.0621	0.145	0.158	0.165

Table 3 summarizes the main parameters of interest for regressions of portfolio debt capital flows on push and pull variables for 7 Latin American countries, where we also include the share of foreign NBFI holding of sovereign debt, and interaction terms between this variable and the VIX and domestic growth. The dependent variables are Total Portfolio Debt Inflows (columns 1-4), Government Portfolio Debt Inflows (5-8), Corporate Portfolio Debt Inflows (9-12), and Bank Portfolio Debt Inflows (13-16). We run these regressions for the whole sample period, and different sub-periods: 2004-2009, 2010-2021, and 2015-2021. In addition to the reported coefficients, for each dependent variable, the first regression includes only the VIX, Domestic Growth and country fixed-effects. The second regression, adds year fixed-effects to the first specification. The third regression also includes additional push variables as detailed in the text. Finally, the fourth regression includes additional pull variables as detailed in the main text. Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table 4 Total flows to selected EMEs, 2004-2021. NBFi as continuous variable																
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
	OLS - AR(1)	OLS - AR(1)	OLS - AR(1)	OLS - AR(1)	OLS - AR(1)	OLS - AR(1)	OLS - AR(1)	OLS - AR(1)	OLS - AR(1)	OLS - AR(1)	OLS - AR(1)	OLS - AR(1)	OLS - AR(1)	OLS - AR(1)	OLS - AR(1)	OLS - AR(1)
	Total Inflows				Gov. Inflows				Corporate Inflows				Bank Inflows			
	2004-2021	2004-2021	2004-2021	2004-2021	2004-2021	2004-2021	2004-2021	2004-2021	2004-2021	2004-2021	2004-2021	2004-2021	2004-2021	2004-2021	2004-2021	2004-2021
L.NBFI	-1.763*** (0.384)	-1.526*** (0.437)	-0.968** (0.466)	-0.372 (0.447)	-0.770*** (0.164)	-0.666*** (0.178)	-0.821*** (0.221)	-0.901*** (0.256)	-0.294** (0.120)	-0.0321 (0.125)	0.00389 (0.144)	0.138 (0.107)	-0.407** (0.177)	-0.391** (0.194)	-0.406 (0.250)	0.275 (0.228)
L.NBFI*VIX	0.0502*** (0.0119)	0.0341*** (0.0116)	0.0456*** (0.0159)	0.0379** (0.0163)	0.0146*** (0.00533)	0.0168*** (0.00524)	0.0189** (0.00766)	0.0155 (0.0102)	0.00841** (0.00408)	0.00638* (0.00378)	0.00158 (0.00561)	0.00158 (0.00448)	0.00791 (0.00637)	0.00428 (0.00633)	4.81e-05 (0.00945)	-0.00243 (0.00981)
L.NBFI*Growth	-2.817 (2.207)	0.978 (2.164)	-3.118 (3.408)	-1.814 (3.331)	1.836** (0.865)	1.198 (0.847)	1.123 (1.311)	2.462 (2.043)	-0.594 (0.655)	-0.647 (0.631)	-1.443 (1.004)	-1.027 (0.936)	-2.170* (1.194)	-1.138 (1.127)	-0.530 (1.934)	-1.942 (2.049)
Observations	1,646	1,646	1,432	1,170	1,436	1,436	1,252	990	1,470	1,470	1,276	1,052	1,564	1,564	1,360	1,113
R-squared	0.155	0.205	0.276	0.192	0.135	0.151	0.184	0.260	0.078	0.129	0.161	0.222	0.225	0.260	0.293	0.251
Number of countrycode	24	24	24	22	21	21	21	19	22	22	22	20	23	23	23	21
VARIABLES	2004-2009	2004-2009	2004-2009	2004-2009	2004-2009	2004-2009	2004-2009	2004-2009	2004-2009	2004-2009	2004-2009	2004-2009	2004-2009	2004-2009	2004-2009	2004-2009
L.NBFI	-0.616 (1.008)	-0.173 (0.931)	-0.239 (0.929)	-0.0587 (0.871)	-1.031*** (0.318)	-0.961*** (0.312)	-0.959*** (0.308)	-0.277 (0.259)	-0.135 (0.397)	0.124 (0.373)	0.0338 (0.358)	-0.0908 (0.268)	0.174 (0.724)	0.222 (0.679)	0.273 (0.686)	-0.440 (0.573)
L.NBFI*VIX	0.0314 (0.0224)	0.0269 (0.0207)	0.0286 (0.0208)	0.0352* (0.0212)	-0.000942 (0.00798)	-0.00174 (0.00792)	-0.000596 (0.00764)	-0.0113 (0.00832)	0.0140* (0.00774)	0.0130* (0.00779)	0.0151** (0.00757)	0.0116** (0.00495)	0.00192 (0.0193)	0.00131 (0.0184)	0.000745 (0.0184)	0.0159 (0.0193)
L.NBFI*Growth	0.113 (5.334)	-3.711 (4.813)	-3.594 (4.848)	-11.51** (5.205)	4.207*** (1.602)	3.730** (1.593)	3.748** (1.584)	-0.921 (1.679)	-0.883 (2.367)	-2.913 (2.260)	-2.555 (2.127)	-0.726 (1.888)	-1.019 (4.660)	-1.352 (4.230)	-2.105 (4.334)	-0.911 (3.996)
Observations	525	525	525	419	459	459	459	353	445	445	445	377	491	491	491	400
R-squared	0.495	0.532	0.534	0.596	0.427	0.443	0.451	0.684	0.273	0.301	0.320	0.555	0.428	0.439	0.444	0.443
Number of countrycode	23	23	23	20	20	20	20	17	20	20	20	18	22	22	22	19
	Post-2010	Post-2010	Post-2010	Post-2010	Post-2010	Post-2010	Post-2010	Post-2010	Post-2010	Post-2010	Post-2010	Post-2010	Post-2010	Post-2010	Post-2010	Post-2010
L.NBFI	-1.067** (0.458)	-1.321** (0.544)	-1.065* (0.627)	-1.136 (0.627)	-0.767*** (0.212)	-0.525** (0.238)	-0.888*** (0.342)	-1.036** (0.449)	-0.126 (0.0872)	-0.0471 (0.0928)	-0.0440 (0.114)	-0.0840 (0.135)	-0.0285 (0.164)	-0.139 (0.180)	0.0375 (0.241)	0.189 (0.282)
L.NBFI*VIX	0.0234* (0.0126)	0.0187 (0.0131)	0.0392** (0.0192)	0.0319 (0.0200)	0.0222*** (0.00648)	0.0262*** (0.00684)	0.0383*** (0.0129)	0.0351** (0.0140)	-0.000863 (0.00327)	-0.000394 (0.00323)	-0.00457 (0.00492)	-0.00787 (0.00555)	-0.00584 (0.00509)	-0.00647 (0.00514)	-0.0140 (0.00975)	-0.0184* (0.00960)
L.NBFI*Growth	1.487 (2.096)	2.226 (2.176)	1.577 (4.664)	4.198 (4.956)	1.238 (1.006)	0.628 (0.970)	-0.231 (1.963)	1.489 (2.441)	0.410 (0.535)	0.290 (0.542)	1.029 (0.914)	1.029 (0.880)	-1.109 (0.853)	-1.015 (0.853)	-0.599 (1.901)	-1.417 (1.614)
Observations	1,121	1,121	907	751	977	977	793	637	1,025	1,025	831	675	1,073	1,073	869	713
R-squared	0.053	0.066	0.067	0.110	0.133	0.159	0.211	0.309	0.077	0.097	0.148	0.235	0.193	0.221	0.278	0.362
Number of countrycode	24	24	24	21	21	21	21	18	22	22	22	19	23	23	23	20
VARIABLES	Post-2015	Post-2015	Post-2015	Post-2015	Post-2015	Post-2015	Post-2015	Post-2015	Post-2015	Post-2015	Post-2015	Post-2015	Post-2015	Post-2015	Post-2015	Post-2015
L.NBFI	-0.365 (0.707)	-0.262 (0.697)	0.0918 (0.896)	0.114 (1.075)	-0.870*** (0.232)	-0.807*** (0.217)	-1.069*** (0.358)	-0.892** (0.384)	0.0322 (0.110)	0.0473 (0.114)	0.0322 (0.127)	0.0252 (0.136)	-0.0346 (0.173)	0.0658 (0.177)	0.462* (0.268)	0.199 (0.255)
L.NBFI*VIX	-0.0253* (0.0133)	-0.0234* (0.0134)	-0.000652 (0.0205)	-0.00115 (0.0233)	0.0143*** (0.00536)	0.0144*** (0.00517)	0.0210* (0.0125)	0.0320*** (0.0123)	0.00181 (0.00333)	0.00154 (0.00337)	-0.00692 (0.00471)	-0.00915* (0.00482)	0.000127 (0.00350)	0.000901 (0.00372)	0.00483 (0.00782)	0.00344 (0.00768)
L.NBFI*Growth	0.183 (1.915)	0.0710 (1.968)	16.56** (7.875)	9.862 (13.53)	1.151 (0.809)	1.237 (0.809)	9.421** (4.494)	7.003* (3.805)	0.727 (0.573)	0.730 (0.589)	3.654*** (1.406)	2.069 (1.477)	0.0914 (0.597)	0.155 (0.623)	-0.558 (1.753)	-2.243 (2.005)
Observations	646	646	432	360	562	562	378	306	590	590	396	324	618	618	414	342
R-squared	0.084	0.092	0.054	0.074	0.157	0.177	0.215	0.423	0.132	0.146	0.303	0.353	0.243	0.272	0.363	0.392
Number of countrycode	24	24	24	20	21	21	21	17	22	22	22	18	23	23	23	19
Country FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Year FE	NO	YES	YES	YES	NO	YES	YES	YES	NO	YES	YES	YES	NO	YES	YES	YES
GFC Controls	NO	NO	YES	YES	NO	NO	YES	YES	NO	NO	YES	YES	NO	NO	YES	YES
Domestic Risk Controls	NO	NO	NO	YES	NO	NO	NO	YES	NO	NO	NO	YES	NO	NO	NO	YES
R2-Overall	0.155	0.205	0.276	0.192	0.135	0.151	0.184	0.260	0.0775	0.129	0.161	0.222	0.225	0.260	0.293	0.251

Table 4 summarizes the main parameters of interest for regressions of total capital flows on push and pull variables for our whole sample of emerging market economies, where we also include the share of foreign NBFi holding of sovereign debt, and interaction terms between this variable and the VIX and domestic growth. The dependent variables are Total Inflows (columns 1-4), Government Inflows (5-8), Corporate Inflows (9-12), and Bank Inflows (13-16). We run these regressions for the whole sample period, and different sub-periods: 2004-2009, 2010-2021, and 2015-2021. In addition to the reported coefficients, for each dependent variable, the first regression includes only the VIX, Domestic Growth and country fixed-effects. The second regression, adds year fixed-effects to the first specification. The third regression also includes additional push variables as detailed in the text. Finally, the fourth regression includes additional pull variables as detailed in the main text. Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
	OLS - AR(1)	OLS - AR(1)	OLS - AR(1)	OLS - AR(1)	OLS - AR(1)	OLS - AR(1)	OLS - AR(1)	OLS - AR(1)	OLS - AR(1)	OLS - AR(1)	OLS - AR(1)	OLS - AR(1)				
	Total Inflows				Gov. Inflows				Corporate Inflows				Bank Inflows			
VARIABLES	Post-2000	Post-2000	Post-2000	Post-2000	Post-2000	Post-2000	Post-2000	Post-2000	Post-2000	Post-2000	Post-2000	Post-2000	Post-2000	Post-2000	Post-2000	Post-2000
L.NBFI	-0.402 (0.295)	-0.298 (0.285)	-0.111 (0.311)	0.113 (0.256)	0.0252 (0.158)	-0.0140 (0.156)	-0.0743 (0.168)	-0.0279 (0.163)	-0.0626 (0.0899)	0.0429 (0.0914)	-0.0340 (0.0913)	0.0129 (0.0885)	-0.325 (0.225)	-0.191 (0.202)	-0.206 (0.225)	-0.210 (0.221)
L.NBFI*VIX	0.0145 (0.0127)	0.0182 (0.0123)	-0.00950 (0.0157)	-0.00805 (0.0134)	0.00342 (0.00535)	0.00190 (0.00521)	-0.00398 (0.00668)	-0.00198 (0.00646)	0.00322 (0.00341)	0.00379 (0.00318)	0.00428 (0.00394)	0.00420 (0.00388)	0.00661 (0.00894)	0.0104 (0.00901)	0.0132 (0.0119)	0.0132 (0.0117)
L.NBFI*Growth	2.131 (2.900)	0.411 (2.700)	4.302 (3.523)	0.791 (2.904)	0.791 (1.222)	-1.182 (1.187)	-0.720 (1.527)	0.396 (1.552)	-0.720 (0.807)	0.689 (0.735)	-0.329 (0.908)	-0.912 (0.873)	-1.480* (2.009)	0.504 (1.985)	0.0985 (2.687)	0.416 (2.648)
Observations	485	485	427	427	485	485	427	427	485	485	427	427	485	485	427	427
R-squared	0.190	0.303	0.294	0.533	0.076	0.133	0.137	0.255	0.051	0.166	0.191	0.219	0.063	0.134	0.119	0.126
Number of countrycode	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7
VARIABLES	2004-2009	2004-2009	2004-2009	2004-2009	2004-2009	2004-2009	2004-2009	2004-2009	2004-2009	2004-2009	2004-2009	2004-2009	2004-2009	2004-2009	2004-2009	2004-2009
L.NBFI	-1.734 (1.166)	-1.548 (1.073)	-1.946* (1.080)	-1.382 (1.005)	0.0633 (0.436)	0.329 (0.405)	0.318 (0.410)	0.431 (0.439)	-0.534* (0.312)	-0.199 (0.253)	-0.307 (0.251)	-0.296 (0.260)	-1.254 (1.018)	-1.418 (1.028)	-1.549 (1.054)	-1.614 (1.089)
L.NBFI*VIX	0.00866 (0.0344)	0.0141 (0.0278)	0.0191 (0.0266)	0.0159 (0.0250)	-0.0196** (0.00997)	-0.0206** (0.00891)	-0.0202** (0.00893)	-0.0202** (0.00894)	0.00295 (0.00644)	0.00460 (0.00482)	0.00592 (0.00455)	0.00364 (0.00469)	0.0329 (0.0281)	0.0339 (0.0263)	0.0353 (0.0264)	0.0358 (0.0261)
L.NBFI*Growth	19.25** (7.874)	11.14 (7.554)	12.92* (7.558)	6.670 (6.819)	-0.292 (2.293)	-3.513 (2.699)	-3.520 (2.788)	-4.141 (2.899)	5.255* (2.811)	1.377 (2.229)	2.047 (2.149)	1.760 (2.216)	4.915 (5.830)	6.465 (6.912)	7.079 (7.180)	7.591 (6.932)
Observations	161	161	161	161	161	161	161	161	161	161	161	161	161	161	161	161
R-squared	0.179	0.340	0.378	0.509	0.252	0.343	0.346	0.359	0.132	0.373	0.427	0.454	0.070	0.110	0.118	0.123
Number of countrycode	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7
VARIABLES	Post-2010	Post-2010	Post-2010	Post-2010	Post-2010	Post-2010	Post-2010	Post-2010	Post-2010	Post-2010	Post-2010	Post-2010	Post-2010	Post-2010	Post-2010	Post-2010
L.NBFI	-0.426 (0.301)	-0.0610 (0.294)	0.202 (0.320)	0.391 (0.240)	0.0455 (0.174)	-0.0625 (0.189)	-0.156 (0.209)	-0.0624 (0.154)	-0.00163 (0.104)	0.137 (0.109)	0.0241 (0.115)	0.0502 (0.113)	-0.101 (0.119)	0.0486 (0.109)	0.193 (0.121)	0.160 (0.111)
L.NBFI*VIX	0.0129 (0.0123)	0.0136 (0.0119)	-0.0353** (0.0163)	-0.0294** (0.0118)	0.0114** (0.00561)	0.0108** (0.00549)	0.0102 (0.00800)	0.0179*** (0.00601)	-0.00127 (0.00349)	-0.00138 (0.00338)	-0.00261 (0.00475)	-0.00139 (0.00474)	-0.00281 (0.00434)	-0.000273 (0.00416)	-0.00417 (0.00632)	-0.00344 (0.00590)
L.NBFI*Growth	-2.615 (2.689)	-2.588 (2.580)	1.237 (3.261)	-1.768 (2.625)	-1.254 (1.326)	-0.903 (1.270)	-0.995 (1.673)	-1.798 (1.289)	-0.513 (0.855)	-0.895 (0.802)	-2.324** (0.933)	-2.401** (0.961)	-2.086** (0.942)	-1.450 (0.896)	-0.911 (1.222)	-0.988 (1.192)
Observations	324	324	266	266	324	324	266	266	324	324	266	266	324	324	266	266
R-squared	0.286	0.396	0.403	0.652	0.106	0.145	0.127	0.473	0.104	0.208	0.244	0.248	0.273	0.391	0.409	0.454
Number of countrycode	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7
VARIABLES	Post-2015	Post-2015	Post-2015	Post-2015	Post-2015	Post-2015	Post-2015	Post-2015	Post-2015	Post-2015	Post-2015	Post-2015	Post-2015	Post-2015	Post-2015	Post-2015
L.NBFI	-0.842** (0.402)	-0.719* (0.420)	-0.982* (0.543)	-0.416 (0.450)	-0.164 (0.281)	-0.174 (0.284)	-0.603 (0.415)	-0.159 (0.340)	0.140 (0.121)	0.213* (0.128)	-0.0796 (0.183)	0.00874 (0.187)	-0.280** (0.133)	-0.364** (0.144)	-0.434** (0.175)	-0.405** (0.188)
L.NBFI*VIX	0.0616*** (0.0146)	0.0588*** (0.0143)	0.0418* (0.0219)	0.0337* (0.0172)	0.0155* (0.00817)	0.0161* (0.00823)	0.0328** (0.0150)	0.0339*** (0.0122)	0.00369 (0.00347)	0.00493 (0.00355)	0.0106 (0.00715)	0.00976 (0.00700)	0.0183*** (0.00352)	0.0193*** (0.00347)	0.0303*** (0.00730)	0.0294*** (0.00728)
L.NBFI*Growth	0.911 (3.593)	2.150 (3.435)	13.63** (5.776)	-0.319 (5.012)	0.173 (2.169)	1.171 (2.074)	9.701* (4.956)	-0.547 (3.889)	0.962 (1.040)	0.942 (1.090)	0.774 (1.962)	-0.275 (2.185)	0.948 (1.077)	1.511 (1.068)	2.659 (1.898)	2.147 (2.175)
Observations	184	184	126	126	184	184	126	126	184	184	126	126	184	184	126	126
R-squared	0.298	0.350	0.380	0.678	0.149	0.199	0.358	0.624	0.144	0.202	0.311	0.337	0.424	0.470	0.586	0.588
Number of countrycode	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7
Country FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Year FE	NO	YES	YES	YES	NO	YES	YES	YES	NO	YES	YES	YES	NO	YES	YES	YES
GFC Controls	NO	NO	YES	YES	NO	NO	YES	YES	NO	NO	YES	YES	NO	NO	YES	YES
Domestic Risk Controls	NO	NO	NO	YES	NO	NO	NO	YES	NO	NO	NO	YES	NO	NO	NO	YES

Table 5 summarizes the main parameters of interest for regressions of total capital flows on push and pull variables for 7 Latin American countries, where we also include the share of foreign NBFI holding of sovereign debt, and interaction terms between this variable and the VIX and domestic growth. The dependent variables are Total Inflows (columns 1-4), Government Inflows (5-8), Corporate Inflows (9-12), and Bank Inflows (13-16). We run these regressions for the whole sample period, and different sub-periods: 2004-2009, 2010-2021, and 2015-2021. In addition to the reported coefficients, for each dependent variable, the first regression includes only the VIX, Domestic Growth and country fixed-effects. The second regression, adds year fixed-effects to the first specification. The third regression also includes additional push variables as detailed in the text. Finally, the fourth regression includes additional pull variables as detailed in the main text. Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

IV.2.b NBFH holdings as a categorical variable

Some of the results discussed so far come from estimations that encompass different episodes. We thus consider three successive sub-periods: a) the “long” global financial crisis, i.e. the 2008-2009 plus the European debt crisis of 2011-2012; b) the “taper tantrum” and its aftermath; c) the 2018 sudden stop and the Covid-19 crisis. In each case, countries are ranked according to foreign NBFH holdings in the quarter immediately before the start of each period. These periods are dated based on identifying peaks and troughs in the series for flows in Figure 3: for instance, period a) starts at the peak of inflows right before the GFC, and finishes at the next peak, and so on for each period.

Table 6 summarizes the regression coefficients for the indicator variable showing that a given country belongs in the group with higher NBFH, as well as the interaction term with both the VIX (push factor) and domestic growth (push factor) in 2007q3-2012q2. We show this for the portfolio debt inflows to the whole economy (columns 1 to 4) and each sector: government columns 5 to 8), private non-banking sector (columns 9 to 12), and banks (columns 13 to 16). Additionally, we show the results for three alternative measures of “high NBFH”: being in the highest NBFH decile, the highest NBFH quintile, and the 30% of the sample with the highest NBFH.

Estimates from 2007q3-2012q2 tend to reveal procyclicality of portfolio debt inflows in countries with the highest foreign NBFH exposure. In countries with the 30%, 20% and 10% highest share of foreign NBFH bond holdings, there is evidence that portfolio inflows are positively linked to domestic growth, over and above the relation of inflows to growth that already exists for a typical country –so higher growth accentuates inflows, lower growth goes together with outflows. This result seems to be mainly driven by flows to governments. In turn, the interaction of high NBFH and the VIX index is negative, once again suggesting that the presence of those investors makes inflows more directly linked to global financial conditions –as the latter worsen, portfolio flows dry out. We find this for the third of countries with high NBFH holdings, especially in flows to governments. But there is also some indication of such interaction in flows to the banking sector in the 10% of countries with the highest foreign NBFH holdings.

Estimates from 2012q3-2017q2 suggest changing links between debt portfolio flows and NBFH: a somewhat lower incidence of “pull factors” and more sensitivity of corporate debt to global financial conditions (table 7). For all sectors, there is some negative interaction of flows and domestic growth when the 30% of countries with highest NBFH is considered. Interestingly enough, we find some evidence of NBFH making flows more linked to global risk aversion in the corporate sector. This squares with findings of corporate debt becoming more important for total EMEs flows, and that as it was held by non-banks it became more sensitive to global financial conditions (Goldberg, 2022). It is also consistent with (anecdotal) evidence on foreign corporate debt in Latin America during the “taper tantrum” episode.

In 2017q3-2021q4, we continue to find higher sensitivity of corporate portfolio flows to global risk aversion in the group of countries with higher foreign NBFH holdings. (table 8) This is in line with the risks posed by foreign corporate debt as outlined above. However, we also find that in those countries, portfolio flows to governments appear less sensitive -a somewhat paradoxical finding given the role of funds in the 2018 and 2020 episodes.

As in the previous section, we also look at total inflow dynamics. 2007-2012 estimates also reveal procyclicality of government inflows -they increase hand in hand with domestic

growth for all groups of countries with higher NBFH holdings (table 9). In one specification, we find a negative interaction of growth and NBFH for inflows to banks, meaning a weaker link to local conditions. In general, no interaction between NBFH and global financial conditions is found here (except for two estimates of corporate inflows and one of total inflows).

In contrast, there are virtually no significant estimates of interactions of NBFH and push or pull factors in 2012-2017 (table 10). Only countries with the 10% highest NBFH holdings show lower sensitivity to domestic growth, in keeping with previous findings on the impact of funds in EMEs. This is consistent with evidence of external loans to non-banks (included in total flows, but not in portfolio debt flows) being less reactive to global financial conditions in the post-GFC period (Avdjiev et al., 2020).

Finally, estimates for total flows in 2018-2021 continue to show that corporate inflows became generally more sensitive to global financial conditions -but the opposite applies to government inflows (table 11). Results are more diverse in terms of domestic cyclicity, as in some specifications for government inflows, corporates and banks, the interaction of local growth with NBFH is positive (suggesting procyclicality), while in others for corporates and banks it is negative (suggesting a weaker role for pull factors).

All in all, our estimates for gross portfolio flows suggest some role for NBFH that corroborates their likely role in increasing procyclicality in 2007-2012, both financial and real: as global conditions tighter, higher NBFH means lower inflows; but as local growth mounts, higher NBFH involve higher inflows. This applies specially to banks. And estimates also suggest the increasing role of corporate as recipients of portfolio flows during the post-GFC period, and how as these relied more on markets this meant a closer link to global financial conditions. The results for total flows are less clear-cut; this is to be expected (as in other sections), since these include lenders other than non-banks (eg: official or multilateral organizations' flows) and instruments such as loans, which other studies find less sensitive to global financial conditions after the GFC.

Table 6
Portfolio debt flows to selected EMES, 2007q3-2012q2

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
	OLS - AR(1)	OLS - AR(1)	OLS - AR(1)	OLS - AR(1)	OLS - AR(1)	OLS - AR(1)	OLS - AR(1)	OLS - AR(1)	OLS - AR(1)	OLS - AR(1)	OLS - AR(1)	OLS - AR(1)	OLS - AR(1)	OLS - AR(1)	OLS - AR(1)	OLS - AR(1)
	Total Inflows				Gov. Inflows				Corporate Inflows				Bank Inflows			
	2007q3-2012q2	2007q3-2012q2	2007q3-2012q2	2007q3-2012q2	2007q3-2012q2	2007q3-2012q2	2007q3-2012q2	2007q3-2012q2	2007q3-2012q2	2007q3-2012q2	2007q3-2012q2	2007q3-2012q2	2007q3-2012q2	2007q3-2012q2	2007q3-2012q2	2007q3-2012q2
L.High NBFI 2007 10%				-0.185** (0.0919)				-0.176* (0.106)	0.0127 (0.0145)	0.00955 (0.0144)	0.0121 (0.0155)	-0.0182 (0.0185)	0.00167 (0.0169)		0.00429 (0.0167)	-0.00453 (0.0174)
L.High NBFI 2007 10%*VIX	-0.000622 (0.00166)	-0.000441 (0.00160)	-0.000498 (0.00158)	-0.000335 (0.00218)	-8.07e-05 (0.00166)	-0.000287 (0.00172)	-0.000635 (0.00161)	-0.00109 (0.00231)	0.000124 (0.000493)	6.12e-05 (0.000483)	6.41e-05 (0.000523)	0.000633 (0.000566)	-0.00102** (0.000418)	-0.00103** (0.000417)	-0.00103** (0.000416)	-0.000702 (0.000463)
L.High NBFI 2007 10%*Growth	0.476 (0.512)	0.711 (0.482)	0.685 (0.470)	1.539** (0.605)	0.787* (0.442)	0.927** (0.437)	0.858** (0.408)	1.470*** (0.436)	-0.0639 (0.105)	-0.0381 (0.121)	-0.0531 (0.119)	0.0622 (0.173)	0.192 (0.127)	0.196 (0.125)	0.195 (0.123)	0.176 (0.134)
Observations	463	463	463	376	425	425	425	338	431	431	431	354	425	425	425	336
R-squared	0.414	0.421	0.424	0.460	0.465	0.470	0.472	0.492	0.197	0.216	0.226	0.275	0.110	0.115	0.123	0.150
Number of countrycode	24	24	24	20	23	23	23	19	23	23	23	19	22	22	22	18
L.High NBFI 2007 20%		-0.0697 (0.0671)		-0.234* (0.120)		-0.0860 (0.0699)	-0.0851 (0.0688)		-0.0151 (0.0126)	-0.00170 (0.0128)		0.0135 (0.0204)		-0.00763 (0.0115)		-0.00910 (0.0160)
L.High NBFI 2007 20%*VIX	7.09e-05 (0.00167)	0.000422 (0.00163)	0.000390 (0.00160)	0.000929 (0.00209)	7.19e-05 (0.00168)	0.000146 (0.00167)	6.68e-05 (0.00163)	-0.000144 (0.00207)	0.000402 (0.000422)	0.000303 (0.000415)	0.000314 (0.000421)	0.000590 (0.000445)	-0.000387 (0.000256)	-0.000409 (0.000258)	-0.000409 (0.000262)	-0.000172 (0.000337)
L.High NBFI 2007 20%*Growth	0.682 (0.518)	0.852* (0.509)	0.840* (0.489)	1.943** (0.772)	0.681 (0.483)	0.763 (0.498)	0.742 (0.470)	1.766** (0.755)	0.0259 (0.104)	0.0527 (0.113)	0.0497 (0.105)	0.161 (0.171)	0.129 (0.0931)	0.138 (0.0948)	0.133 (0.0949)	0.118 (0.124)
Observations	463	463	463	376	425	425	425	338	431	431	431	354	425	425	425	336
R-squared	0.416	0.424	0.427	0.472	0.465	0.471	0.473	0.503	0.197	0.217	0.227	0.279	0.100	0.105	0.112	0.143
Number of countrycode	24	24	24	20	23	23	23	19	23	23	23	19	22	22	22	18
L.High NBFI 2007 30%	-0.0943 (0.0759)			-0.204 (0.154)		-0.0739 (0.0796)	-0.0691 (0.0801)		0.00256 (0.0143)		0.00820 (0.0154)	0.0115 (0.0226)		-0.0446* (0.0242)		-0.0457* (0.0240)
L.High NBFI 2007 30%*VIX	-0.00305** (0.00154)	-0.00276* (0.00154)	-0.00278* (0.00152)	-0.00265 (0.00182)	-0.00320* (0.00178)	-0.00317* (0.00179)	-0.00322* (0.00178)	-0.00420* (0.00220)	0.000266 (0.000451)	0.000193 (0.000451)	0.000231 (0.000446)	0.000565 (0.000514)	-0.000294 (0.000338)	-0.000307 (0.000336)	-0.000309 (0.000343)	-0.000205 (0.000378)
L.High NBFI 2007 30%*Growth	0.626 (0.554)	0.680 (0.563)	0.648 (0.558)	2.516** (0.979)	0.604 (0.553)	0.585 (0.574)	0.584 (0.561)	2.243** (0.923)	0.0694 (0.120)	0.0678 (0.118)	0.0592 (0.108)	0.184 (0.185)	0.0855 (0.0794)	0.0888 (0.0793)	0.0849 (0.0814)	0.115 (0.141)
Observations	463	463	463	376	425	425	425	338	431	431	431	354	425	425	425	336
R-squared	0.419	0.426	0.429	0.494	0.467	0.472	0.475	0.524	0.198	0.217	0.227	0.280	0.111	0.117	0.123	0.161
Number of countrycode	24	24	24	20	23	23	23	19	23	23	23	19	22	22	22	18
L.High NBFI 2007 40%	-0.124 (0.0767)	-0.126* (0.0752)	0.0206 (0.0652)	-0.231 (0.162)	0.0165 (0.0677)	-0.103 (0.0790)		-0.246 (0.170)	-0.0179 (0.0144)	-0.00415 (0.0139)		0.00549 (0.0242)		-0.0481** (0.0242)		-0.0490** (0.0240)
L.High NBFI 2007 40%*VIX	-0.00212 (0.00168)	-0.00183 (0.00172)	-0.00180 (0.00168)	-0.00217 (0.00211)	-0.00241 (0.00186)	-0.00232 (0.00189)	-0.00230 (0.00187)	-0.00377 (0.00233)	0.000457 (0.000463)	0.000395 (0.000462)	0.000434 (0.000457)	0.000817 (0.000578)	-0.000154 (0.000294)	-0.000152 (0.000294)	-0.000157 (0.000297)	-8.51e-05 (0.000348)
L.High NBFI 2007 40%*Growth	0.574 (0.566)	0.617 (0.580)	0.594 (0.578)	2.593** (1.064)	0.502 (0.566)	0.473 (0.598)	0.495 (0.584)	2.345** (1.019)	0.0575 (0.119)	0.0629 (0.118)	0.0568 (0.108)	0.180 (0.187)	0.0996 (0.0788)	0.0995 (0.0784)	0.0957 (0.0804)	0.126 (0.141)
Observations	463	463	463	376	425	425	425	338	431	431	431	354	425	425	425	336
R-squared	0.417	0.423	0.426	0.491	0.465	0.469	0.472	0.522	0.199	0.218	0.228	0.283	0.112	0.117	0.122	0.160
Number of countrycode	24	24	24	20	23	23	23	19	23	23	23	19	22	22	22	18
Country FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Year FE	NO	YES	YES	YES	NO	YES	YES	YES	NO	YES	YES	YES	NO	YES	YES	YES
GFC Controls	NO	NO	YES	YES	NO	NO	YES	YES	NO	NO	YES	YES	NO	NO	YES	YES
Domestic Risk Controls	NO	NO	NO	YES	NO	NO	NO	YES	NO	NO	NO	YES	NO	NO	NO	YES

Table 6 summarizes the main parameters of interest for regressions of portfolio debt capital flows on push and pull variables over the 2007q3-2012q2 period, where we also include a dummy to identify countries in the High-NBFI group, and interaction terms between this dummy and the VIX and domestic growth. The dependent variables are Total Portfolio Debt Inflows (columns 1-4), Government Portfolio Debt Inflows (5-8), Corporate Portfolio Debt Inflows (9-12), and Bank Portfolio Debt Inflows (13-16). We use four alternative measures for identifying the High-NBFI group, including the top 10, 20, 30% or 40% of foreign nonbank holdings of sovereign debt. In addition to the reported coefficients, for each dependent variable, the first regression includes only the VIX, Domestic Growth and country fixed-effects. The second regression, adds year fixed-effects to the first specification. The third regression also includes additional push variables as detailed in the text. Finally, the fourth regression includes additional pull variables as detailed in the main text. Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table 7
Portfolio debt flows to selected EMEs, 2012q3-2017q2

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
	Total Inflows				Gov. Inflows				Corporate Inflows				Bank Inflows			
	OLS - AR(1)	OLS - AR(1)	OLS - AR(1)	OLS - AR(1)	OLS - AR(1)	OLS - AR(1)	OLS - AR(1)	OLS - AR(1)								
	2012q3-2017q3	2012q3-2017q3	2012q3-2017q3	2012q3-2017q3	2012q3-2017q3	2012q3-2017q3	2012q3-2017q3	2012q3-2017q3								
L.High NBF1 2012 10%			0.00729 (0.223)		0.123 (0.227)		0.136 (0.226)	0.0846 (0.205)	-0.0173 (0.0317)		-0.0189 (0.0318)					-0.0605** (0.0250)
L.High NBF1 2012 10%*VIX	0.00102 (0.0142)	0.00108 (0.0134)	0.000966 (0.0135)	0.00405 (0.0123)	-0.00112 (0.0142)	-0.00105 (0.0142)	-0.00108 (0.0142)	0.00271 (0.0129)	0.00213 (0.00168)	0.00197 (0.00166)	0.00182 (0.00159)	0.00160 (0.00153)	0.00221 (0.00146)	0.00243 (0.00154)	0.00244 (0.00154)	0.00267* (0.00157)
L.High NBF1 2012 10%*Growth	-2.368 (4.542)	-3.521 (4.337)	-3.500 (4.363)	-1.929 (4.122)	-1.460 (4.365)	-2.283 (4.252)	-2.292 (4.262)	-1.543 (4.008)	-0.798 (0.502)	-0.727 (0.458)	-0.694 (0.442)	-0.322 (0.456)	-0.133 (0.393)	-0.106 (0.434)	-0.107 (0.435)	0.0422 (0.442)
Observations	480	480	480	396	440	440	440	356	460	460	460	376	440	440	440	356
R-squared	0.123	0.171	0.171	0.301	0.094	0.128	0.128	0.299	0.169	0.204	0.208	0.250	0.133	0.177	0.177	0.233
Number of countrycode	24	24	24	21	22	22	22	19	23	23	23	20	22	22	22	19
L.High NBF1 2012 20%	-0.0754 (0.138)	-0.0418 (0.135)	-0.0405 (0.136)		-0.128 (0.135)					0.0193 (0.0224)	0.0202 (0.0229)	0.0532* (0.0299)		-0.0550*** (0.0165)	-0.0552*** (0.0165)	-0.0521*** (0.0148)
L.High NBF1 2012 20%*VIX	0.00475 (0.00825)	0.00415 (0.00822)	0.00407 (0.00824)	0.00548 (0.00726)	0.00594 (0.00811)	0.00572 (0.00827)	0.00570 (0.00827)	0.00701 (0.00757)	-0.00159 (0.00130)	-0.00165 (0.00125)	-0.00156 (0.00128)	-0.00155 (0.00133)	0.000601 (0.000497)	0.000626 (0.000512)	0.000631 (0.000513)	0.000860 (0.000632)
L.High NBF1 2012 20%*Growth	2.505 (1.736)	1.270 (1.761)	1.240 (1.774)	0.500 (1.591)	2.860 (2.037)	2.097 (2.070)	2.087 (2.088)	0.903 (1.891)	-0.0979 (0.355)	-0.228 (0.361)	-0.305 (0.358)	-0.255 (0.355)	0.289** (0.140)	0.194 (0.148)	0.195 (0.149)	0.273 (0.167)
Observations	480	480	480	396	440	440	440	356	460	460	460	376	440	440	440	356
R-squared	0.115	0.151	0.151	0.291	0.096	0.124	0.124	0.294	0.164	0.200	0.205	0.251	0.132	0.172	0.172	0.231
Number of countrycode	24	24	24	21	22	22	22	19	23	23	23	20	22	22	22	19
L.High NBF1 2012 30%	-0.131 (0.106)	-0.132 (0.101)	-0.129 (0.101)		-0.0855 (0.101)			0.0181 (0.0917)		0.0157 (0.0149)	0.0165 (0.0138)	0.0521** (0.0236)	-0.0360** (0.0143)			-0.0467*** (0.0156)
L.High NBF1 2012 30%*VIX	0.00190 (0.00569)	0.00157 (0.00546)	0.00145 (0.00549)	0.00358 (0.00507)	0.00407 (0.00612)	0.00358 (0.00609)	0.00356 (0.00609)	0.00613 (0.00549)	-0.00118* (0.000713)	-0.00124* (0.000711)	-0.00119* (0.000713)	-0.00127 (0.000867)	0.000375 (0.000595)	0.000450 (0.000594)	0.000454 (0.000596)	0.000761 (0.000732)
L.High NBF1 2012 30%*Growth	-0.675 (1.121)	-0.883 (1.007)	-0.939 (1.018)	-1.579* (0.859)	-0.563 (1.107)	-0.815 (1.082)	-0.827 (1.088)	-1.968** (1.004)	-0.363* (0.218)	-0.303 (0.235)	-0.355 (0.226)	-0.288 (0.223)	0.0359 (0.126)	0.0857 (0.122)	0.0866 (0.123)	0.158 (0.128)
Observations	480	480	480	396	440	440	440	356	460	460	460	376	440	440	440	356
R-squared	0.114	0.162	0.163	0.312	0.089	0.123	0.123	0.308	0.168	0.201	0.206	0.251	0.125	0.170	0.171	0.232
Number of countrycode	24	24	24	21	22	22	22	19	23	23	23	20	22	22	22	19
L.High NBF1 2012 40%		-0.0301 (0.124)	-0.0225 (0.123)	0.0525 (0.0962)	-0.0911 (0.135)	-0.0670 (0.121)	-0.0652 (0.122)	-0.189 (0.406)		-0.0190 (0.0270)	-0.297** (0.121)	-0.501*** (0.124)		0.0484*** (0.0166)	0.0320 (0.0665)	0.0594 (0.0794)
L.High NBF1 2012 40%*VIX	0.00303 (0.00536)	0.00260 (0.00514)	0.00249 (0.00516)	0.00441 (0.00483)	0.00361 (0.00558)	0.00334 (0.00554)	0.00330 (0.00554)	0.00590 (0.00521)	0.000721 (0.00143)	0.000687 (0.00142)	0.000764 (0.00143)	0.000777 (0.00146)	-0.000596 (0.000731)	-0.000571 (0.000727)	-0.000574 (0.000728)	-0.000305 (0.000868)
L.High NBF1 2012 40%*Growth	0.428 (0.912)	0.150 (0.821)	0.0863 (0.827)	-0.467 (0.752)	0.195 (0.881)	0.0571 (0.845)	0.0375 (0.852)	-1.155 (0.800)	0.271 (0.243)	0.243 (0.241)	0.199 (0.239)	0.372 (0.244)	-0.0689 (0.111)	-0.0640 (0.109)	-0.0668 (0.110)	0.0395 (0.111)
Observations	480	480	480	396	440	440	440	356	460	460	460	376	440	440	440	356
R-squared	0.112	0.153	0.153	0.294	0.087	0.120	0.120	0.297	0.165	0.198	0.202	0.256	0.126	0.168	0.168	0.220
Number of countrycode	24	24	24	21	22	22	22	19	23	23	23	20	22	22	22	19
Country FE	YES	YES	YES	YES	YES	YES	YES	YES								
Year FE	NO	YES	YES	YES	NO	YES	YES	YES	NO	YES	YES	YES	NO	YES	YES	YES
GFC Controls	NO	NO	YES	YES	NO	NO	YES	YES	NO	NO	YES	YES	NO	NO	YES	YES
Domestic Risk Controls	NO	NO	NO	YES	NO	NO	NO	YES	NO	NO	NO	YES	NO	NO	NO	YES

Table 7 summarizes the main parameters of interest for regressions of portfolio debt capital flows on push and pull variables over the 2010-2021 period, where we also include a dummy to identify countries in the High-NBFI group, and interaction terms between this dummy and the VIX and domestic growth. The dependent variables are Total Portfolio Debt Inflows (columns 1-4), Government Portfolio Debt Inflows (5-8), Corporate Portfolio Debt Inflows (9-12), and Bank Portfolio Debt Inflows (13-16). We use three alternative measures for identifying the High-NBFI group, including the top 10, 20 or 30% of foreign nonbank holdings of sovereign debt. In addition to the reported coefficients, for each dependent variable, the first regression includes only the VIX, Domestic Growth and country fixed-effects. The second regression, adds year fixed-effects to the first specification. The third regression also includes additional push variables as detailed in the text. Finally, the fourth regression includes additional pull variables as detailed in the main text. Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table 8
Portfolio Debt Gross Inflows to selected EMEs, Post-2017

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
	OLS - AR(1)	OLS - AR(1)	OLS - AR(1)	OLS - AR(1)	OLS - AR(1)	OLS - AR(1)	OLS - AR(1)	OLS - AR(1)	OLS - AR(1)	OLS - AR(1)	OLS - AR(1)	OLS - AR(1)	OLS - AR(1)	OLS - AR(1)	OLS - AR(1)	OLS - AR(1)
	Total Inflows				Gov. Inflows				Corporate Inflows				Bank Inflows			
	Post-2017q3	Post-2017q3	Post-2017q3	Post-2017q3	Post-2017q3	Post-2017q3	Post-2017q3	Post-2017q3	Post-2017q3	Post-2017q3	Post-2017q3	Post-2017q3	Post-2017q3	Post-2017q3	Post-2017q3	Post-2017q3
L.High NBFI 2017 10%	0.131 (0.0882)	0.134 (0.0879)	-0.0911 (0.0916)	-0.271** (0.114)	0.0980 (0.0885)			-0.208* (0.114)		0.0102 (0.00875)				0.0127* (0.00706)	0.00839 (0.0143)	-0.0205 (0.0180)
L.High NBFI 2017 10%*VIX	-0.000335 (0.00352)	-0.000540 (0.00351)	0.00987* (0.00507)	0.00783* (0.00428)	-0.000304 (0.00357)	-0.000459 (0.00356)	0.00912* (0.00496)	0.00873** (0.00409)	-0.000299 (0.000318)	-0.000233 (0.000306)	-0.000151 (0.000839)	-0.000454 (0.000918)	-0.000229 (0.000279)	-0.000222 (0.000256)	-0.000287 (0.000619)	-0.000507 (0.000673)
L.High NBFI 2017 10%*Growth	-0.576 (1.037)	-0.770 (1.025)	6.819* (3.779)	3.267 (2.546)	-0.542 (1.042)	-0.774 (1.039)	7.115* (3.824)	2.704 (2.539)	-0.0367 (0.0596)	-0.0159 (0.0667)	-0.263 (0.256)	0.146 (0.328)	-0.0594 (0.0656)	-0.0705 (0.0599)	-0.0566 (0.182)	0.212 (0.231)
Observations	394	394	192	160	379	379	184	152	380	380	184	152	361	361	176	144
R-squared	0.128	0.159	0.286	0.556	0.137	0.160	0.271	0.545	0.211	0.230	0.358	0.365	0.110	0.128	0.362	0.400
Number of countrycode	24	24	24	20	23	23	23	19	23	23	23	19	22	22	22	18
L.High NBFI 2017 20%										0.0416*** (0.0121)	0.0459** (0.0210)			0.00588 (0.00650)		
L.High NBFI 2017 20%*VIX	-0.00263 (0.00191)	-0.00267 (0.00189)	0.00604 (0.00406)	0.00575* (0.00336)	-0.00191 (0.00180)	-0.00180 (0.00178)	0.00640* (0.00334)	0.00748*** (0.00245)	-0.00109*** (0.000272)	-0.00108*** (0.000266)	-0.000377 (0.000731)	-0.000672 (0.000760)	0.000155 (0.000108)	0.000169 (0.000111)	0.000337 (0.000243)	0.000348 (0.000257)
L.High NBFI 2017 20%*Growth	-0.415 (0.285)	-0.413 (0.277)	3.515 (2.785)	1.919 (1.944)	-0.284 (0.248)	-0.281 (0.250)	4.685* (2.746)	2.638 (1.804)	-0.132** (0.0552)	-0.131** (0.0536)	-0.942** (0.443)	-0.627 (0.438)	-0.00926 (0.0217)	-0.00673 (0.0223)	-0.00393 (0.137)	0.0688 (0.161)
Observations	394	394	192	160	379	379	184	152	380	380	184	152	361	361	176	144
R-squared	0.133	0.165	0.275	0.543	0.140	0.164	0.271	0.549	0.225	0.244	0.364	0.374	0.112	0.130	0.360	0.397
Number of countrycode	24	24	24	20	23	23	23	19	23	23	23	19	22	22	22	18
L.High NBFI 2017 30%	0.0591 (0.0438)	0.00768 (0.0365)	-0.0732 (0.104)	-0.248* (0.130)	0.0469 (0.0439)	0.0433 (0.0434)			0.00714 (0.0135)	-0.00137 (0.00833)					-0.0126 (0.0105)	-0.0332** (0.0164)
L.High NBFI 2017 30%*VIX	0.00185 (0.00123)	0.00180 (0.00123)	0.00437 (0.00292)	0.00354 (0.00347)	0.00120 (0.00119)	0.00112 (0.00118)	0.00543** (0.00260)	0.00663** (0.00298)	0.000439 (0.000295)	0.000384 (0.000295)	-0.000533 (0.000790)	-0.000968 (0.000811)	0.000123 (9.57e-05)	0.000137 (9.96e-05)	0.000225 (0.000213)	0.000128 (0.000317)
L.High NBFI 2017 30%*Growth	-0.168 (0.219)	-0.161 (0.214)	4.058 (2.899)	2.465 (2.336)	-0.178 (0.194)	-0.161 (0.191)	4.519* (2.641)	2.522 (2.191)	-0.00114 (0.0610)	-0.00771 (0.0597)	-1.008** (0.498)	-0.790 (0.520)	-0.0118 (0.0247)	-0.0103 (0.0257)	-0.0208 (0.148)	0.0339 (0.175)
Observations	394	394	192	160	379	379	184	152	380	380	184	152	361	361	176	144
R-squared	0.125	0.156	0.271	0.528	0.134	0.157	0.284	0.528	0.216	0.237	0.439	0.456	0.112	0.130	0.361	0.401
Number of countrycode	24	24	24	20	23	23	23	19	23	23	23	19	22	22	22	18
L.High NBFI 2017 40%	-0.0430 (0.0392)	-0.195* (0.101)	0.0980 (0.352)	-0.234** (0.0944)	0.0205 (0.0348)	-0.123 (0.105)	-0.115 (0.0969)	0.587* (0.336)	-0.0137 (0.0136)	-0.00507 (0.00932)	-0.00854 (0.0162)	0.0181 (0.0160)	-0.00505 (0.00601)	-0.00673 (0.00641)	0.0128 (0.0157)	-0.000302 (0.0123)
L.High NBFI 2017 40%*VIX	-0.000120 (0.00118)	-0.000216 (0.00118)	0.00393** (0.00184)	0.00474* (0.00273)	-0.000708 (0.00106)	-0.000747 (0.00105)	0.00380** (0.00157)	0.00528** (0.00229)	0.000275 (0.000264)	0.000198 (0.000267)	-0.000228 (0.000623)	-0.000921 (0.000593)	8.40e-05 (0.000137)	0.000100 (0.000142)	0.000514** (0.000242)	0.000694** (0.000284)
L.High NBFI 2017 40%*Growth	-0.0606 (0.253)	-0.0254 (0.249)	3.341** (1.552)	0.463 (1.494)	-0.0370 (0.210)	0.0324 (0.212)	3.391** (1.443)	0.870 (1.398)	-0.00368 (0.0600)	-0.0224 (0.0608)	0.122 (0.233)	0.113 (0.305)	-0.0453* (0.0260)	-0.0433 (0.0281)	-0.000231 (0.120)	-0.390** (0.159)
Observations	394	394	192	160	379	379	184	152	380	380	184	152	361	361	176	144
R-squared	0.125	0.156	0.327	0.538	0.135	0.160	0.334	0.519	0.211	0.231	0.353	0.373	0.117	0.135	0.368	0.431
Number of countrycode	24	24	24	20	23	23	23	19	23	23	23	19	22	22	22	18
Country FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Year FE	NO	YES	YES	YES	NO	YES	YES	YES	NO	YES	YES	YES	NO	YES	YES	YES
GFC Controls	NO	NO	YES	YES	NO	NO	YES	YES	NO	NO	YES	YES	NO	NO	YES	YES
Domestic Risk Controls	NO	NO	NO	YES	NO	NO	NO	YES	NO	NO	NO	YES	NO	NO	NO	YES

Table 8 summarizes the main parameters of interest for regressions of total capital flows on push and pull variables over the 2010-2021 period, where we also include a dummy to identify countries in the High-NBFI group, and interaction terms between this dummy and the VIX and domestic growth. The dependent variables are Total Inflows (columns 1-4), Government inflows (5-8), Corporate Inflows (9-12), and Bank Inflows (13-16). We use three alternative measures for identifying the High-NBFI group, including the top 10, 20 or 30% of foreign nonbank holdings of sovereign debt. In addition to the reported coefficients, for each dependent variable, the first regression includes only the VIX, Domestic Growth and country fixed-effects. The second regression, adds year fixed-effects to the first specification. The third regression also includes additional push variables as detailed in the text. Finally, the fourth regression includes additional pull variables as detailed in the main text. Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table 9
Total inflows to selected EMEs, 2007q3-2012q2

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	
	OLS - AR(1)	OLS - AR(1)	OLS - AR(1)	OLS - AR(1)	OLS - AR(1)	OLS - AR(1)	OLS - AR(1)	OLS - AR(1)	OLS - AR(1)	OLS - AR(1)	OLS - AR(1)	OLS - AR(1)					
	Total Inflows				Gov. Inflows				Corporate Inflows				Bank Inflows				
	2007q3-2012q2	2007q3-2012q2	2007q3-2012q2	2007q3-2012q2	2007q3-2012q2	2007q3-2012q2	2007q3-2012q2	2007q3-2012q2	2007q3-2012q2	2007q3-2012q2	2007q3-2012q2	2007q3-2012q2	2007q3-2012q2	2007q3-2012q2	2007q3-2012q2	2007q3-2012q2	
L.High NBFI 2007 10%	0.356*** (0.135)				-0.162 (0.119)			-0.786** (0.375)			-0.0150 (0.0867)		0.184* (0.0985)	0.148 (0.0917)		-0.196** (0.0841)	
L.High NBFI 2007 10%*VIX	0.00315 (0.00389)	0.00251 (0.00378)	0.00211 (0.00383)	0.00416 (0.00405)	0.00446** (0.00214)	0.00346 (0.00231)	0.00328 (0.00224)	0.00333 (0.00245)	-0.00204 (0.00247)	-0.00189 (0.00260)	-0.00206 (0.00244)	0.00214 (0.00281)	-0.00268 (0.00210)	-0.00221 (0.00209)	-0.00219 (0.00209)	0.000813 (0.00275)	
L.High NBFI 2007 10%*Growth	1.590 (1.066)	1.359 (1.008)	1.313 (1.001)	1.750** (0.799)	1.923* (1.081)	3.314** (1.439)	3.447** (1.488)	3.742** (1.545)	0.150 (0.505)	0.0361 (0.529)	0.00430 (0.529)	0.322 (0.528)	1.035 (0.689)	0.818 (0.612)	0.759 (0.625)	0.594 (0.478)	
Observations	465	465	465	376	278	278	278	211	409	409	409	332	380	380	380	311	
R-squared	0.306	0.351	0.354	0.483	0.579	0.589	0.588	0.586	0.220	0.232	0.251	0.450	0.528	0.559	0.559	0.653	
Number of countrycode	24	24	24	20	14	14	14	11	22	22	22	18	19	19	19	16	
L.High NBFI 2007 20%	0.358*** (0.128)	-0.115 (0.102)		-0.233* (0.131)			-0.0445 (0.0781)		-0.0458 (0.0683)	-0.0595 (0.0722)	-0.000647 (0.0654)	-0.135* (0.0705)		0.0529 (0.0778)	0.0567 (0.0756)	0.0746 (0.111)	
L.High NBFI 2007 20%*VIX	0.00371 (0.00319)	0.00304 (0.00301)	0.00269 (0.00306)	0.00308 (0.00294)	0.00215 (0.00224)	0.00200 (0.00230)	0.00194 (0.00228)	0.00157 (0.00300)	-0.000121 (0.00181)	7.91e-05 (0.00182)	-0.000102 (0.00179)	0.00222 (0.00168)	0.00106 (0.00202)	0.000855 (0.00204)	0.000840 (0.00203)	0.00209 (0.00209)	
L.High NBFI 2007 20%*Growth	0.362 (0.786)	0.391 (0.789)	0.331 (0.815)	0.580 (0.782)	1.179** (0.539)	1.314** (0.578)	1.339** (0.579)	2.370* (1.220)	0.0537 (0.420)	-0.0295 (0.423)	-0.0686 (0.432)	0.162 (0.461)	-0.172 (0.533)	-0.206 (0.539)	-0.311 (0.549)	-0.610 (0.489)	
Observations	465	465	465	376	278	278	278	211	409	409	409	332	380	380	380	311	
R-squared	0.312	0.355	0.358	0.460	0.584	0.594	0.594	0.602	0.211	0.224	0.243	0.449	0.537	0.566	0.567	0.649	
Number of countrycode	24	24	24	20	14	14	14	11	22	22	22	18	19	19	19	16	
L.High NBFI 2007 30%				-0.176 (0.135)			-0.184 (0.116)						0.106 (0.0835)			0.153 (0.111)	
L.High NBFI 2007 30%*VIX	0.00168 (0.00343)	0.00210 (0.00330)	0.00193 (0.00334)	0.00175 (0.00280)	-0.000890 (0.00292)	-0.00106 (0.00292)	-0.00100 (0.00289)	-0.00259 (0.00340)	0.000990 (0.00155)	0.00131 (0.00153)	0.00115 (0.00154)	0.00241* (0.00132)	-0.000529 (0.00225)	-0.000783 (0.00227)	-0.000722 (0.00229)	0.000371 (0.00183)	
L.High NBFI 2007 30%*Growth	-0.0964 (0.784)	0.0183 (0.769)	-0.0922 (0.797)	0.339 (0.855)	1.100* (0.648)	1.251* (0.658)	1.312** (0.650)	3.630** (1.683)	-0.276 (0.396)	-0.296 (0.387)	-0.364 (0.402)	-0.0424 (0.458)	-0.433 (0.577)	-0.433 (0.603)	-0.557 (0.610)	-1.119** (0.570)	
Observations	465	465	465	376	278	278	278	211	409	409	409	332	380	380	380	311	
R-squared	0.298	0.347	0.351	0.461	0.597	0.607	0.608	0.651	0.211	0.225	0.245	0.448	0.527	0.560	0.560	0.651	
Number of countrycode	24	24	24	20	14	14	14	11	22	22	22	18	19	19	19	16	
L.High NBFI 2007 40%	0.0625 (0.226)	0.0666 (0.198)	0.0250 (0.103)	-0.0880 (0.111)				-0.557 (0.358)			-0.101 (0.0690)		-0.0298 (0.0782)		0.0543 (0.0847)	0.0560 (0.0832)	0.122 (0.114)
L.High NBFI 2007 40%*VIX	0.00337 (0.00348)	0.00346 (0.00333)	0.00331 (0.00337)	0.00217 (0.00275)	-0.00115 (0.00312)	-0.00127 (0.00315)	-0.00122 (0.00312)	-0.00359 (0.00385)	0.00174 (0.00163)	0.00204 (0.00163)	0.00187 (0.00163)	0.00279** (0.00129)	0.00194 (0.00226)	0.00166 (0.00233)	0.00168 (0.00234)	0.00225 (0.00176)	
L.High NBFI 2007 40%*Growth	-0.0899 (0.787)	0.0672 (0.782)	-0.0407 (0.815)	0.367 (0.888)	1.021 (0.651)	1.184* (0.664)	1.261* (0.659)	3.789** (1.778)	-0.247 (0.401)	-0.251 (0.399)	-0.310 (0.415)	-0.000624 (0.475)	-0.433 (0.579)	-0.489 (0.612)	-0.573 (0.618)	-1.186** (0.575)	
Observations	465	465	465	376	278	278	278	211	409	409	409	332	380	380	380	311	
R-squared	0.303	0.351	0.354	0.462	0.594	0.604	0.606	0.650	0.212	0.227	0.246	0.450	0.530	0.561	0.562	0.655	
Number of countrycode	24	24	24	20	14	14	14	11	22	22	22	18	19	19	19	16	
Country FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	
Year FE	NO	YES	YES	YES	NO	YES	YES	YES	NO	YES	YES	YES	NO	YES	YES	YES	
GFC Controls	NO	NO	YES	YES	NO	NO	YES	YES	NO	NO	YES	YES	NO	NO	YES	YES	
Domestic Risk Controls	NO	NO	NO	YES	NO	NO	NO	YES	NO	NO	NO	YES	NO	NO	NO	YES	

Table 9 summarizes the main parameters of interest for regressions of total capital flows on push and pull variables over the 2004-2009 period, where we also include a dummy to identify countries in the High-NBFI group, and interaction terms between this dummy and the VIX and domestic growth. The dependent variables are Total Inflows (columns 1-4), Government Inflows (5-8), Corporate Inflows (9-12), and Bank Inflows (13-16). We use three alternative measures for identifying the High-NBFI group, including the top 10, 20 or 30% of foreign nonbank holdings of sovereign debt. In addition to the reported coefficients, for each dependent variable, the first regression includes only the VIX, Domestic Growth and country fixed-effects. The second regression, adds year fixed-effects to the first specification. The third regression also includes additional push variables as detailed in the text. Finally, the fourth regression includes additional pull variables as detailed in the main text. Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table 10
Total Capital Flows to selected EMEs, 2012q3-2017q2

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
	OLS - AR(1)	OLS - AR(1)	OLS - AR(1)	OLS - AR(1)	OLS - AR(1)	OLS - AR(1)	OLS - AR(1)	OLS - AR(1)								
	Total Inflows				Gov. Inflows				Corporate Inflows				Bank Inflows			
	2012q3-2017q3	2012q3-2017q3	2012q3-2017q3	2012q3-2017q3	2012q3-2017q3	2012q3-2017q3	2012q3-2017q3	2012q3-2017q3								
L.High NBFI 2012 10%						0.0432 (0.559)		-0.176 (0.540)	0.0765 (0.0993)		0.0559 (0.100)		-0.0794 (0.383)	-0.0237 (0.378)		-0.137 (0.369)
L.High NBFI 2012 10%*VIX	0.0175 (0.0176)	0.0182 (0.0177)	0.0178 (0.0176)	0.0170 (0.0191)	-0.00164 (0.0276)	-0.00208 (0.0271)	-0.00214 (0.0271)	0.00626 (0.0253)	-0.000528 (0.00577)	0.000143 (0.00599)	0.000305 (0.00588)	-0.000810 (0.00610)	-0.00145 (0.0185)	-0.00162 (0.0183)	-0.00147 (0.0184)	0.00112 (0.0178)
L.High NBFI 2012 10%*Growth	-14.72*** (5.462)	-15.53*** (5.416)	-15.32*** (5.396)	-15.16*** (5.821)	-1.358 (7.027)	-2.470 (6.742)	-2.539 (6.754)	1.014 (6.316)	-2.881* (1.639)	-2.909* (1.704)	-2.839* (1.645)	-1.351 (1.715)	-0.279 (4.483)	-2.037 (4.484)	-2.038 (4.507)	-0.396 (4.338)
Observations	480	480	480	396	280	280	280	206	440	440	440	356	380	380	380	306
R-squared	0.236	0.242	0.252	0.403	0.104	0.147	0.147	0.365	0.153	0.180	0.205	0.289	0.372	0.414	0.415	0.510
Number of countrycode	24	24	24	21	14	14	14	11	22	22	22	19	19	19	19	16
L.High NBFI 2012 20%	-0.314* (0.187)	-0.302 (0.185)	-0.296 (0.185)			-0.256 (0.171)		-0.189 (0.188)		0.0561 (0.0699)	0.0550 (0.0678)	0.121* (0.0661)	-0.293** (0.131)		-0.299** (0.132)	-0.333** (0.131)
L.High NBFI 2012 20%*VIX	0.0188* (0.0105)	0.0185* (0.0104)	0.0180* (0.0104)	0.0158 (0.0103)	0.0111 (0.00937)	0.0110 (0.00948)	0.0110 (0.00946)	0.0103 (0.00888)	-0.00389 (0.00355)	-0.00350 (0.00346)	-0.00361 (0.00332)	-0.00458 (0.00334)	0.00710 (0.00767)	0.00753 (0.00782)	0.00788 (0.00777)	0.00826 (0.00751)
L.High NBFI 2012 20%*Growth	-0.133 (2.565)	-0.897 (2.590)	-0.952 (2.600)	-3.022 (2.754)	2.500 (2.115)	1.582 (2.166)	1.620 (2.186)	0.793 (1.914)	-0.564 (0.940)	-0.852 (0.893)	-0.814 (0.858)	-0.657 (0.828)	0.696 (1.216)	0.0870 (1.365)	0.170 (1.331)	0.753 (1.326)
Observations	480	480	480	396	280	280	280	206	440	440	440	356	380	380	380	306
R-squared	0.191	0.196	0.209	0.337	0.109	0.150	0.150	0.372	0.142	0.172	0.197	0.288	0.371	0.408	0.409	0.504
Number of countrycode	24	24	24	21	14	14	14	11	22	22	22	19	19	19	19	16
L.High NBFI 2012 30%		-0.241 (0.149)	-0.231 (0.147)					-0.135 (0.128)		0.0270 (0.0607)	0.0212 (0.0596)	0.0905 (0.0583)			-0.438*** (0.108)	-0.463*** (0.109)
L.High NBFI 2012 30%*VIX	0.0115 (0.00807)	0.0117 (0.00810)	0.0112 (0.00804)	0.00807 (0.00827)	0.00532 (0.00724)	0.00563 (0.00712)	0.00568 (0.00710)	0.00520 (0.00657)	-0.00290 (0.00278)	-0.00266 (0.00276)	-0.00242 (0.00269)	-0.00407 (0.00286)	0.00135 (0.00617)	0.00174 (0.00622)	0.00189 (0.00621)	0.00184 (0.00622)
L.High NBFI 2012 30%*Growth	0.385 (1.715)	0.453 (1.694)	0.267 (1.699)	-0.656 (1.634)	0.316 (1.233)	0.135 (1.301)	0.137 (1.318)	-1.221 (1.190)	-0.473 (0.603)	-0.321 (0.611)	-0.309 (0.593)	-0.162 (0.550)	0.902 (0.895)	0.717 (0.973)	0.786 (0.956)	1.142 (0.931)
Observations	480	480	480	396	280	280	280	206	440	440	440	356	380	380	380	306
R-squared	0.169	0.177	0.191	0.302	0.091	0.139	0.139	0.366	0.142	0.171	0.195	0.287	0.371	0.404	0.405	0.506
Number of countrycode	24	24	24	21	14	14	14	11	22	22	22	19	19	19	19	16
L.High NBFI 2012 40%	0.0207 (0.130)	0.0232 (0.128)	0.0422 (0.127)	0.183 (0.125)		-0.183 (0.120)			-0.0195 (0.0466)		-0.00967 (0.0482)	0.124** (0.0602)		0.105 (0.0803)	0.420 (0.352)	0.103 (0.0820)
L.High NBFI 2012 40%*VIX	0.00737 (0.00645)	0.00759 (0.00642)	0.00732 (0.00638)	0.00365 (0.00677)	0.00753 (0.00696)	0.00832 (0.00672)	0.00834 (0.00671)	0.00621 (0.00617)	-0.000115 (0.00237)	-0.000260 (0.00247)	-5.02e-06 (0.00247)	-0.00216 (0.00277)	-0.00336 (0.00427)	-0.00346 (0.00432)	-0.00337 (0.00433)	-0.00409 (0.00441)
L.High NBFI 2012 40%*Growth	1.351 (1.277)	1.421 (1.246)	1.201 (1.248)	0.776 (1.191)	0.831 (1.157)	0.615 (1.188)	0.636 (1.210)	-0.645 (1.113)	0.424 (0.529)	0.343 (0.547)	0.247 (0.523)	0.509 (0.467)	0.0623 (0.664)	-0.106 (0.699)	-0.0307 (0.695)	0.445 (0.697)
Observations	480	480	480	396	280	280	280	206	440	440	440	356	380	380	380	306
R-squared	0.178	0.184	0.197	0.307	0.095	0.143	0.143	0.363	0.139	0.169	0.194	0.287	0.339	0.372	0.374	0.465
Number of countrycode	24	24	24	21	14	14	14	11	22	22	22	19	19	19	19	16
Country FE	YES	YES	YES	YES	YES	YES	YES	YES								
Year FE	NO	YES	YES	YES	NO	YES	YES	YES	NO	YES	YES	YES	NO	YES	YES	YES
GFC Controls	NO	NO	YES	YES	NO	NO	YES	YES	NO	NO	YES	YES	NO	NO	YES	YES
Domestic Risk Controls	NO	NO	NO	YES	NO	NO	NO	YES	NO	NO	NO	YES	NO	NO	NO	YES

Table 10 summarizes the main parameters of interest for regressions of total capital flows on push and pull variables over the 2010-2021 period, where we also include a dummy to identify countries in the High-NBFI group, and interaction terms between this dummy and the VIX and domestic growth. The dependent variables are Total Inflows (columns 1-4), Government Inflows (5-8), Corporate Inflows (9-12), and Bank Inflows (13-16). We use three alternative measures for identifying the High-NBFI group, including the top 10, 20 or 30% of foreign nonbank holdings of sovereign debt. In addition to the reported coefficients, for each dependent variable, the first regression includes only the VIX, Domestic Growth and country fixed-effects. The second regression, adds year fixed-effects to the first specification. The third regression also includes additional push variables as detailed in the text. Finally, the fourth regression includes additional pull variables as detailed in the main text. Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table 11
Total Capital Flows to selected EMEs, Post-2017q3

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	
	Total Inflows				Gov. Inflows				Corporate Inflows				Bank Inflows				
	OLS - AR(1)	OLS - AR(1)	OLS - AR(1)	OLS - AR(1)	OLS - AR(1)	OLS - AR(1)	OLS - AR(1)	OLS - AR(1)	OLS - AR(1)	OLS - AR(1)	OLS - AR(1)	OLS - AR(1)	OLS - AR(1)	OLS - AR(1)	OLS - AR(1)	OLS - AR(1)	
	Post-2017q3	Post-2017q3	Post-2017q3	Post-2017q3	Post-2017q3	Post-2017q3	Post-2017q3	Post-2017q3	Post-2017q3	Post-2017q3	Post-2017q3	Post-2017q3	Post-2017q3	Post-2017q3	Post-2017q3	Post-2017q3	
L.High NBFI 2017 10%		0.0193 (0.116)		-0.165 (0.143)	0.0126 (0.0825)					-0.0318 (0.0366)		-0.0842 (0.0563)	0.0266 (0.0389)				
L.High NBFI 2017 10%*VIX	0.000836 (0.00357)	0.00117 (0.00356)	0.0140** (0.00563)	0.0124*** (0.00466)	0.00248 (0.00337)	0.00249 (0.00338)	0.00823* (0.00470)	0.0116*** (0.00365)	-0.000116 (0.00103)	-0.000699 (0.000991)	-0.00164 (0.00269)	-0.00216 (0.00235)	0.000721 (0.00141)	0.000603 (0.00139)	0.00281 (0.00429)	0.00153 (0.00268)	
L.High NBFI 2017 10%*Growth	0.0287 (1.033)	0.185 (1.020)	6.580* (3.689)	-1.424 (2.129)	0.454 (0.969)	0.437 (0.988)	6.633* (3.855)	0.243 (3.078)	0.293 (0.292)	0.0890 (0.259)	1.097 (0.833)	0.764 (0.926)	-0.198 (0.332)	-0.140 (0.371)	-3.569** (1.565)	-1.644* (0.922)	
Observations	394	394	192	160	276	276	136	104	361	361	176	144	332	332	160	128	
R-squared	0.129	0.175	0.514	0.655	0.214	0.214	0.554	0.566	0.192	0.204	0.406	0.451	0.260	0.265	0.427	0.447	
Number of countrycode	24	24	24	20	17	17	17	13	22	22	22	18	20	20	20	16	
L.High NBFI 2017 20%	0.0949 (0.102)	0.103 (0.0981)									-0.0341 (0.0518)	-0.0640 (0.0558)			0.0616 (0.0911)		
L.High NBFI 2017 20%*VIX	-0.00597** (0.00298)	-0.00630** (0.00295)	0.00725 (0.00454)	0.00613** (0.00312)	-0.00342 (0.00258)	-0.00342 (0.00258)	0.00588* (0.00349)	0.00840*** (0.00275)	-0.00122 (0.00181)	-0.00121 (0.00180)	-0.00280* (0.00153)	-0.00317** (0.00130)	-0.00375*** (0.00143)	-0.00357** (0.00143)	0.00227 (0.00430)	0.00111 (0.00357)	
L.High NBFI 2017 20%*Growth	-1.004** (0.481)	-1.145** (0.475)	4.658 (2.911)	0.705 (1.965)	-0.653 (0.598)	-0.657 (0.605)	5.577* (3.368)	1.119 (2.835)	-1.061*** (0.327)	-1.050*** (0.325)	0.488 (0.783)	-0.151 (0.851)	0.428* (0.228)	0.401* (0.243)	-1.446 (1.589)	0.840 (1.450)	
Observations	394	394	192	160	276	276	136	104	361	361	176	144	332	332	160	128	
R-squared	0.137	0.184	0.508	0.659	0.220	0.219	0.571	0.587	0.277	0.288	0.409	0.460	0.288	0.299	0.424	0.430	
Number of countrycode	24	24	24	20	17	17	17	13	22	22	22	18	20	20	20	16	
L.High NBFI 2017 30%	-0.0638 (0.103)	-0.00691 (0.0836)	-0.0441 (0.211)		0.0104 (0.0535)				-0.118* (0.0683)	-0.117* (0.0683)	-0.0734 (0.0454)		0.0512 (0.0373)	0.0557 (0.0373)		-0.234** (0.106)	
L.High NBFI 2017 30%*VIX	0.00181 (0.00227)	0.00190 (0.00216)	-0.00346 (0.00383)	-0.00226 (0.00409)	0.00296* (0.00172)	0.00294* (0.00174)	0.00568* (0.00303)	0.00926*** (0.00337)	0.00121 (0.00126)	0.00123 (0.00126)	-0.00463*** (0.00133)	-0.00480*** (0.00101)	-0.000425 (0.00133)	-0.000180 (0.00132)	0.00156 (0.00313)	0.000667 (0.00201)	
L.High NBFI 2017 30%*Growth	-0.429 (0.381)	-0.494 (0.365)	3.555 (2.555)	0.392 (1.910)	-0.0438 (0.527)	-0.0306 (0.531)	7.935** (3.762)	3.799 (3.572)	-0.571** (0.237)	-0.557** (0.239)	1.567** (0.759)	1.278* (0.776)	0.246 (0.182)	0.189 (0.200)	-2.286 (1.495)	-0.155 (1.324)	
Observations	394	394	192	160	276	276	136	104	361	361	176	144	332	332	160	128	
R-squared	0.125	0.172	0.498	0.655	0.220	0.220	0.613	0.583	0.233	0.244	0.456	0.526	0.264	0.272	0.423	0.424	
Number of countrycode	24	24	24	20	17	17	17	13	22	22	22	18	20	20	20	16	
L.High NBFI 2017 40%	-0.205 (0.130)	-0.188* (0.107)	-0.122 (0.108)	-0.0546 (0.125)	0.0166 (0.0489)	0.0112 (0.0505)		-0.142 (0.0882)			-0.0589 (0.0753)	-0.0323 (0.218)	0.0442 (0.0382)	0.00566 (0.0428)	0.0803 (0.0596)	0.169* (0.100)	-0.127* (0.0762)
L.High NBFI 2017 40%*VIX	-0.00127 (0.00230)	-0.00136 (0.00219)	-0.000322 (0.00412)	0.000204 (0.00367)	0.00151 (0.00153)	0.00155 (0.00153)	0.00589** (0.00282)	0.00757** (0.00343)	5.66e-05 (0.000966)	-1.00e-05 (0.000960)	-0.00309** (0.00142)	-0.00370*** (0.000965)	-8.28e-05 (0.00126)	-3.36e-05 (0.00125)	0.00605* (0.00323)	0.00308 (0.00191)	
L.High NBFI 2017 40%*Growth	-0.174 (0.425)	-0.401 (0.410)	1.266 (1.561)	-0.00989 (2.197)	0.161 (0.388)	0.197 (0.389)	2.135* (1.135)	3.881* (2.196)	-0.423** (0.179)	-0.428** (0.187)	0.880** (0.439)	0.975 (0.721)	0.00828 (0.189)	-0.108 (0.216)	-3.642** (1.448)	-0.380 (1.272)	
Observations	394	394	192	160	276	276	136	104	361	361	176	144	332	332	160	128	
R-squared	0.128	0.172	0.509	0.643	0.228	0.233	0.527	0.548	0.214	0.226	0.435	0.483	0.256	0.262	0.461	0.437	
Number of countrycode	24	24	24	20	17	17	17	13	22	22	22	18	20	20	20	16	
Country FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	
Year FE	NO	YES	YES	YES	NO	YES	YES	YES	NO	YES	YES	YES	NO	YES	YES	YES	
GFC Controls	NO	NO	YES	YES	NO	NO	YES	YES	NO	NO	YES	YES	NO	NO	YES	YES	
Domestic Risk Controls	NO	NO	NO	YES	NO	NO	NO	YES	NO	NO	NO	YES	NO	NO	NO	YES	

Table 11 summarizes the main parameters of interest for regressions of total capital flows on push and pull variables over the 2010-2021 period, where we also include a dummy to identify countries in the High-NBFI group, and interaction terms between this dummy and the VIX and domestic growth. The dependent variables are Total Inflows (columns 1-4), Government Inflows (5-8), Corporate Inflows (9-12), and Bank Inflows (13-16). We use three alternative measures for identifying the High-NBFI group, including the top 10, 20 or 30% of foreign nonbank holdings of sovereign debt. In addition to the reported coefficients, for each dependent variable, the first regression includes only the VIX, Domestic Growth and country fixed-effects. The second regression, adds year fixed-effects to the first specification. The third regression also includes additional push variables as detailed in the text. Finally, the fourth regression includes additional pull variables as detailed in the main text. Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

V. Event studies: 2008 and Covid-19

In this section, we refine the analysis by sub-periods and look at two specific sudden stop episodes, aiming to assess whether capital inflows for countries with higher NBFi exhibit a different trend relative to countries with lower NBFi. We focus on two shorter periods surrounding two different crises: the Global Financial Crisis of 2008, and the “dash for cash” at the outbreak of the Covid-19 pandemic.

Our sample periods encompass a year before and two years after each episode. We date each episode in 2008q3 and 2020q1, respectively. We provide a first hint as to the differences across levels of NBFi by showing the evolution of capital inflows for two for countries with “high” and “low” levels of NBFi. We define countries with high levels of NBFi as those belonging in the first quintile of foreign nonbank investor share of sovereign debt securities during the quarter immediately before the onset of each crisis. Likewise, we define a country as having lower levels of NBFi if it falls within the second to fifth quintiles of foreign nonbank share.

We are interested in assessing the differences between high and low NBFi countries in terms of the evolution of total capital inflows as well as to each of the three institutional sectors (government, corporate, and banks). This renders four variables of interest or dependent variables. For each one of these four dependent variables, we run two separate, two-way fixed effects regressions (using country and time dummies), using only either countries with high- or low-NBFi. That is, we run the following simple model:

$$y_{it} = \sum \alpha_i C_i + \sum \beta_t T_t + e_{it} \quad \text{Eq. 4}$$

Where y_{it} represents either total, government, corporate or banks inflows, α_i represent de country effects, C_i are indicator variables for each country, β_t represent the time effects, T_t are time indicators, and e_{it} is the disturbance term, which we model as heteroskedastic, correlated across countries and autocorrelated within each country.

Figures 4 and 6 below show the evolution of inflows across sectors and NBFi levels in the context of each crisis, by plotting the estimate of the time dummies and its confidence interval for each quarter in the sample period. In order to compare the evolution between high and low-NBFi countries each panel presents the results for both groups.

In a second step, we estimate a single model using the whole sample of countries covered in the Arslanalp & Tsuda (2014) database. In order to gauge the differential evolution of countries with high NBFi share, we include a set of interaction terms between an indicator variable signaling that a given country is among the 20% of the sample with higher foreign nonbank participation in sovereign debt demand, and each quarter in the pre- and post-crisis window.

$$y_{it} = \sum \alpha_i C_i + \sum \beta_t T_t + \sum \gamma_t NBFi_i T_t + e_{it} \quad \text{Eq. 4}$$

Where $NBFi_i$ is an indicator variable that is equal to one when the country is among the 20% of the sample with the highest NBFi, and is zero otherwise. And γ_t represent the

interaction term between high NBFIs and each time period, aimed to capture the differential evolution of capital inflows to countries with high NBFIs.

V. a NBFIs and capital flows during the Global Financial Crisis

Since NBFIs growth only accelerated in the aftermath of the Global Financial Crisis of 2008, we might expect not to see clear-cut signs of NBFIs impact on the differential trajectories of inflows to countries with high and low foreign NBFIs penetration.

Figure 4 shows the time-effects in the time window around the crisis. We observe that inflows to both groups remains approximately the same in the run-up to the crisis and falls abruptly in 2008q3 and 2008q4. Even though total inflows seem to fall equally for both groups of countries, they recover at a significantly faster pace for countries with low levels of NBFIs reaching their pre-crisis levels by 2009q3, while the negative impact of the crisis on inflows to high NBFIs countries seem much more pervasive, with inflows sticking to highly negative values two years after the crisis epicenter.

A sectoral breakdown of this overall trend shows that, among high NBFIs countries, the private sector was the most severely hit by the crisis, with corporates and banks showing a greater divergence relative to lower NBFIs countries. Government inflows, on the other hand, seem to have been affected more evenly, without greatly noticeable differences between high and low NBFIs countries.

Figure 4
Time effects for High- and Low-NBFI countries during GFC. Total Inflows

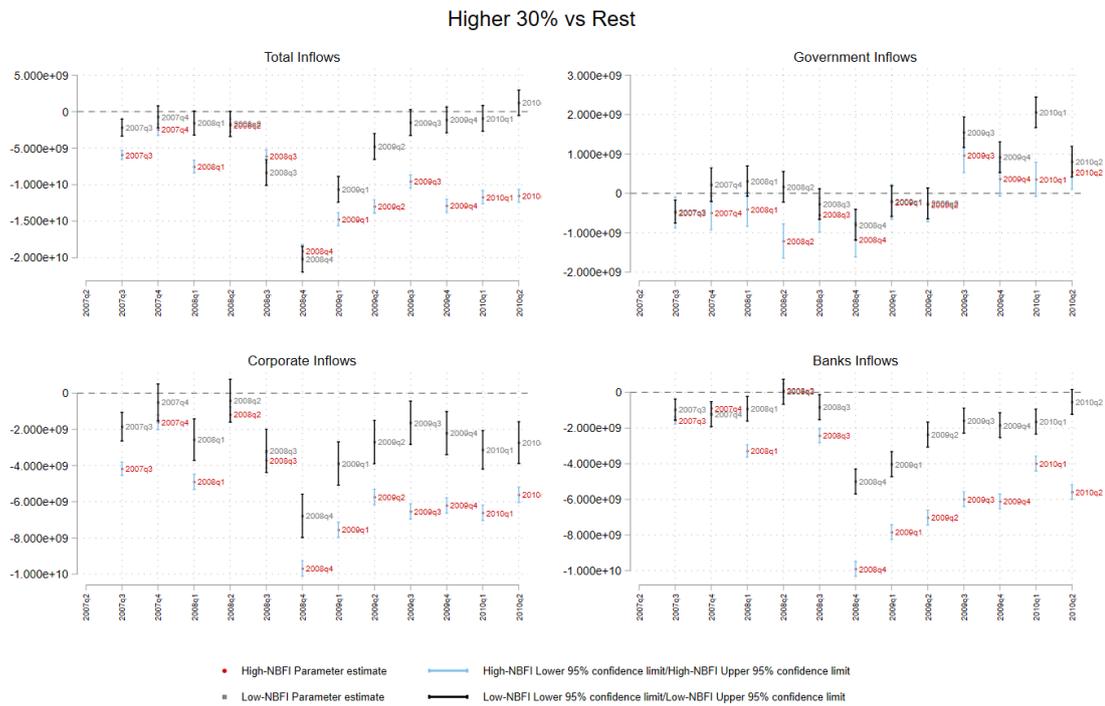


Figure 4 shows the time effects during the Global Financial Crisis of 2008 for both the High- and Low-NBFI countries, obtained from two separate regressions with two-way (country and time) fixed-effects. We show both the estimates and confidence intervals for each period.

Figure 5 below displays the evolution of the interaction term γ_t over the time window 2007q2-2010q2, and provides a different picture of the joint evolution of inflows to countries with high and low NBFI. Inflows to governments appear more affected by the crisis in high NBFI countries, although they rapidly converged with those received by low NBFI ones. However, countries in the high NBFI group experienced a significantly smaller *total* inflows contraction during the crisis. This performance seems mainly due to the private sector, where corporates and banks posted the larger differences between high and low NBFI countries.

Figure 5
Interaction terms for High NBFi during GFC. Total Inflows

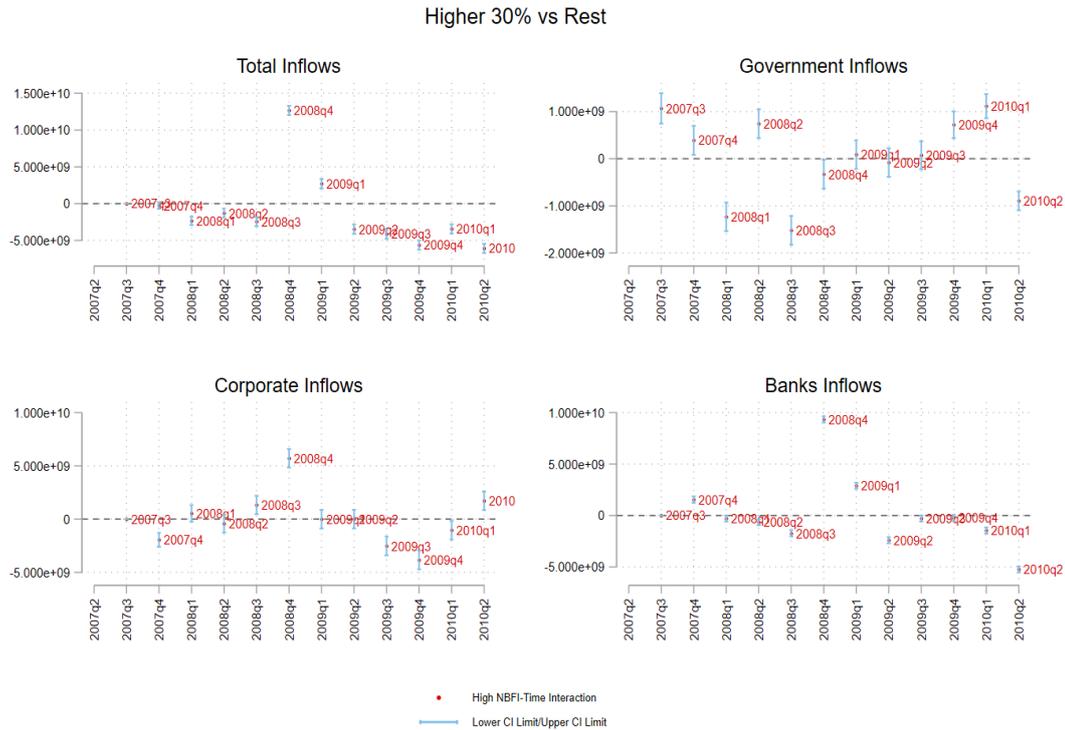


Figure 5 shows the interaction terms between an indicator variable equal to one for countries in the group with highest NBFi in the period immediately before the onset of the Global Financial Crisis of 2008, and each time period. Both the point estimates and the confidence interval are displayed. The dependent variable is Total Inflows and the model also includes country fixed-effects.

Overall, there is limited evidence that NBFi penetration significantly conditioned inflows to emerging countries during the Global Financial Crisis. We go on to replicate this exercise focusing on the sudden stop that followed the Covid crisis.

V. b NBFi and capital flows during the Covid-19 crisis

Figure 6 shows the time effects for the capital flows sudden-stop amid the Covid-19 crisis. In the run-up to the sudden stop, both groups of countries shared approximately the same levels and trends, with inflows gradually descending into negative territory. However, these trends begin to drift apart after the onset of the pandemic. Indeed, countries with the highest NBFi participation remained with negative inflows, while those with lower levels experienced a rebound until the end of 2021.

This divergence between both groups of countries for total inflows seem to be mostly explained by the breaking apart of flows to the corporate and banking sectors. Instead, when we observe the joint trajectories of inflows to the government sector for these two groups (Figure 6), these seem to move approximately in tandem.

These results hold when we change the definition of groups with high levels of NBFi to include countries within the higher 30% or 40% of the sample in terms of foreign nonbank share in sovereign debt demand.

If we consider only portfolio debt inflows instead of total portfolio and Other Investment inflows, the results remain the same. A stark disconnect emerges after the onset of the Covid crisis for portfolio debt inflows between countries with high levels of NBFi and the remaining countries in the sample. This seems to confirm that portfolio debt inflows are driving the observed divergence.

Figure 6

Time effects for High- and Low-NBFI countries during Covid-19 crisis. Total Inflows

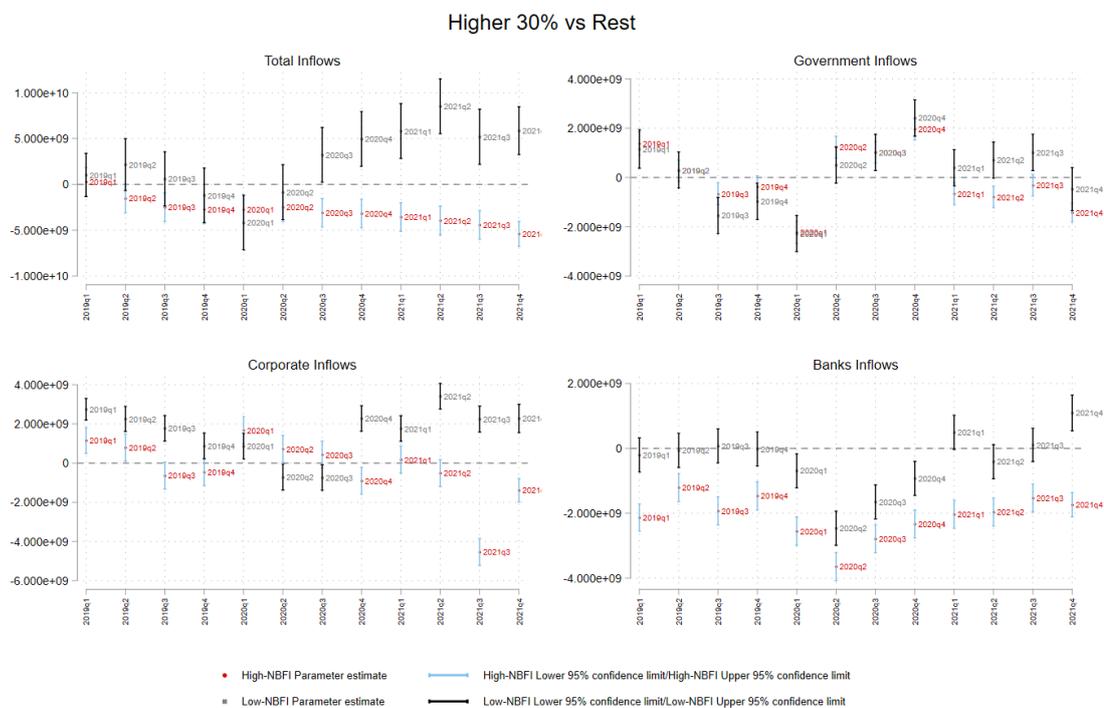


Figure 6 shows the time effects during the Covid-19 crisis for both the High- and Low-NBFI countries, obtained from two separate regressions with two-way (country and time) fixed-effects. We show both the estimates and confidence intervals for each period.

Finally, in Figure 7 we proceed to show the results of the joint regression using both data for low and high NBFI countries, as presented in Equation 4 above. The following Figure plots the results for the coefficients corresponding to the interaction terms, γ_t . It ratifies what is suggested by preliminary evidence. The interaction terms confirm that total inflows begin to fall among high NBFI countries relative to the rest of the sample after the onset of the Covid crisis. In addition, this seems to be explained by inflows to the corporate sector, but also by sovereigns from high NBFI countries, which now seem to drift apart from their lower NBFI peers.

Figure 7
Interaction terms for High-NBFI during Covid-19 crisis. Total Inflows

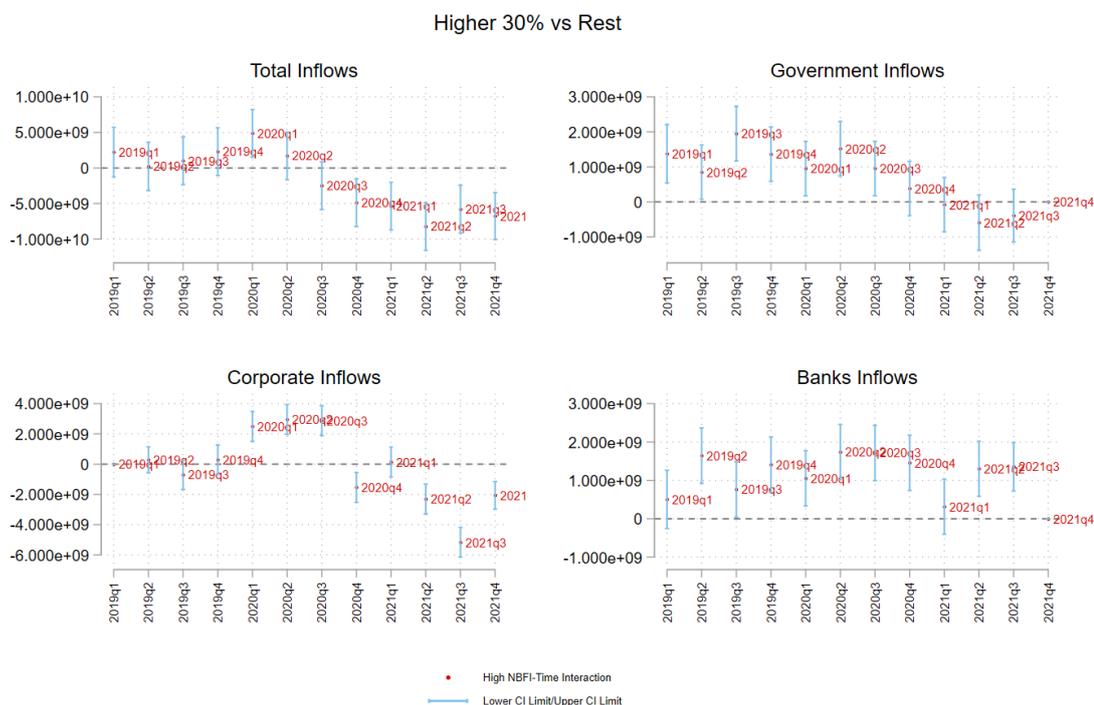


Figure 7 shows the interaction terms between an indicator variable equal to one for countries in the group with highest NBFI in the period immediately before the onset of Covid-19 crisis, and each time period. Both the point estimates and the confidence interval are displayed. The dependent variable is Total Inflows and the model also includes country fixed-effects.

Overall, when comparing the results of the event studies for both crises we see a clearer role for NBFI in propagating the impact of the Covid sudden stop. Results for the Covid crisis are robust to changing the NBFI measure and, most importantly, are confirmed by the interaction terms in different versions of the event study. Thus, as a preliminary conclusion we can infer that NBFI affect more strongly and consistently the impact of the crisis on capital inflows during the Covid crisis when compared to the GFC. This, in turn, is coherent with the fact that NBFI are significantly more extended during the more recent episode.

VI. Concluding remarks

As global financial intermediation takes place increasingly outside banks, NBFI as a “pipe” for capital flows has come to the foreground. Over and above conventional “push” and “pull” factors, the structure of financial markets and their key players have become determinants of capital flows. We examine the interaction of foreign NBFI of government debt with global risk aversion (a “push” factor) and with domestic growth (a “pull” factors), in twenty four EMEs from 2004 to 2021, using quarterly data. We estimate panel data models that account for autocorrelation and cross-country correlation, discriminate flows by sectors (total, government, corporate and banking), include time and country fixed effects, and employ several definitions of our variable of interest: either as a direct measure of participation of foreign non-bank investors, or as categorical variable, that captures those countries with

the largest share of them. We do this for the whole 2004-2021 period and for two subperiods (2004-2009 and 2010-2021). To sharpen our focus on sudden stops, we run two event studies around the outbreak of the Global Financial Crisis and the “dash for cash” at the start of the Covid-19 pandemic.

We find evidence for “pipe” factors as possible determinants of capital flows: foreign NBFIs holdings of government debt NBFIs are generally associated to capital flows (in many cases, they involve lower inflows or higher outflows). We also find links between NBFIs and global determinants of capital flows: in some cases, non-bank investors make them more sensitive to global risk aversion, and less so to domestic growth. In the models with NBFIs holdings as a continuous variable, the main findings are as follows.

- For portfolio flows, higher NBFIs holdings are linked to higher sensitivity of EMEs flows to global risk aversion in 2004-2009, something that looks driven by government flows. In Latin America, both for the whole 2004-2021 and the 2004-2009 periods, NBFIs interacts negatively with global risk aversion. And after 2010, higher NBFIs is linked to lower sensitivity of flows to domestic growth.
- For total flows to EMEs, NBFIs holdings are linked to lower inflows but *less* sensitivity to global risk aversion. This appears driven by government flows and, to a lesser extent, corporate ones. But since 2015, there is some indication that total flows to EMEs are more sensitive to the VIX as foreign NBFIs holdings increase, and that the latter accentuate the response to local growth -that is, suggestions of procyclical behavior of NBFIs flows. In Latin America, countries with higher foreign NBFIs receive lower inflows as VIX increases after 2010 -but those coefficients are not significant in 2004-2009.

We go on to consider the categorical variable, which allows us to contrast countries with the highest NBFIs with the rest of the sample. And we refine our temporal focus, looking at three subperiods: the global financial crisis and its aftermath (including the European debt crisis), the post-GFC period (from the “taper tantrum” until 2017), and financial turbulence since 2018 (sudden stop in that year and the Covid crisis).

- In 2007-2012, we find some role of NBFIs increasing portfolio flows procyclicality, both financial and real: as global conditions tighter, higher NBFIs means lower inflows; but as local growth mounts, higher NBFIs involve higher inflows. This applies specially to flows to governments and banks. During the post-GFC period, results also suggest how as corporates relied more on bond financing, this meant a closer link to global financial conditions, and a lower one to domestic growth. This is in keeping with findings on the growing role of foreign corporate debt in EMEs after the GFC.
- Looking at total flows, we also find that NBFIs is linked to domestic procyclicality during the GFC and its aftermath, especially in inflows to governments. But in the period following the GFC, we find no clear link of NBFIs and sensitivity to push or pull factors. This is to be expected, since total flows include official or multilateral lenders as well as loans, which other studies find less sensitive to global financial conditions after the GFC (Avdjiev et al., 2020). During 2018-2021, we also find some evidence of higher sensitivity of flows to corporate to global financial conditions.

Finally, to go beyond average behavior in several years' periods and focus on episodes of interest, we run event studies around the outbreak of the GFC and the Covid-19 crisis. There is stronger evidence of a more significant role of NBFIs in amplifying outflows in the latter episode: countries with a higher share of government debt held by NBFIs show consistently higher outflows across several sectors.

All in all, we find evidence of "pipe" factors driving capital flows; and also of a link between NBFIs and standard flow determinants, in that non-bank holders of debt amplify or dampen global and domestic factors. Such links change by periods and type of flows. For Latin America, these results are in line with those of studies such as Ramos-francia et al. (2021).

Several issues for further work remain. We will unify the choice of sampling periods across the exercises (NBFIs as continuous and categorical variable), and provide economic significance of the findings. Also, in the models we use in section IV.a, we plan to go beyond estimations by period and employ interactions with dummy variables at the time of sudden stops (in general, to refine the analysis by distinguishing inflow and outflow episodes). A natural following step would be to employ quantile regressions, capturing periods of more extreme responses of flows vis-a-vis average ones. Finally, to employ more detailed models in the event studies and thus better pinpoint the likely influence of NBFIs on capital flows at the time of the Covid-19 crisis and other episodes.

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Annex I. Data sources

Non-bank financial intermediation. We use the database compiled by Arslanalp and Tsuda (2014), updated until 2021. This source compiles data on the share of sovereign debt held by different investors in 24 EMEs. It includes local and foreign currency denominated debt, discriminated by holders: foreign officials, foreign banks and foreign nonbanks, as well as domestic central bank, banks and nonbanks. Nonbanks include insurance companies, pension funds, and investment funds. Investment funds could be mutual funds, exchange-traded funds, or sovereign wealth funds.

Capital flows. We use gross capital inflows data from the IMF's Balance of Payments (BOPS) Database. In particular, we use series corresponding to "Net Incurrence of Liabilities". Typically, the literature refers to these series as gross capital inflows, in contrast to net capital inflows, which reflect the net Financial Account balance from the balance of payments and are computed by subtracting gross capital outflows from gross capital inflows. Gross capital outflows, in turn, represent the net accumulation of foreign assets by the residents of a given economy.

Following the "resident principle" used by the Balance of Payments and International Position Manual, gross inflows register the net variation of foreign liabilities held by residents of a given economy (thus its name "*Net Incurrence of Liabilities*"), where their creditor counterpart is a non-resident agent. For a given period, gross capital inflows are positive if transactions leading to higher foreign liabilities surpass operations that reduce foreign liabilities. The fact that this "net" concept is referred to as "gross inflows" is unfortunate and might lead to confusions. For more on this methodological discussion see Avdjiev et al. (2018).

Apart from analyzing total gross inflows for each country, a distinctive contribution of our paper consists in separating gross inflows to different institutional sectors (government, nonbanking private sector, and banks) and in the form of different asset types (mainly, portfolio debt flows and the so-called "other investment" flows).

To compute these gross inflows to different institutional sectors we exploit the sectoral breakdown of gross flows available in the BOP database and follow Avdjiev et al. (2018). This implies concentrating both portfolio and "other investment" flows, while ignoring FDI flows, since the BOP database does not provide a separation of this flow type by resident institutional sector.

In the regressions, capital flows are normalized by quarterly GDP in US Dollar terms. Our main source for this is the IMF's International Financial Statistics database. When missing, we estimate this based on annual GDP coming from the World Economic Outlook Database.

Macroeconomic and financial controls

VIX or Chicago Board Options Exchange (CBOE) Volatility Index data is obtained from the Federal Reserve Bank of Saint Louis Database (FRED). Country-level economic growth data is computed based on quarterly, seasonally adjusted real GDP obtained from the IMF's International Financial Statistics database.

We follow Forbes & Warnock (2012) to compute our estimate of global interest rates. These authors proxy global interest rate with the average rate on long-term government bonds in the United States, core euro area, and Japan, from the IMF's International Financial Statistics. Annual global growth is obtained from the World Bank, and we compute a quarterly growth rate using a four-quarter moving-average.

The JP Morgan's EMBI Index is obtained from the World Bank's Global Economic Monitor Database. Finally, we take current account balance and annual inflation data from the IMF's International Financial Statistics Database, and central bank reserve assets from the IMF's Balance of Payments Database.

Annex II. Descriptive statistics of capital flows and control variables.

Summary Statistics						
	N	Mean	Sd	P25	P50	P75
Total Inflows	1694	0,1259	0,3283	-0,0213	0,1014	0,2232
Gov. Inflows	1481	0,0515	0,1996	-0,0208	0,0148	0,0907
Corp. Inflow	1514	0,0393	0,1509	-0,0219	0,0296	0,0875
Bank Inflows	1610	-0,002	0,2404	-0,057	-0,0017	0,0546
VIX	1704	19,1397	8,5972	13,71	16,31	22,75
Growth	1697	0,0403	0,0499	0,0183	0,0428	0,0686
CAB	1694	-0,0125	0,0684	-0,0374	-0,0127	0,0177
Reserve Assc	1694	0,0684	0,2325	-0,0235	0,0414	0,1506
EMBI	1322	290,7	420,2	140,1	202,4	302,0195
Inflation	1715	5,8218	6,2332	2,5613	4,2348	7,3609
Global r	1488	2,5838	0,9295	1,824	2,524	3,4212
Global Grow	1728	3,5222	1,7381	3,3535	3,5645	4,8602

Summary Statistics - Total Inflows						
	N	Mean	Sd	P25	P50	P75
Argentina	72	7,72%	18,43%	-1,47%	4,99%	12,98%
Brazil	72	5,49%	14,15%	-4,53%	6,88%	15,15%
Bulgaria	72	10,66%	30,55%	-8,40%	4,77%	27,32%
Chile	71	15,41%	20,85%	1,88%	14,90%	28,27%
China, P.R.: Mainland	68	6,83%	9,33%	2,68%	8,84%	12,53%
Colombia	72	11,61%	12,28%	3,72%	10,05%	18,32%
Egypt, Arab Rep. of	43	14,88%	25,31%	-0,80%	10,44%	29,99%
Hungary	72	10,98%	42,12%	-17,34%	6,62%	44,43%
India	72	14,57%	8,18%	9,25%	16,13%	20,11%
Indonesia	72	6,54%	8,02%	2,43%	6,05%	12,10%
Latvia	72	21,16%	53,33%	-12,69%	17,19%	58,55%
Lithuania	72	50,77%	99,81%	-13,05%	30,68%	102,98%
Malaysia	72	9,84%	38,24%	-8,82%	12,19%	26,42%
Mexico	72	8,03%	10,69%	-0,22%	7,56%	14,38%
Peru	72	9,47%	17,34%	-2,97%	8,49%	19,13%
Philippines	72	4,71%	13,93%	-4,93%	4,69%	13,77%
Poland, Rep. of	72	10,33%	17,35%	-1,54%	9,71%	20,38%
Romania	72	13,35%	23,71%	-7,27%	17,33%	29,20%
Russian Federation	72	4,31%	19,10%	-6,10%	1,54%	12,38%
South Africa	72	14,01%	20,26%	2,30%	15,97%	24,44%
Thailand	72	7,31%	19,81%	-4,47%	5,65%	20,15%
Turkey	72	14,42%	17,09%	6,27%	16,77%	27,09%
Ukraine	72	22,50%	31,90%	2,61%	23,81%	39,61%
Uruguay	72	7,89%	31,78%	-11,74%	10,65%	20,56%

Summary Statistics - Total Portfolio Debt Inflows

	N	Mean	Sd	P25	P50	P75
Argentina	72	2,06%	13,89%	-4,29%	0,40%	5,53%
Brazil	72	1,24%	6,03%	-3,03%	2,48%	5,67%
Bulgaria	72	0,11%	16,03%	-5,21%	-1,12%	1,77%
Chile	71	8,75%	13,94%	0,74%	4,81%	15,55%
China, P.R.: F	64	1,29%	1,92%	0,00%	0,75%	1,97%
Colombia	72	6,50%	8,64%	0,46%	5,25%	10,90%
Egypt, Arab F	43	4,70%	20,00%	-6,84%	-0,01%	13,93%
Hungary	72	3,85%	24,44%	-14,77%	3,00%	19,49%
India	56	0,65%	3,05%	-0,52%	0,52%	1,94%
Indonesia	72	5,82%	5,91%	2,30%	6,16%	9,68%
Latvia	72	5,72%	18,95%	-1,56%	0,82%	12,40%
Lithuania	72	22,51%	63,13%	-10,17%	-0,63%	41,03%
Malaysia	72	6,84%	25,12%	-6,56%	6,78%	18,01%
Mexico	72	6,74%	8,91%	0,85%	5,99%	12,74%
Peru	72	8,62%	12,35%	-0,06%	7,12%	15,47%
Philippines	72	2,33%	8,89%	-2,99%	1,55%	7,64%
Poland, Rep.	72	4,02%	11,82%	-3,01%	2,29%	10,88%
Romania	72	5,90%	11,18%	-1,11%	2,42%	13,10%
Russian Fed€	72	0,75%	3,55%	-1,38%	0,71%	2,90%
South Africa	72	5,26%	9,30%	-0,43%	5,89%	11,66%
Thailand	72	2,42%	6,27%	-1,83%	2,06%	6,03%
Turkey	72	4,32%	8,94%	-1,61%	4,46%	10,45%
Ukraine	72	5,76%	13,46%	-1,55%	4,35%	13,57%
Uruguay	72	6,70%	19,15%	-4,56%	6,21%	15,38%