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Do Capital Controls Limit Inflow Surges?

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ABSTRACT: With rising financial integration, the magnitude and swings in capital flows have increased in the past two decades, intensifying the policy debate on how best to deal with these flows. This paper assesses the use and effectiveness of capital controls in limiting inflow surges. Using a novel dataset on capital control changes across 40 advanced and emerging market and developing economies over 1995-2018, we find that the tightening of capital controls reduces the probability of future surges both at the aggregate and the asset flow levels. The results are robust to various definitions of surges and are stronger when controls are matched to the asset class they target. Finally, we also find significant multilateral spillovers from capital control actions, pointing towards the need for international cooperation in the use of these policies.

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1. Introduction

Capital flow surges and reversals associated with increasing international integration of financial markets have long been a concern for policymakers and has remained a major challenge in recent years. While capital flows are generally beneficial for recipient economies, for many emerging market and developing economies (EMDEs), flows have been large compared to the size of domestic financial systems, creating challenges for their efficient allocation. While total flows recovered quickly after the global financial crisis (GFC), capital flows to EMDEs in particular have exhibited large swings. Several periods of sustained inflows—in part driven by prolonged easy monetary policies in advanced economies (AEs)—were followed by sharp reversals as global financial conditions tightened, such as during the Taper Tantrum, and more recently, the COVID-19 pandemic resulting in repeated surges and reversals.

Countries have followed different approaches to handle capital flow volatility, reflecting country-specific circumstances. While AEs with open capital accounts and deep financial markets have generally allowed their exchange rates to float freely, many EMDEs have actively used capital account measures, macroprudential measures (MPMs) and foreign exchange market intervention (FXI) together with monetary and fiscal policy tools to meet stabilization objectives.

This paper contributes to the large and growing literature on the use and effectiveness of capital inflow controls by addressing three main questions. The first question—do countries respond to increases in capital inflows by introducing new or tightening previously existing capital controls? —has been subject to much debate. While Eichengreen and Rose (2014), Fernandez and others (2016), Gupta and Masetti (2018) and Fernandez and others (2020) argue that capital controls are largely acyclical and do not respond to macroeconomic activity, a different strand of the literature has found that countries do react to economic conditions by introducing capital controls (Ghosh and others (2017), Pasricha (2017, 2020). We find only limited evidence for countercyclical use of capital controls, wherein, only around 10 percent of measures that tightened controls were introduced during an inflow surge.

The second question on the effectiveness of capital controls also has a long history with effectiveness measured by various objectives—reducing the volume of net capital inflows, altering the composition of flows, alleviating exchange rate pressures and/or making monetary policy more independent. The results based on multi-country studies are rather mixed (Montiel and Reinhart (1999), Reinhart and Smith (1998), Kaplan and Rodrik (2002), Edison and Reinhart (2001), Campion and Neumann (2004), Miniane and Rogers (2007), Binici and others (2010), Gochoco-Bautista and others (2012), Baba and Kokenyne (2011)). There is also a rich literature looking at effectiveness of capital controls at country level finding more promising results.[2] While there is significant variation in results obtained in these papers, in general, they suggest that capital controls were successful in altering the composition of capital flows toward longer maturities and in making monetary policy more independent.[3] However, there is limited evidence regarding the effectiveness of capital controls in reducing the volume of capital flows and reducing real exchange rate pressures. Nispi Landi and Schiavone

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[2] Some country specific studies include Ariyoshi and others (2000), Chamon and Garcia (2016), Baba and Kokenyne (2011) for Brazil; Edwards and Rigobon (2005), Gallego and others (2002), Reinhart and Smith (1998) for Chile; Rincon and Toro (2010), Clements and Kamil (2009) and Baba and Kokenyne (2011) for Colombia; Ariyoshi and others (2000) and Baba and Kokenyne (2011) for Thailand. See Magud and others (2018) for a survey of empirical papers.

[3] Most cross-country studies are based on annual indices of capital controls (Chinn-Ito, Fernandez etc.), which capture the existence of regulations on certain capital flow transactions however do not capture changes in these regulations. However, some studies (particularly at the country level, Chamon and Garcia (2016), Gallego and others (2002), Clements and Kamil (2009)) use more granular data from Central Banks capturing the changes in specific regulations (like URR's) over time. The result from granular studies is more promising in terms of making monetary policy more independent and partially in reducing volume of capital inflows.

(2021) find that capital controls are associated with lower capital inflows both in AEs and EMDEs. Das and others (2022) find that preemptive capital flow management measures can reduce EMDEs external finance premia during risk-off shocks, especially for vulnerable countries.

In this paper, we assess the effectiveness of tightened controls by their ability to limit the probability of future surges. The question of how to define surges is far from resolved in the literature (a matter we discuss in detail in Annex 1). Crystallin and others (2015) have previously demonstrated how different ways of defining capital flow surges lead to significant differences in the number, duration, and intensity of the episodes identified. To ensure some degree of robustness to this problem, we build on two different definitions of surges, by Forbes and Warnock (2012, 2021) and by Ghosh and others (2014). We also add to the literature by creating a new series for inflow tightening and easing measures using capital control changes data based on Baba and others (forthcoming). Finally, unlike most other papers, which look at effectiveness of capital controls at aggregate flow level, we also directly match controls to the asset class they are applied to.

We find that capital control actions are effective in limiting inflow surges. Tightening of capital controls results in a lower probability of future surges. This is true both at aggregate flow level as well as when controls are mapped to the asset they are targeted to, with the latter effect being stronger.

The third question is that of multilateral spillover, notably the effect of capital control actions on flows to other countries. The empirical evidence on spillover effects of capital controls is currently limited. The available evidence either pertains to post-crisis years and the impact of a single country's capital controls (Forbes and others, 2015; Lambert and others, 2011)[4] or uses less refined measures of capital controls that do not capture how controls evolve within each category or the precise dates of change (Giordani and others (2017); Beirne and Friedrich (2017)).[5] The only other paper that provides a comprehensive assessment based on policy changes is Pasricha and others (2018) however they only focus on capital control actions taken by the BRICS in assessing the spillovers to other EMDEs. We use policy changes in all countries to explore spillovers to other countries in the sample.

We find evidence of strong multilateral spillovers, with capital control actions resulting in flows being deflected to other countries in the region or with similar fundamentals (risk, return etc.). Overall, the results indicate that while capital controls can help countries in limiting surges, they may result in spillovers that should be taken into account when considering these policies from a multilateral perspective.

The rest of the paper is organized as follows. Section 2 presents the data and descriptive statistics. Section 3 discusses the econometric approach and results. Section 4 concludes.

2. Data and Descriptive Statistics

The analysis considers the effects of tightening measures on non-resident inflows for 40 countries over 1995-2018. A total of 184 measures are initially identified for four asset classes: portfolio debt, equity, foreign direct investment (FDI), and other (mainly bank and non-bank commercial and financial credits).

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[4] Forbes and others (2013) find that more stringent capital controls set by Brazil between 2006 and 2011, such as the introduction of a 2 percent tax on portfolio equity and debt inflows in 2009, have led investors to increase the share of their portfolios allocated to other emerging markets.

[5] Giordani and others (2017) find that in their large sample of developing countries, capital controls are found to deflect capital flows to other countries with similar characteristics.

2.1 Data

The vast majority of the literature on the effects of capital controls has used annual indices of the level of capital controls.[6] These indices capture the extensive margin of controls i.e., how many types of transactions are restricted, rather than the intensive margin i.e., how the restrictions change over time for each type of transaction. For example, if non-residents purchase of debt securities is restricted in a country, the presence of the control would be coded as 1 in the annual indices. Any further tightening in the regulation will not change the extensive margin based annual indices. The evolution of restrictiveness of the controls for each asset class is important in assessing their effectiveness and hence annual indices that solely capture the extensive margin are not appropriate.

The recent literature has made meaningful progress in capturing the intensive margin by using data on changes in regulations (Pasricha (2012); Forbes and others (2015); Pandey and others (2015); Pasricha and others (2018, 2020).[7] The methodology used in this paper is similar in spirit to Pasricha and others (2018, 2020), however we expand the sample from 21 to 40 countries. The dataset uses a narrative approach and is derived from the changes section of the Annual Report on Exchange Arrangements and Exchange Restrictions (AREAER): policy changes from AREAER are converted into numerical measures that capture the direction of policy. Similar to Pasricha (2018), a policy change in the dataset has a unique classification along the following dimensions:

1. **Direction of flows the measure regulates**. We focus on controls on resident liabilities (including on repayment of these liabilities). This includes controls on both non-residents' inflows of capital as well as its repatriation (i.e., on nonresident outflows). Since, our primary objective is to look at the effectiveness of inflow controls in limiting future surges, we exclude controls on non-resident outflows introduced during crisis times as their primary objective is to curb outflows with immediate effect, rather than pre-emptively discourage inflows.[8] Overall, the vast majority of controls on nonresidents target inflow transactions, as tightening actions on nonresident outflows (outside of crises) represent only 5 percent of the measures that tighten controls.

2. **Direction of change**. Easing or tightening of restrictions. We focus on tightening of inflow restrictions. However, easing measures are also considered for robustness checks.

3. **Asset class (International Investment Position (IIP) category)**. Four asset classes are considered – Equity (portfolio flows), Debt (portfolio flows), FDI, and Other flows (mainly bank and non-bank commercial and financial credits).[9] Controls on derivatives have been excluded due to a lack of information on derivative flows for a large proportion of the sample considered.

4. **Type of instrument**. Quantitative (e.g., limits), price-based (e.g., taxes, unremunerated reserve requirements), and administrative/monitoring (e.g., authorizations, notifications, registrations). Certain measures that are insignificant (for example, certain notifications and registrations) are dropped.

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[6] See for example Chinn and Ito (2008), Schindler (2009), Magud and others (2011), and most recently Fernandez and others (2016).

[7] See Pasricha and others (2018) for details.

[8] The crisis episodes are based on the Laeven and Valencia (2020), which includes periods of banking, currency and/or sovereign debt crisis. These are episodes of deep crisis, where concerns on inflow surges are not material in the near to medium term. Including these controls in our specification would introduce noise to our measure of capital controls actions. These controls if not reversed may, however, reduce the probability of surges in the future when flows reverse. If these controls result in a change in the Fernandez and others (2015) index, they would be captured in the overall restrictiveness index, which is also included as a control variable in the regressions.

[9] Note that the FDI category includes transactions of residential real estate properties by non-residents.

Annex Table 1 reports the detailed description of the measures tightening capital controls on nonresident transactions considered in the analysis.

Nonresident capital inflow data are collected from the IMF's Financial Flow Analytics (FFA) database. The variable is defined as the difference between nonresident capital inflows and nonresident capital outflows as percent of Gross Domestic Product (GDP), excluding official flows. A positive number of the variable indicates a positive net nonresident capital inflow in the country.

2.2 Descriptive Statistics

The number of actions that tighten capital controls on nonresidents have progressively increased from the early 2000s and have remained high in the post-GFC period as ultra-accommodative monetary policies conducted in core economies and the associated rise in global liquidity have put emerging markets under pressure (Figure 1, top left panel). Not surprisingly, the bulk of capital control tightening actions have indeed been introduced by EMDEs, essentially from Asia and Latin America, although some European countries like Iceland and Ukraine have also actively used controls (Figure 1, top right panel). Capital control tightening actions in our sample are evenly distributed across the four asset classes, but commercial and financial credits (category "Other") and Debt, are slightly dominating (Figure 1, bottom left panel). Finally, about one-third of tightened capital controls are price-based measures, while administrative measures, limits, registration measures, and mandatory holdings represent between 10 and 15 percent of measures. The two extremes: bans and even more notifications are rarely used (Figure 1, bottom right panel).

Figure 1. Descriptive Statistics of Tightened Capital Controls on Nonresident Inflows

Number of tightened capital controls on nonresident inflows (Annual)

Number of tightened capital controls on nonresident inflows by type (From 1995-2018)

Sources: AREAER database, IMF; and Authors' calculations.

Sources: AREAER database, IMF; and Authors' calculations.

Number of tightened capital controls on nonresident inflows by targeted assets
(From 1995-2018)

Number of tightened capital controls on nonresident inflows by type
(From 1995-2018)

Sources: AREAER database, IMF; and Authors' calculations.

Sources: AREAER database, IMF; and Authors' calculations.

Sources: AREAER database, IMF; and authors' calculations.

For each of the 184 measures, we look at the evolution of capital inflows in a four-year window surrounding the introduction of the control. In some cases, measures are introduced after sustained and large outflows/reduction in inflows, so that the control may appear ineffective due to a catching-up effect (Figure 2). This is for example the case for a measure on Other flows introduced by India in 2009Q1 or for measures which have targeted Debt inflows introduced in 2005 Q2 and 2005 Q4 by Argentina, while the country experienced a restructuring of its sovereign debt, after several years of banking and currency crises.

Figure 2. Measures Introduced after Sustained and Large Outflows

India: Gross Other Inflows

Argentina: Gross Debt Inflows

Sources: AREAER, Financial Flow Analytics, IMF; and authors' calculations.
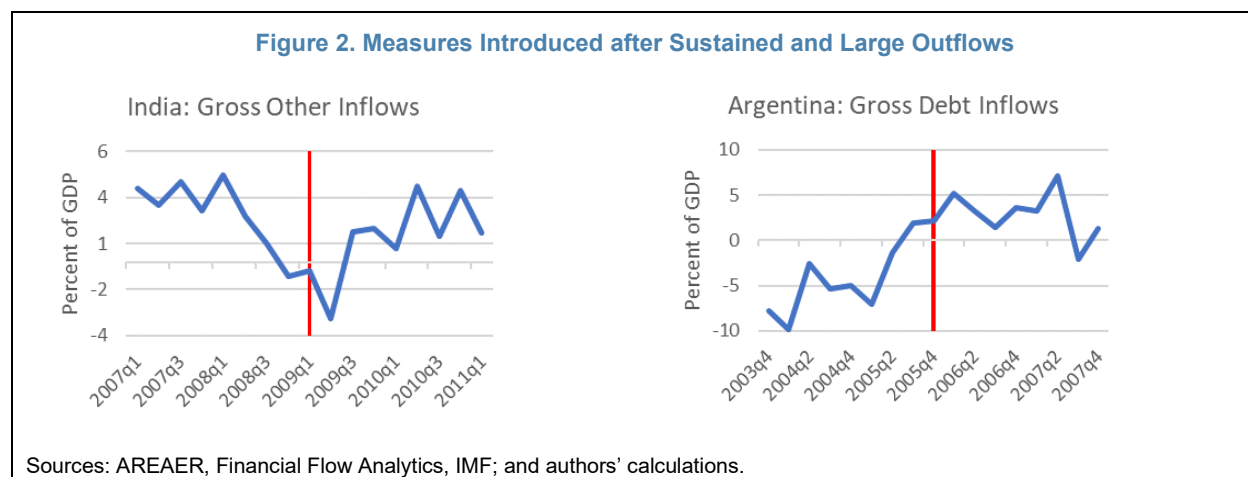
More specifically, a rebound of capital inflows following the introduction of controls on non-resident inflows can be observed just after financial crises due to catching up effect (Figure 3), as for example in the cases of Debt controls introduced in 2009Q4 by Brazil in the wake of the GFC, of controls on Other flows introduced by Kazakhstan following its 1999 currency crisis or Turkey following its 1996 currency crisis. These observations on the introduction of inflow controls during/after a financial crisis suggest that some countries may have learnt their lessons from crises and decided in response to introduce controls on inflows to limit boom-bust patterns.

Figure 3. Measures Introduced after Financial Crises

Sources: AREAER, Financial Flow Analytics, IMF; and authors' calculations.
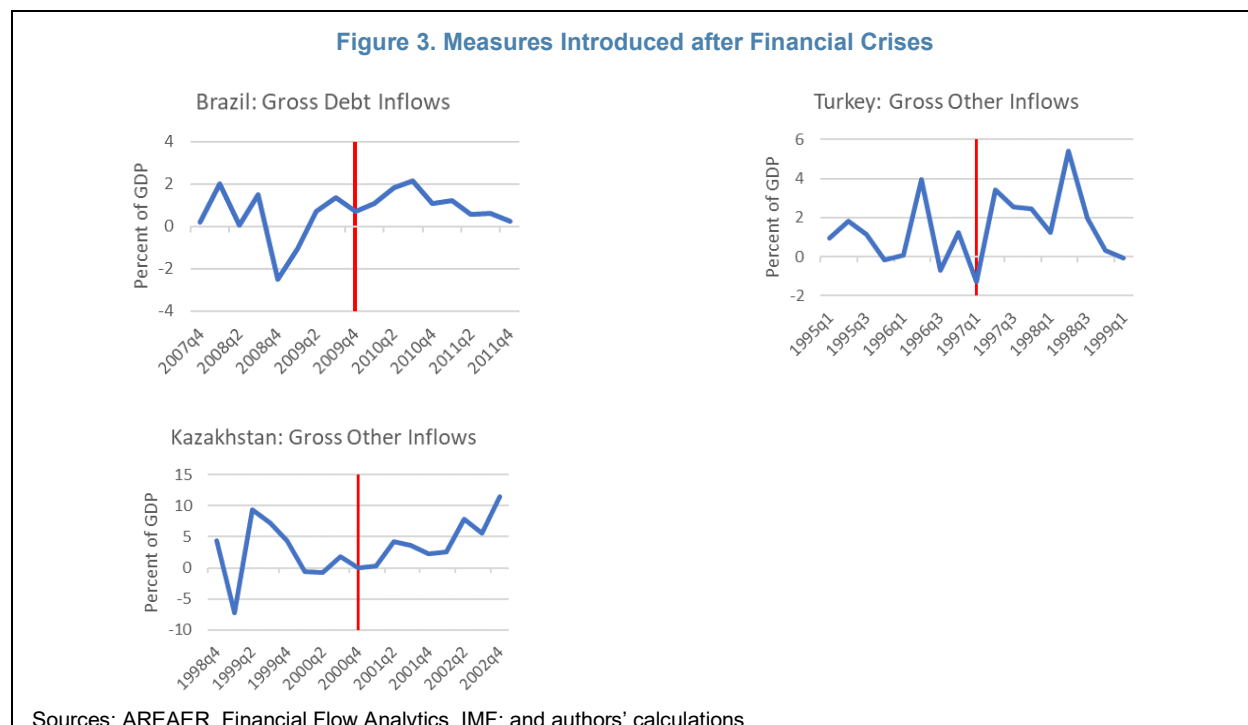
2.3 Surges of Capital Inflows

We use three different definitions of surges (using nonresident private inflows).[10]

- As a benchmark, the definition proposed by Forbes and Warnock (2012, 2021);
- The definition of surges put forth by Ghosh and others (2014);
- A simple threshold definition of surges for gross total nonresident inflows.

Details on the methodology to identify surges using Forbes and Warnock (2012, 2021) and Ghosh and others (2014) approaches are presented in Annex 1. The simple threshold approach categorizes a country as experiencing a surge of nonresident capital inflows if these latter are above 5 percent of GDP over a given quarter.

Figure 4 shows the proportion of countries experiencing surges, by type of definition of surges. Overall, the number of countries experiencing a surge based on the three definitions displays a broadly similar trend.

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[10] The literature has defined surges in different, and often conflicting ways. Various dimensions to consider when defining surges include: the use of gross or net flows, of private or total flows, of aggregate or asset-specific flows. Moreover, the methodology itself can vary significantly, resulting in different outcomes. Crystallin and others (2015) show that various definitions yield different results with respect to the frequency and length of the surges. In particular, when considering seven definitions of surges, they find that the number of episodes identified can vary by up to a factor of three.

Figure 4. Distribution of Surges of Various Definitions

Percentage of Sample Countries Experiencing a Surge

Sources: Financial Flow Analytics, IMF; and Authors' calculations.

Sources: Financial Flow Analytics; IMF; and authors' calculations.
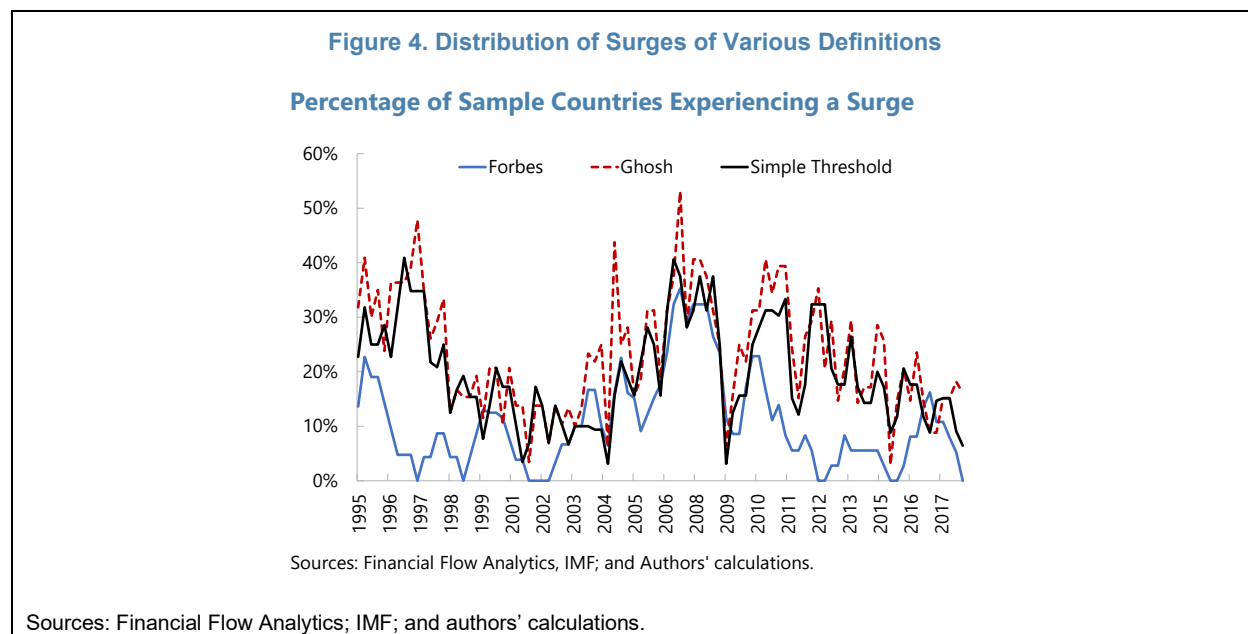
Moreover, Figure 5 shows a breakdown of the relationship between the total nonresident gross flow and the asset level gross flow surge measures for the Forbes measures. As can be seen, although surges in total flow often happen at the same time as surges in individual asset types, this may not always be the case.

Figure 5. Forbes Surges: Total Flows v/s Asset Specific

Sources: Financial Flow Analytics; IMF; and authors' calculations.
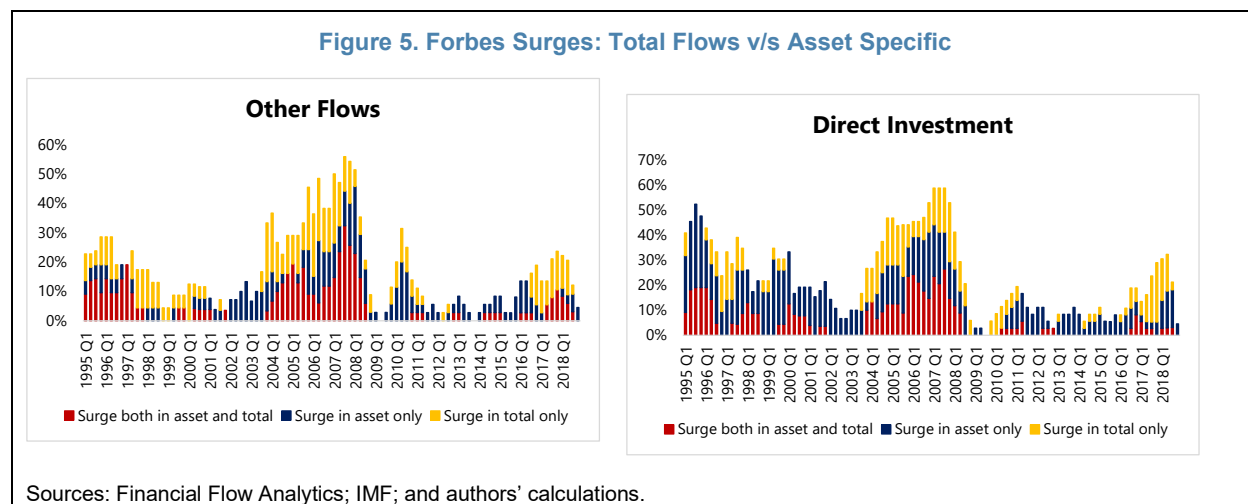
We begin with a descriptive analysis comparing the timing of tightening with the occurrence of surges—investigating what fraction of tightening actions happens during or around surges. Figure 6 plots the time after and before a surge for each tightening action. We use as a baseline Forbes and Warnock's definition of surges using gross inflows, which we call Forbes for short.

Figure 6. Distribution of the timing of introduction of tightening with respect to surges

Source: Authors' calculations.
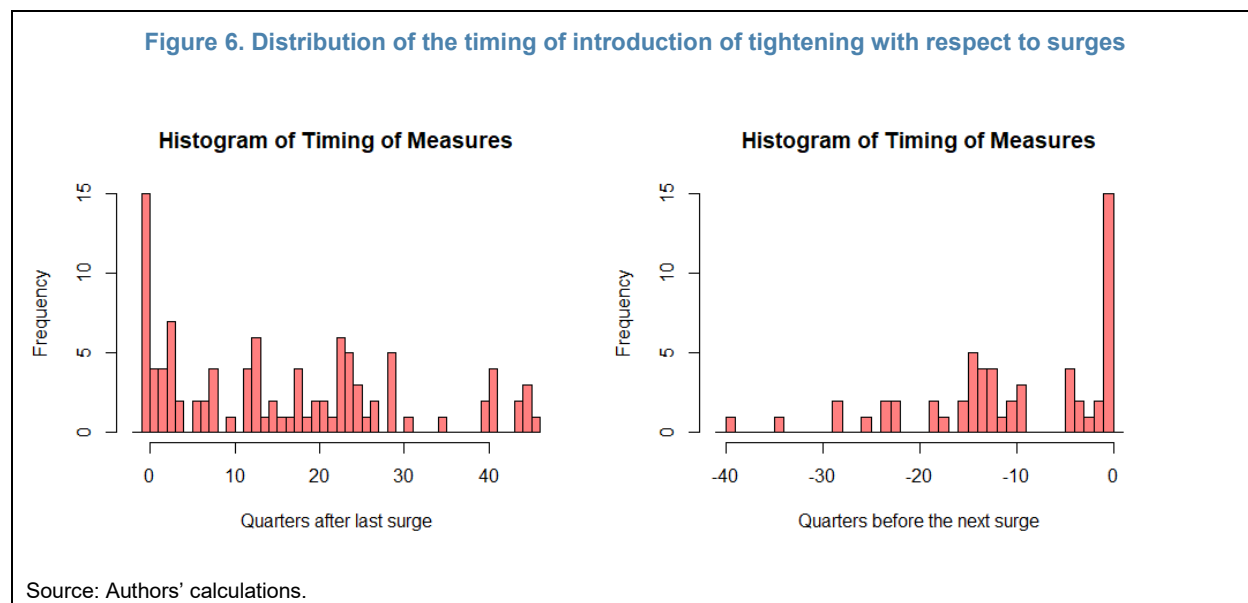
Figure 6 shows that controls were tightened in only 15 cases (or around 10 percent of the sample) during a surge. Moreover, only 17 tightening actions were observed within a year following a surge and only 9 happened within a year preceding a surge. The IMF's Institutional View on the liberalization and management of capital flows (IV) adopted in 2012 proposes that CFMs and CFM/MPMs may be appropriate during inflow surges; the 2022 revision of the IV proposes that CFM/MPMs may additionally be appropriate outside surges in the case of certain high debt stock vulnerabilities, the latter possibly arising either without a surge or in the aftermath of a surge. If countries have followed the IV recommendations (even before they were written), we may observe that capital controls are imposed mainly during surges or in their aftermath. Figure 6 indicates that this is indeed true. However, in addition, we also find a large number of tightening actions at other times. Figure 7 further supports this assertion. We plot a histogram of the timing distance in quarters of our tightening measures to the closest surge. Positive values mean the control was introduced after the closest surge, while negative values mean the control was introduced before the closest surge. We then compare this histogram to that of an artificial random distribution of quarters within the sample and, taking the surges' dates as given, we compute the timing distance of this random quarters to the surges.[11]

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[11] The randomization procedure consists of choosing at random, for each country i, x_i different periods in the sample to be the "randomly selected periods," where x_i is the number of tightenings actually observed in the sample for country i. We then compute the timing distance between these "if random" tightenings to the actual surges. The histograms in figures 7 and 8 show these "if random" distances for a particular random realization in order to illustrate the procedure, although in practice the randomization was performed many (over 50) times in order to ensure that the results were not driven by a specific realization of the random selection of periods.

Figure 7. Tightening Timing with Respect to Closest Surge, Actual and Random

Histogram of Timing of Measures
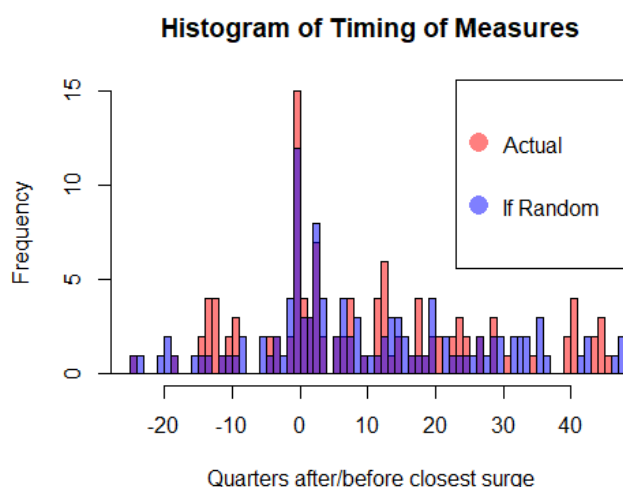
Source: Authors' calculations.

The histogram in Figure 8 seems to indicate the actual tightening actions are only very weakly more concentrated around the surges than those in the random sample. To formalize this notion, we classify tightening actions according to their timing distance into a number of bins: 10 or more quarters before a surge (which can be assumed to be unrelated to the surge), between 9 and 6 quarters before the surge, between 5 and 2 quarters before the surge, during a surge or in either the quarter preceding or after a surge, between 2 and 5 quarters after a surge, between 6 and 9 quarters after a surge, and 10 or more quarters away from a surge. We then compute the distribution of all the quarters in the sample across these bins and compare the actual tightening actions to this total distribution through a goodness-of-fit chi-square test. The histogram below illustrates the test:

Figure 8. Goodness-of-Fit for Tightening Timing with Respect to Closest Surge, Actual and Random

Histogram of Timing of Measures
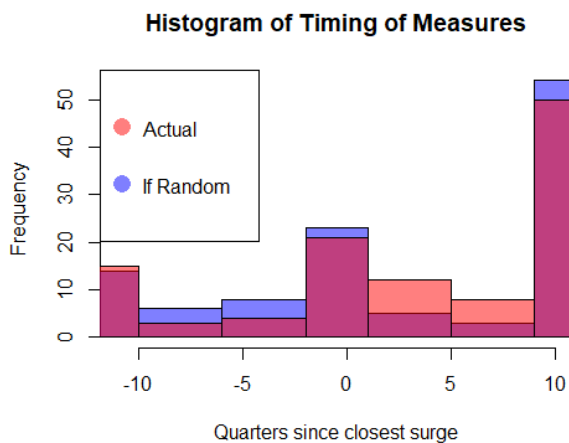
Source: Authors' calculations.

The test has a *p*-value of 0.22, which means that we do not reject the null hypothesis that the actual timing of the tightening actions is not significantly different from the timing that would be observed if the tightening actions were chosen randomly. Hence, countries do not seem to enact controls specifically during or around surges. This finding is robust to using different definitions of surges and different random realizations—although the actual distribution of the surges themselves vary significantly depending on the methodology and data used—the controls in our sample are never found to cluster only around these surges. This is also robust to only looking at episodes of net tightening (when the number of tightening actions is greater than the number of easing actions), as well as only looking at specific types of controls (like quantitative limits and prices).

3. Econometric Analysis

This section presents the econometric analysis of the effects of capital controls. We first analyze how the introduction of capital controls affects the probability of future surges of inflows. Thereafter, we assess the multilateral spillovers arising from the introduction of such controls.

3.1 The effects of Capital Controls on the Probability of Surges

We estimate a logit model where the dependent variable takes the value one if the period is an inflow surge, based on the surge definitions above and zero otherwise:

$$
\begin{aligned}
\text{Prob}&\big(InflowSurge_{i,t}\big) \\
&= \text{F}(\beta_1 Control_{i,t-1,t-4} + \beta_2 DiffGDPgrowth_{i,t-1} + \beta_3 DiffIR_{i,t-1} + \text{B}X_{i,t-1} \\
&\quad + \gamma_i + \theta_t + \varepsilon_{i,t}), \qquad (1)
\end{aligned}
$$

where *Inflow Surge* is a dummy variable equal to one if the country experiences a surge in non-resident total gross inflows (for all asset categories) during quarter *t* (see below for details), *Control* is a dummy variable equal to one if the country introduces capital controls on non-resident inflows (and/or on non-resident outflows, outside of crises) in the past four quarters. This is our primary variable of interest. A negative and significant value of β_1 reflects that controls introduced in the past four quarters reduce the probability of future surges. *Diff GDP growth* is the difference between domestic and U.S. real GDP growths; *Diff IR* is the difference between domestic and U.S. real interest rates. The latter two variables control for pull factors affecting the flow of capital and are expressed as deviations from the U.S variables to reflect the inflow from source countries such as the U.S. In the regression, we also include a set of other control variables including foreign exchange reserves to GDP, a composite risk index measuring political, financial, and economic risk rating of a country, and Fernandez and others (2018) index of capital restrictions on non-resident inflows. We lag the domestic pull factors and other control variables to reduce endogeneity problems. γ_i and θ_t are respectively country and time fixed effects. Sources and definitions of variables are detailed in Annex Table 2.

Row (1) in Table 1 shows that the probability of surge (defined at gross inflow level) is lower if a country has introduced a control in the past four quarters for two out of the three definitions considered. The push-pull factors on GDP growth and interest rates have a significant positive effect on the probability of inflow surges for our baseline definition (Forbes). An empirical estimation of the impact of tightening controls on inflows (and probability of surge as in our case) is often marred by the presence of endogeneity due to reverse causality (see Magud and others 2011). If controls tend to be tightened when inflows increase, we are likely to find a positive effect of controls on inflows due to this reverse causality. Using lags of controls should reduce the reverse causality but may not completely correct for it. The negative and significant effect despite the possibility of reverse causality (which would bias results towards finding a positive coefficient) provides additional support

to our findings. Further, we find in Section 2 that the actual timing of the tightening actions is not significantly different from the timing that would be observed if the tightening actions were chosen randomly. This would also help allay the endogeneity concerns.

For further robustness, we run additional specifications with alternative measures of tightening actions: (i) net tightening in the past four quarters – defined as the difference between the total number of tightening actions and total number of easing actions in the past four quarters. Unlike our first measure, this measure also takes into account easing actions, which may also affect surges;[12] and (ii) the sum of tightening actions and easing actions separately. Using net tightening implicitly assumes that the intensity of tightening and easing measures are the same, which may not be true. Hence, we include another specification where these are included as two separate variables. Overall, results are robust to using alternative definitions of tightening and we find that tightening is effective in lowering probabilities of surges for all three definitions.[13],[14]

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[12] An important caveat is that an unweighted sum of the number of measures implicitly assumes that they all are equally important, which is unlikely to be true given the wide range of capital controls used by the countries. Nonetheless, the measure still signals how active a country is in introducing capital controls.

[13] Results are also largely robust to using surge definition based on net inflows i.e. gross nonresident inflows – gross resident outflows.

[14] In practice, countries use capital controls as a part of broader policy package (for example, along with macroprudential tools and FX interventions). Since these policies are not explicitly controlled for in the analysis, we may potentially be capturing their joint effects.

Table 1. Impact of Capital Controls on the Probability of Surges

VARIABLES	Forbes			Ghosh			Simple Threshold		
	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)
Whether tightening in the past 4 qtrs	-0.405			-0.456*			-0.356**		
	(0.270)			(0.246)			(0.160)		
DiffGDPGrowth	0.181***	0.185***	0.185***	0.0712	0.0708	0.0748	0.116***	0.115***	0.116***
	(0.0612)	(0.0611)	(0.0613)	(0.0575)	(0.0575)	(0.0578)	(0.0354)	(0.0354)	(0.0355)
DIffIR	0.0581***	0.0570***	0.0549**	0.0286**	0.0251*	0.0275**	0.0152*	0.0144*	0.0145*
	(0.0219)	(0.0218)	(0.0219)	(0.0137)	(0.0137)	(0.0136)	(0.00850)	(0.00850)	(0.00849)
Composite Risk Index	0.123***	0.126***	0.123***	0.160***	0.157***	0.159***	0.113***	0.114***	0.113***
	(0.0300)	(0.0300)	(0.0301)	(0.0280)	(0.0281)	(0.0281)	(0.0168)	(0.0168)	(0.0168)
Foreign Exchange reserves as % of GDP	-0.00294	-0.00309	-0.00292	0.000394	0.000626	0.000605	-0.00260*	-0.00256	-0.00257
	(0.00298)	(0.00308)	(0.00303)	(0.00246)	(0.00248)	(0.00246)	(0.00157)	(0.00158)	(0.00158)
FD: Financial development index	0.832	1.478	1.084	5.772***	6.278***	5.877***	3.462***	3.607***	3.553***
	(1.600)	(1.595)	(1.623)	(1.620)	(1.627)	(1.636)	(1.092)	(1.089)	(1.091)
Inflow restrictions index (Fernandez et.al.)	-0.190	-0.538	-0.363	0.456	0.175	0.318	0.691*	0.483	0.553
	(0.614)	(0.613)	(0.628)	(0.550)	(0.544)	(0.549)	(0.369)	(0.364)	(0.369)
Sum of net tightening in past 4 qtrs		-0.0527*			-0.0524*			-0.0417*	
		(0.0318)			(0.0301)			(0.0233)	
Sum of tightenings in past 4 qtrs			-0.139*			-0.188**			-0.0994*
			(0.0826)			(0.0876)			(0.0556)
Sum of easings in past 4 qtrs			0.0435			0.0416			0.0346
			(0.0339)			(0.0323)			(0.0236)
Observations	2,382	2,382	2,382	2,196	2,196	2,196	2,643	2,643	2,643
Number of panel_id	33	33	33	32	32	32	37	37	37

Notes: Dependent variable is a binary variable equal to one if a country experiences surge based on aggregate non-resident inflow into the country. 'Whether tightening in the past 4 quarters' is a binary variable equal to one if a country has tightened capital controls on nonresident inflows in the past 4 quarters. Net tightening in the past 4 quarters is defined as the sum of tightenings minus the sum of easings in the past 4 quarters. Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

3.2 The effect of Capital Control on Asset-Specific Surges

The empirical specification thus far considered surges at the total flow level and the *Control* variable is one if a capital control is introduced in any asset class. There could be two potential concerns with conducting analysis at aggregate flow level. First, surges could be asset specific i.e., it is possible to have a surge in a certain asset class without necessarily having a surge at the aggregate level. While aggregate flows are relevant for macroeconomic outcomes such as the impact on exchange rate, asset level surges may still be relevant for financial stability considerations. Second, conducting analysis at an aggregate level does not allow to match controls with the specific asset class where they are imposed.

To address these concerns, we use a three-dimensional (country-time-asset) panel. The inflow surges are now defined at the asset level.[15] Further, capital controls are directly matched with the relevant asset category to which they are applied. The regression specification is as follows:

$$\text{Prob}\big(InflowSurgeAsset_{i,n,t}\big)$$
$$= \text{F}(\beta_1 ControlAsset_{i,n,t-1,t-4} + \beta_2 DiffGDPgrowth_{i,t-1} + \beta_3 DiffIR_{i,t-1}$$
$$+ \text{B}X_{i,t-1} + \gamma_i + \theta_t + \mu_n + \varepsilon_{i,t}), \qquad (2)$$

Where *InflowAssetSurge* is the surge defined at asset level, *ControlAsset* is a dummy variable equal to one if the country introduces capital controls on nonresident inflows in the specific asset class in the past four quarters. The other controls are as before, and we also add asset fixed effects μ_n.

The results shown in Table 2 depict a similar pattern as before. Controls are found to reduce the probability of future asset specific surges. The results are generally stronger when controls are directly mapped to the assets to which they are applied. We also find that for our baseline specification (Forbes) higher restrictiveness index (Fernandez index) is associated with lower future surges. This is in line with findings from Bhargava and others (forthcoming) who find that countries with higher level of restrictions generally receive lower capital inflows.

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[15] We consider two surge definitions at asset level – Forbes and Ghosh. We don't include the simple limit as setting (flow/GDP) limits at asset levels may be arbitrary.

Table 2. Impact of Capital Controls on the Probability of Surges at Asset Level

VARIABLES	Forbes			Ghosh		
	(1)	(2)	(3)	(1)	(2)	(3)
Whether tightening in the past 4 qtrs	-0.300*			-0.266*		
	(0.182)			(0.139)		
DiffGDPGrowth	0.0712***	0.0721***	0.0727***	0.0289	0.0299	0.0300
	(0.0257)	(0.0257)	(0.0257)	(0.0197)	(0.0197)	(0.0197)
DIffIR	0.0407***	0.0399***	0.0398***	0.00507	0.00455	0.00466
	(0.00684)	(0.00684)	(0.00684)	(0.00505)	(0.00506)	(0.00506)
Foreign Exchange reserves as % of GDP	0.000360	0.000392	0.000400	-0.00114	-0.00112	-0.00111
	(0.00127)	(0.00127)	(0.00127)	(0.000950)	(0.000954)	(0.000953)
Composite Risk Index	0.0943***	0.0957***	0.0952***	0.0154*	0.0152	0.0152
	(0.0121)	(0.0121)	(0.0121)	(0.00931)	(0.00933)	(0.00933)
FD: Financial development index	1.992***	2.163***	2.103***	3.402***	3.573***	3.530***
	(0.726)	(0.724)	(0.727)	(0.590)	(0.589)	(0.591)
Inflow restrictions index at asset/flow level (Fernandez et.al.)	-0.573***	-0.647***	-0.625***	-0.0736	-0.134	-0.119
	(0.186)	(0.186)	(0.187)	(0.144)	(0.144)	(0.145)
Sum of net tightening in past 4 qtrs		-0.107**			-0.130***	
		(0.0443)			(0.0365)	
Sum of tightenings in past 4 qtrs			-0.198*			-0.201**
			(0.110)			(0.0900)
Sum of easings in past 4 qtrs			0.0961**			0.121***
			(0.0471)			(0.0383)
Observations	9,359	9,359	9,359	9,759	9,759	9,759
Number of panels	128	128	128	135	135	135

Notes: Dependent variable is a binary variable equal to one if a country experiences surge based on asset specific non-resident inflow into the country. 'Whether tightening in the past 4 quarters' is a binary variable equal to one if a country has tightened capital controls on nonresident inflows in the corresponding asset class in the past 4 quarters. Net tightening in the past 4 quarters is defined as the sum of tightenings minus the sum of easings in the past 4 quarters. Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

3.3 Multilateral Considerations of Capital Controls: International Spillovers

The earlier sections found that capital controls can reduce the probability of future surges. While capital controls may help individual countries in their domestic stabilization and financial stability concerns emerging from surges, there might be spillovers to other countries. Understanding these spillovers is essential in building multilateral cooperation in this area.

Based on an investor survey, Sahay and others (forthcoming) find that investors tend to move their capital to countries with similar fundamentals or in the same region in response to tightening of capital controls. We create groupings using various metrics to assess the impact of controls on the probability of surges in other countries in the sample. In particular, we look at the following metrics:

- *Region based spillover*: We divide countries into seven regional groups: Asia, Sub-Saharan Africa, Middle East and North Africa, Western Europe, Eastern Europe and Central Asia, Latin America, and North America. Next, we assess how capital controls affect inflows in other countries in the same group.
- *Return based spillover*: We use real GDP growth rate as a proxy for country specific return. The countries are divided into four groups based on their average real GDP growth rates across the sample period. For example, the low-return group in period *t* consists of countries whose sample average growth rates are in the bottom 25 percentile in that period.
- *Risk based spillover*: We use the same methodology as above (for return based spillover) using instead a measure of risk – the composite risk index.
- *Large EMDEs based spillover*: Following Pasricha et. al (2018), we create an additional indicator of spillover assuming that the most important spillovers of capital control actions are most likely to stem from the BRICS (Brazil, Russia, India, China, and South Africa). In particular, the BRICS are assumed to be affected by spillovers of capital control actions by any of the other BRICS, but that spillovers to other EMDEs arise only from the actions of the regional BRICS country. For example, capital control actions by India are most likely to affect flows to the other Asian countries in the sample (e.g., Malaysia or Thailand) or to the other BRICS, as they represent closer substitutes to India than smaller countries in other regions.

To assess multilateral spillovers, we run the following regression:

$$
\begin{aligned}
\text{Prob}\big(InflowSurge_{i,t}\big) \\
= \beta_1 Control_{\,i,t-1,t-4} + \beta_2 Control_{\,s-i,t-1,t-4} + \beta_3 DiffGDPgrowth_{i,t-1} \\
+ \beta_4 DiffIR_{i,t-1} + \mathrm{B}X_{i,t-1} + \gamma_i + \theta_t + \varepsilon_{i,t}, \quad\quad (3)
\end{aligned}
$$

This is similar to regression (1); however, we also add an additional term $Control_{\,s-i,t-1,t-4}$ which is a weighted average of controls introduced in the past 4 quarters in other countries in the group. For the first three measures of spillover (region, return and risk):

$$
Control_{s-i} = \frac{\sum_{j=s-i} y_j \, control_j}{\sum_{j=s-i} y_j}
$$

Where y_j is the non-resident inflows in country *j*, a measure of relative importance of the controls based on the inflows they are applied to. For large EMDE-based spillovers, for each of the BRICS, $Control_{s-i}$ is the sum of the number of policy changes in any of the other BRICS in a given quarter. For each of the other countries in the sample (i.e., the non-BRICS), the variable is the sum of the number of measures introduced by the regional BRICS country (for example, Brazil for Latin America, India and China for Asia).

The results shown in Table 3 reveal significant multilateral spillovers from capital control actions. We find that tightening of capital controls increases the probability of surge in other countries with similar risk index i.e., within-group spillover when countries are grouped by risk index. Similarly, capital control tightening in large emerging market economies (BRICS) is found to increase the probability of surges in other countries. We also find evidence that easing of capital controls can reduce the probability of surges in other countries with similar characteristics (based on region). In terms of relative magnitudes, the within-group spillovers are largest among countries with similar risk index and from controls introduced in BRICS countries.

Table 3: Impact of Capital Controls on the Probability of Surges in Other Countries

VARIABLES	Forbes							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Sum of own tightenings in past 4 qtrs	-0.136*		-0.140*		-0.144*		-0.152*	
	(0.0827)		(0.0823)		(0.0827)		(0.0811)	
Sum of own easings in past 4 qtrs	0.0358		0.0379		0.0421		0.0425	
	(0.0338)		(0.0336)		(0.0336)		(0.0340)	
L. DiffGDPGrowth	0.200***	0.196***	0.186***	0.181***	0.182***	0.176***	0.187***	0.181***
	(0.0628)	(0.0621)	(0.0612)	(0.0606)	(0.0612)	(0.0607)	(0.0620)	(0.0612)
L. DIffIR	0.0526**	0.0579***	0.0563***	0.0621***	0.0553**	0.0613***	0.0528**	0.0595***
	(0.0219)	(0.0219)	(0.0218)	(0.0218)	(0.0220)	(0.0220)	(0.0222)	(0.0222)
Composite Risk Index	0.120***	0.124***	0.112***	0.116***	0.118***	0.121***	0.111***	0.115***
	(0.0302)	(0.0300)	(0.0301)	(0.0299)	(0.0301)	(0.0299)	(0.0302)	(0.0299)
Foreign Exchange reserves as % of GDP	-0.00215	-0.00214	-0.00228	-0.00227	-0.00291	-0.00291	-0.00275	-0.00272
	(0.00288)	(0.00288)	(0.00294)	(0.00294)	(0.00301)	(0.00302)	(0.00291)	(0.00291)
Inflow restrictions index (Fernandez et.al.)	-0.347	-0.375	-0.434	-0.467	-0.403	-0.422	-0.494	-0.504
	(0.626)	(0.589)	(0.628)	(0.591)	(0.623)	(0.588)	(0.630)	(0.592)
Region based spillover: Tightenings	0.0345	0.0356						
	(0.0234)	(0.0234)						
Region based spillover: Easings	-0.0150*	-0.0154*						
	(0.00857)	(0.00857)						
Risk based spillover: Tightenings			0.0931**	0.0948**				
			(0.0381)	(0.0377)				
Risk based spillover: Easings			-0.0221	-0.0228				
			(0.0151)	(0.0152)				
Return based spillover: Tightenings					0.108	0.105		
					(0.0791)	(0.0791)		
Return based spillover: Easings					-0.00996	-0.0105		
					(0.0100)	(0.0102)		
BRICS based spillover: Tightenings							0.0877*	0.0858*
							(0.0473)	(0.0470)
BRICS based spillover: Easings							0.0294	0.0274
							(0.0181)	(0.0180)
Observations	2,382	2,382	2,382	2,382	2,382	2,382	2,382	2,382
Number of panels	33	33	33	33	33	33	33	33

Notes: Dependent variable is a binary variable equal to one if a country experiences surge based on aggregate non-resident inflow into the country. 'Sum of own tightenings/easings' the sum of tightenings/easings done by the country in the past 4 quarters. Region based spillover (tightening/easing) is the flow-weighted sum of tightenings/easings in all other countries in the region. Risk based spillover (tightening/easing) is the flow-weighted sum of tightenings/easings in all other countries in the same risk group as the country of interest. Return based spillover (tightening/easing) is the flow-weighted sum of tightenings/easings in all other countries in the same return group as the country of interest. BRICS based spillover is an indicator variable reflecting tightenings/easings spillovers from capital control actions in BRICS countries. Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

4. Conclusion

Policy makers around the world, particularly in EMDEs, have relied on a range of policy instruments to deal with adverse effects of large and volatile capital flows. The verdict on the effectiveness of one such policy tool—capital controls—is far from settled. Proponents argue that capital controls are effective in stemming large and volatile inflows in recipient countries and can therefore be valid tools of macroeconomic and macro-prudential management (IMF, 2011). However, the empirical evidence of the effectiveness of capital controls in meeting various domestic policy objectives is rather mixed.

This paper contributes to the literature by assessing the impact of capital controls in limiting inflow surges using granular data on capital control actions in a group of 40 advanced EMDEs. We match capital controls directly to the assets they are targeting to better estimate their impact. We assess effectiveness by looking at the impact of controls on the probability of future surges. Since there is no consensus in the literature on a preferred definition of inflow surge, we consider various measures of surges in our analysis. Overall, we find robust evidence that tightening of capital controls reduces the probability of future surges. This implies that capital controls can be an important part of policymakers' toolkit to deal with volatile flows. However, using these controls may also have adverse effects (IMF, 2022), an assessment of which is beyond the scope of this paper. An optimal policy response should weigh pros and cons of various available policy tools depending on a country's initial conditions and nature of the shock as envisaged in the ongoing work related to the integrated policy framework (Basu and others (2020) and Adrian and others (2021)) and the IMF's IV on the liberalization and management of capital flows.

Beyond their impact in achieving domestic stabilization goals by limiting inflow surges, capital controls can also have adverse spillovers. Controls introduced in one country can affect the probability of a surge in another country by deflecting capital flows. Indeed, we find evidence of significant multilateral spillovers, with capital control actions on inflows resulting in flows being directed to countries with similar fundamentals, particularly those with similar risk profile as measured by the composite risk index. This indicates that even when capital controls are effective in achieving domestic goals, they may have a large spillover effect, which may call for international cooperation in the use of this policy.

Annex Table I – Tightened Capital Control Measures on Non-Resident Inflows

Country	Year Quarter	Targeted Asset	Measure
Argentina	2005q2	Debt	(1) The minimum period that nonresident investors must hold incoming capital (excluding foreign trade operations and direct investment) in the country was raised to 365 days from 180 days; (2) All new local market debts denominated in foreign currency and any new debts or rollover of existing debts by residents with external creditors were subject to a retention of 365 days; (3) A 30 percent unremunerated deposit requirement of one year was imposed on foreign portfolio investment, excluding initial public offerings, foreign direct investment, and trade finance flows.
Argentina	2005q4	Debt	The exemption from the 30 percent deposit requirement for the primary issuance of trust securities was removed. All receipts on the local market of foreign exchange to be used to underwrite primary issues of securities, bonds, or equity certificates issued by the trustee of a trust, which may or may not be publicly offered and listed on self-regulated markets, when the stated requirements apply to any of the assets of the trust are also covered.
Argentina	2009q2	Debt	BCRA approval requirement was introduced to access the MULC for the purpose of obtaining foreign exchange to repatriate the proceeds of portfolio investments by nonresidents if the foreign beneficiary is an individual or legal entity resident, incorporated, or domiciled in associated dominions, jurisdictions, territories, or states included on the list in Decree No. 1344/98 (Communication A 4940).
Argentina	2013q1	Debt	The deadline for advance payments on the principal of foreign financial debts was changed from 30 calendar days to 10 business days. Full or partial prepayment is allowed when financing is entirely through inward foreign exchange transactions by way of capital contributions or when the payment is financed through inward transactions involving new borrowing from international organizations and their agencies, official foreign lending agencies, and foreign banks, as long as the payments are a condition for the issuance of new debt and do not result in an increase in the current value of the foreign borrowing of the debtor. The minimum applicable holding period must be met in all cases (Communication A 5397).
Argentina	2005q2	Equity	(1) The minimum period that nonresident investors must hold incoming capital (excluding foreign trade operations and direct investment) in the country was raised to 365 days from 180 days; (2) All new local market debts denominated in foreign currency and any new debts or rollover of existing debts by residents with external creditors were subject to a retention of 365 days; (3) A 30 percent unremunerated deposit requirement of one year was imposed on foreign portfolio investment, excluding initial public offerings, foreign direct investment, and trade finance flows.
Argentina	2005q4	Equity	The exemption from the 30 percent deposit requirement for the primary issuance of trust securities was removed. All receipts on the local market of foreign exchange to be used to underwrite primary issues of securities, bonds, or equity certificates issued by the trustee of a trust, which may or may not be publicly offered and listed on self-regulated markets, when the stated requirements apply to any of the assets of the trust are also covered.
Argentina	2009q2	Equity	BCRA approval requirement was introduced to access the MULC for the purpose of obtaining foreign exchange to repatriate the proceeds of portfolio investments by nonresidents if the foreign beneficiary is an individual or legal entity resident, incorporated, or domiciled in associated dominions, jurisdictions, territories, or states included on the list in Decree No. 1344/98 (Communication A 4940).
Argentina	2003q4	FDI	Repatriation of inward direct investments by nonresidents was subject to a monthly limit of US$5,000 or the equivalent on sales of foreign exchange to nonresidents.
Argentina	2004q4	FDI	Nonresidents' purchases of foreign exchange were limited to US$2 million a month.
Argentina	2009q2	FDI	BCRA approval requirement was introduced to access the MULC for the purpose of obtaining foreign exchange to repatriate the proceeds of portfolio investments by nonresidents if the foreign beneficiary is an individual or legal entity resident, incorporated, or domiciled in associated dominions, jurisdictions, territories, or states included on the list in Decree No. 1344/98 (Communication A 4940).
Argentina	2011q4	FDI	The CB introduced new regulations setting additional requirements for the repatriation of direct investments made in Argentina by foreign investors (Communication A 5237). Since that date, access to the foreign exchange market for the repatriation of all forms of direct investment in the country without prior BCRA approval require evidence that funds for new investment involving new contributions and purchases of shares in domestic enterprises and real estate were brought in through the MULC and were disbursed in foreign exchange by the foreign investor on or after October 28, 2011. Transactions to repatriate direct investment subject to but not in compliance with the above requirements requires CB approval.
Argentina	2012q3	FDI	All rules set out in point 4.2 of the Annex to Communication A 5236 granting access to the local exchange market without Central Bank of Argentina (BCRA) approval for the purchase of residents' external assets not earmarked for a specific purpose (point 2 of Communication A 5318) were suspended, making BCRA approval compulsory for these transactions.
Australia	2010q2	FDI	Residential real estate purchased by temporary residents directly or through Australian companies or trusts, where the real estate is an established dwelling intended to be the acquirer's place of residence, constitutes single blocks of vacant land, or is a new dwelling, is subject to notification and approval requirements under the Foreign Acquisitions and Takeovers Act 1975. Previously, this was allowed under exemptions from the notification and approval requirements.
Australia	2015q4	FDI	The threshold to acquire an interest in Agribusiness was valued above $A 55 million (previously $A 248 million).
Australia	2017q1	FDI	In the state of Victoria, the land tax surcharge (on vacant properties only) imposed on foreign owners was increased to 1.5 percent from 0.5 percent.
Australia	2017q2	FDI	The Commonwealth Government (1) introduced an annual vacancy fee on foreign owners of under-utilized residential property where the property is not occupied or genuinely available on the rental market for at least six months in a 12-month period; (2) capped sales from property developers directly to foreign persons at 50 percent of dwellings in new residential housing developments under New Dwelling Exemption Certificates; and (3) eliminated the main residence capital gains tax exemption for foreign tax residents.
Australia	2017q3	FDI	In the state of New South Wales, the surcharge purchaser duty (stamp duty) imposed on foreign buyers was increased to 8 percent from 4 percent.
Brazil	2009q4	Debt	A 2 percent tax (IOF) was introduced on foreign equity and fixed income inflows (but not FDI), with no discrimination between long- and short-term flows.

Brazil	2010q4	Debt	(1) The IOF tax rate for foreign inflows in fixed-income instruments was increased from 2 percent to 4 percent; (2) The IOF tax rate for foreign inflows in fixed-income instruments was increased from 4 percent to 6 percent.
Brazil	1999q3	Equity	A 15 percent tax was levied on foreign investment profits from Brazilian fixed-income funds.
Brazil	2009q4	Equity	(1) A 2 percent tax (IOF) was introduced on foreign equity and fixed income inflows (but not FDI), with no discrimination between long- and short-term flows; (2) A 1.5 percent tax was introduced on certain trades involving ADRs issued by Brazilian companies. The tax is charged when foreign investors convert ADRs for Brazilian companies into receipts for shares issued locally.
Brazil	2010q4	Equity	(1) The IOF rate was increased from 2 percent to 4 percent on inflows, including through simultaneous foreign exchange operations by foreign investors to purchase shares of participation investment funds, emerging companies investment funds, or investment funds in shares of equity funds regulated by the CVM; (2) The IOF rate was increased from 4 percent to 6 percent on inflows, including through simultaneous foreign exchange operations by foreign investors to purchase shares of participation investment funds, emerging companies investment funds, or investment funds in shares of equity funds regulated by the CVM.
Brazil	2011q1	Equity	The IOF rate was increased from zero to 2 percent on inflows, including through simultaneous foreign exchange operations related to inflows of FDI under provisions of Law No. 4.131 (September 3, 1962) contracted since January 1, 2011, and destined for investment in shares traded on the stock exchange, according to the regulation issued by the NMC.
Canada	2007q4	FDI	According to new guidelines issued by the minister of industry on how the net benefit to Canada requirement will be applied, the governance and commercial orientation of SOEs will be examined in determining whether acquisitions by SOEs are of net benefit to Canada.
Canada	2013q4	FDI	New investment rules for state-owned enterprises (SOEs), announced in December 2012 and supplementing 2007 SOE guidelines, stipulate that future SOE bids for control of a Canadian oil-sands business will be approved on an "exceptional basis only." The definition of a SOE was also altered to include entities that are influenced directly or indirectly by a foreign government. The government intends to liberalize the review threshold under the Investment Canada Act to Can$1 billion in enterprise value over four years only for private sector investors. The review threshold for foreign SOEs will remain Can$330 million in asset value.
Canada	2017q2	FDI	Ontario introduced a 15 percent non-resident speculation tax (NRST) on the purchase or acquisition of an interest in residential property located in the Greater Golden Horseshoe (GGH) by individuals who are not citizens or permanent residents of Canada or by foreign corporations ("foreign entities") and taxable trustees.
Chile	2000q4	Debt	The rating of the long-term foreign debt instruments of the firms issuing them were required to have a minimum classification of BB–, if the weighted average term of the bonds is more than four years, or BB, if it is between two and four years.
China	2004q2	FDI	Capital remitted as inward foreign direct investment can be converted into renminbi only on the basis of a written payment order by the foreign-invested enterprise.
China	2008q3	FDI	The amount of capital remitted as inward foreign direct investment that may be converted to renminbi only with a written payment order by the company making the foreign investment was reduced to US$50,000 from US$200,000.
Colombia	2002q2	Debt	Purchases by nonresidents could not be greater than 20 percent of the total issue, and the maturities of securities with a fixed interest rate must be less than two years.
Colombia	2004q4	Debt	Redemptions of portfolio investments were restricted for a period of a year from the date of investment; however, net profits could be remitted before one year elapsed.
Colombia	2007q2	Debt	Foreign portfolio investments were made subject to a six-month URR of 40 percent to be held in the BR.
Colombia	2010q4	Debt	Foreign portfolio capital investments (investments in securities registered in the National Registry of Securities and Issuers, RNVE, in securities listed by foreign securities listing services and in equity holdings in collective portfolios) must be made through local administrators (floor brokers, trust companies, or investment management companies subject to SF inspection and supervision). Authorized venture capital in operation may continue to function in accordance with the rules governing management companies (Decree No. 2080/00, amended by Decree No. 4800 of 2010).
Colombia	2004q4	Equity	Redemptions of portfolio investments were restricted for a period of a year from the date of investment; however, net profits could be remitted before one year elapsed.
Colombia	2007q2	Equity	Foreign portfolio investments were made subject to a six-month URR of 40 percent to be held in the BR.
Colombia	2010q4	Equity	Foreign portfolio capital investments (investments in securities registered in the National Registry of Securities and Issuers, RNVE, in securities listed by foreign securities listing services and in equity holdings in collective portfolios) must be made through local administrators (floor brokers, trust companies, or investment management companies subject to SF inspection and supervision). Authorized venture capital in operation may continue to function in accordance with the rules governing management companies (Decree No. 2080/00, amended by Decree No. 4800 of 2010).
Iceland	2008q4	Debt	The purchase of securities for foreign currency was prohibited except for reinvestment of investments made prior to that date. The proceeds must be reinvested in the same type of instrument within two weeks. /n The issuance and sale of securities denominated in foreign currency were prohibited if the settlement takes place in Icelandic krónur. If the issuance is denominated in Icelandic krónur, the proceeds from the sale must be deposited to a króna-denominated account, in the issuer's name, with an AD in Iceland. Króna-denominated financial instruments may not be settled in foreign currency, and the proceeds must be deposited to the nonresident's account with an Icelandic AD. However, residents may issue foreign-currency-denominated securities abroad.
Iceland	2010q3	Debt	Investments in krónur-denominated financial instruments from vostro accounts are limited to securities eligible as collateral for CBI facilities
Iceland	2012q1	Debt	Act No. 17/2012 prohibited the purchase of foreign currency for the payment of bond principal and indexation on bond principal.
Iceland	2013q2	Debt	Use of króna balances for investment in financial instruments issued in domestic currency, previously limited to real estate and securities eligible as collateral for Central Bank of Iceland (CBI) facilities, is now limited to instruments on CBI exemption lists, and the proceeds that are not convertible króna-denominated financial investments from vostro accounts previously limited to securities eligible as collateral for CBI facilities are now limited to financial instruments issued in domestic currency that are on the CBI exemption list.
Iceland	2016q2	Debt	A special 40 percent reserve requirement (with a 12-month holding period, at a zero interest rate) on specific debt inflows was introduced.

Iceland	2017q2	Debt	Effective June 27, 2017, the scope of exemptions related to cross-border movement of krónur was narrowed. The amendments are as follows: First, cross-border movement of Icelandic krónur is no longer exempt from the restrictions provided for in the Foreign Exchange Act when they are related to exports of specified securities issued in Icelandic krónur; and second, settlement of transactions with further specified financial instruments comparable to those falling under Article 2 of the Rules on Special Reserve Requirements for New Foreign Currency Inflows, No. 490/2016, is not exempt from the restrictions on settlement of trades with such financial instruments pursuant to the Foreign Exchange Act. The amendments were made to support the Rules No. 490/2016, on special reserve requirements for new foreign currency inflows. The amendment closed a potential loophole where financial products in domestic currency subject to the reserve requirement could be sold to investors for foreign currency, that is, without a prior FX/ISK currency exchange, without the investor having to meet the reserve requirement.
Iceland	2008q4	Equity	The purchase of securities for foreign currency was prohibited except for reinvestment of investments made prior to that date. The proceeds must be reinvested in the same type of instrument within two weeks. /n The issuance and sale of securities denominated in foreign currency were prohibited if the settlement takes place in Icelandic krónur. If the issuance is denominated in Icelandic krónur, the proceeds from the sale must be deposited to a króna-denominated account, in the issuer's name, with an AD in Iceland. Króna-denominated financial instruments may not be settled in foreign currency, and the proceeds must be deposited to the nonresident's account with an Icelandic AD. However, residents may issue foreign-currency-denominated securities abroad.
Iceland	2010q3	Equity	Investments in krónur-denominated financial instruments from vostro accounts are limited to securities eligible as collateral for CBI facilities
Iceland	2013q2	Equity	Use of króna balances for investment in financial instruments issued in domestic currency, previously limited to real estate and securities eligible as collateral for Central Bank of Iceland (CBI) facilities, is now limited to instruments on CBI exemption lists, and the proceeds that are not convertible króna-denominated financial investments from vostro accounts previously limited to securities eligible as collateral for CBI facilities are now limited to financial instruments issued in domestic currency that are on the CBI exemption list.
Iceland	2017q1	Equity	The reserve base was changed to include deposits that are used to invest in bonds or bills in domestic currency, and deposits that are used to invest in funds or equity of companies that either invest in domestic currency bonds or bills, or own domestic currency deposits (if cash and deposits bearing an annual interest of 3 percent or more constitute 10 percent or more of the funds' assets.
Iceland	2017q2	Equity	Effective June 27, 2017, the scope of exemptions related to cross-border movement of krónur was narrowed. The amendments are as follows: First, cross-border movement of Icelandic krónur is no longer exempt from the restrictions provided for in the Foreign Exchange Act when they are related to exports of specified securities issued in Icelandic krónur; and second, settlement of transactions with further specified financial instruments comparable to those falling under Article 2 of the Rules on Special Reserve Requirements for New Foreign Currency Inflows, No. 490/2016, is not exempt from the restrictions on settlement of trades with such financial instruments pursuant to the Foreign Exchange Act. The amendments were made to support the Rules No. 490/2016, on special reserve requirements for new foreign currency inflows. The amendment closed a potential loophole where financial products in domestic currency subject to the reserve requirement could be sold to investors for foreign currency, that is, without a prior FX/ISK currency exchange, without the investor having to meet the reserve requirement.
Iceland	2008q4	FDI	Nonresidents were prohibited from transferring capital from the sale or liquidation of direct investments out of Iceland if the investment was made from nonresidents' blocked króna accounts for the purpose of transferring the balance out of Iceland.
Iceland	2014q2	FDI	Nonresidents may sell real estate in Iceland to residents, provided the purchase was made by withdrawal from a króna-denominated account, in the issuer's name, with an AD in Iceland, but the proceeds must be deposited in a króna-denominated account, in the issuer's name, with an AD in Iceland.
India	2003q3	Equity	OCBs were no longer allowed to purchase securities under the portfolio investment scheme.
India	2001q1	FDI	The facility for acquisition by foreign investors of shares and convertible debentures of Indian companies engaged in the print media sector was eliminated.
India	2003q3	FDI	OCBs that are unincorporated entities were not allowed to make new investments under the Foreign Direct Investment Scheme, including through the automatic route.
Indonesia	2010q3	Debt	BI imposed a one-month minimum holding period for all investors (both domestic and foreign) for purchases of SBIs in both the primary and secondary markets.
Indonesia	2011q2	Debt	The minimum holding period for all investors (both domestic and foreign) for purchases of Bank Indonesia certificates (SBIs) in both the primary and secondary markets was lengthened from one month to six months.
Indonesia	2012q1	Debt	Bank Indonesia regulation No.14/25/PBI/2012 amended Regulation No.13/20/PBI/2011. The new regulation aims to to ensure that receipt of foreign exchange proceeds from debt issuance abroad takes place through a domestic foreign exchange bank in the Indonesian banking system. These funds do not have to be kept in a domestic bank and they may be freely transferred abroad. The foreign exchange does not have to be converted to domestic currency. This requirement does not apply to agreements signed before January 2, 2012, during a transition period that ends December 31, 2012.
Israel	2011q3	Debt	The BOI imposed reporting requirements on nonresidents' transactions in makam bills and short-term government bonds.
Japan	2007q3	FDI	Investment regulations were amended in order to prevent foreign investment from jeopardizing Japan's defense industrial base and to control the proliferation of sensitive technologies related to weapons of mass destruction.
Kenya	2007q2	Equity	The minimum share capital of a listed company that must be held by domestic investors was raised to 40 percent from 25 percent to account for East African investors who are now treated as local investors.
Malaysia	1998q3	Debt	Nonresident sellers of Malaysian securities were required to hold on to their ringgit proceeds for at least one year and to carry out all purchases and sales of ringgit securities through authorized depository institutions.
Malaysia	1998q3	Equity	Nonresident sellers of Malaysian securities were required to hold on to their ringgit proceeds for at least one year and to carry out all purchases and sales of ringgit securities through authorized depository institutions.
Malaysia	2006q2	Equity	CIS funds of limited distribution to sophisticated investors (restricted investment schemes) were required to be managed and administered by a fund management company licensed by the SC.
Malaysia	2009q1	Equity	The issuance of a collective investment scheme became subject to the approval of the SC.
Malaysia	2012q1	FDI	The minimum value for the acquisition of residential property by foreigners was raised from RM 250,000 to RM 500,000.
Mexico	2004q1	FDI	Financial and commercial entities that provide information to credit information companies were prohibited from acquiring more than 18 percent ownership interest in such companies or directly or indirectly controlling them.
Pakistan	2010q3	Debt	A 10 percent tax on capital gains on stocks/shares/securities held for six months or less applies. A 7.5 percent capital gains tax applies to holdings of stocks/shares/securities exceeding six months. No tax applies to capital gains arising from holdings exceeding 12 months.
Pakistan	2010q3	Equity	A 10 percent tax on capital gains on stocks/shares/securities held for six months or less applies. A 7.5 percent capital gains tax applies to holdings of stocks/shares/securities exceeding six months. No tax applies to capital gains arising from holdings exceeding 12 months.

Peru	2008q1	Debt	The regulations for acquiring and trading CDs were changed with respect to the registration of transfers of ownership when at least one of the parties is a nonresident. The CRBP was authorized to charge commissions on the registration of transfers.
Philippines	1997q1	Debt	The issuance of peso-denominated instruments in the international capital markets, as well as inward remittances of foreign exchange to the Philippines and sale thereof for pesos to the local banking system and resident enterprises participating in such activity shall require prior BSP approval.
Philippines	2004q2	Debt	If at least one of the parties in the securities transaction was a bank or an NBFI under BSP supervision, securities purchased were required to be held by a BSP-accredited securities custodian or registry that must be an unaffiliated third party. However, if the purchaser was a nonresident with an existing global custody agreement governed by foreign laws and conventions wherein the bank or NBFI was designated as custodian or subcustodian, the requirement for a third party BSP-accredited custodian did not apply.
Philippines	1997q1	Equity	The issuance of peso-denominated instruments in the international capital markets, as well as inward remittances of foreign exchange to the Philippines and sale thereof for pesos to the local banking system and resident enterprises participating in such activity shall require prior BSP approval.
Philippines	2004q2	Equity	If at least one of the parties in the securities transaction was a bank or an NBFI under BSP supervision, securities purchased were required to be held by a BSP-accredited securities custodian or registry that must be an unaffiliated third party. However, if the purchaser was a nonresident with an existing global custody agreement governed by foreign laws and conventions wherein the bank or NBFI was designated as custodian or subcustodian, the requirement for a third party BSP-accredited custodian did not apply.
Philippines	1997q3	FDI	Per Circular 142, an investment funded by foreign exchange deposited in an investor's FCDU account for investment purposes shall be issued a Bangko Sentral registration document, evidencing BSP registration only after the amount deposited has been converted into pesos, as certified by the bank maintaining the said ECDU account.
Philippines	2012q1	FDI	All applications for FDI registration must be filed with the Bangko Sentral ng Pilipinas (BSP) within five years of the date of inward remittance/actual transfer of assets to the Philippines. A Bangko Sentral Registration Document must be issued by the BSP as evidence of registration.
Philippines	2013q2	FDI	Applicants for registration of FDI must file with the Bangko Sentral ng Pilipinas within one year (previously five years) of inward remittance/actual transfer of assets to the Philippines.
Russia	1998q2	FDI	Capital outflow to Latvia is no longer allowed without guarantees of the government of Latvia on return of investments and its earnings and guarantees against the discrimination of entities with Russian capital.
Russia	1998q3	Debt	The authorities suspended repayments and converted all treasury bills maturing before end-1999 into longer-term paper, and introduced a 90-day moratorium on the payment of many private sector foreign currency obligations.
Russia	2004q3	Debt	A provisioning requirement was imposed on certain transactions requiring the use of special accounts.
Russia	2004q3	Equity	A provisioning requirement was imposed on certain transactions requiring the use of special accounts.
Russia	2013q4	FDI	The threshold for participation in credit institutions without Bank of Russia approval was lowered from 20 percent to 10 percent.
Russia	2015q4	FDI	In accordance with Federal Law No. 372-FZ of December 14, 2015, on Amendments to Articles 16 and 18 of the Federal Law on Banks and Banking, adopted on the basis of the Russian Federation's commitments in connection with accession to the WTO, the level of participation of foreign capital in the Russian Federation's banking system is taken into account when considering whether the Bank of Russia will issue a permit to establish a credit institution with foreign investments. The level of participation of foreign capital in the aggregate authorized capital of credit institutions licensed to perform banking operations is calculated as the ratio of nonresidents' foreign investments in the authorized capital of credit institutions that are licensed to perform banking operations to the aggregate authorized capital of said credit institutions. The procedure for calculating the level of participation of foreign capital is defined under Bank of Russia Directive No. 3948-U of January 28, 2016, on the Procedure for Calculating the Level of Participation of Foreign Capital in the Aggregate Authorized Capital of Credit Institutions Licensed to Perform Banking Operations. The following foreign investments are not included in the calculation of foreign investments in the authorized capital of credit institutions licensed to perform banking operations: (1) investments made in the authorized capital of credit institutions licensed to perform banking operations that are financed at the expense of earnings of said credit institutions received in the Russian Federation or repatriated to the Russian Federation from abroad; (2) investments made in the authorized capital of credit institutions licensed to perform banking operations by subsidiary credit institutions of foreign banks licensed to perform banking operations, and all subsequent investments by said institutions in the authorized capital of credit institutions licensed to perform banking operations; (3) investments made before January 1, 2007, in the authorized capital of credit institutions licensed to perform banking operations; (4) investments made in the authorized capital of credit institutions licensed to perform banking operations, the privatization of which was performed after August 22, 2012; (5) investments representing 51 percent or more of the shares (equity stakes) in the authorized capital of a credit institution licensed to perform banking operations, performed after January 1, 2007, on the condition that said shares (equity stakes) are held by an investor for 12 or more years, unless the Bank of Russia has adopted a decision before the expiration of this time period to continue to include said investments in the calculation and has published this decision. The procedure for the adoption by the Bank of Russia of such a decision and for its publication is established by the Bank of Russia. A quota is understood to mean the maximum level of participation of foreign capital in the aggregate authorized capital of credit institutions licensed to perform banking operations, which is equal to 50 percent. When the quota is reached, the Bank of Russia performs the following measures with respect to foreign investments: (1) it refuses to register a credit institution with foreign investments and to issue it a banking license; (2) it imposes a ban on an increase in the authorized capital of a credit institution licensed to perform banking operations using nonresidents' funds and on the conveyance of shares (equity stakes) in the credit institution in favor of nonresidents if such actions mean that the quota will be exceeded. Shares (equity stakes) in a credit institution that have been conveyed (sold) in violation of such a ban are not voting shares and are not taken into account in determining a quorum at a general meeting of shareholders (stakeholders) of the credit institution for the period that such a ban is in effect. In the event that a transaction (or transactions) is (are) performed to convey (acquire) shares (equity stakes) in a credit institution in violation of said ban, the Bank of Russia files a petition requesting that the relevant transaction (or transactions) be declared null and void. The measures provided for under the sixth part of Article 18 of the Federal Law on Banks and Banking are not applied with respect to foreign investments referred to under items 1 and 2 of the second part of Article 18 of the Law on Banks. The measures provided for under item 2 of the sixth part of Article 18 of the Federal Law on Banks are not applied with respect to foreign investments intended for the authorized capital of credit institutions licensed to perform banking operations as defined in accordance with regulatory acts of the Bank of Russia on the basis of international agreements of the Russian Federation. The Bank of Russia ceases to apply the measures provided for under the sixth part of Article 18 of the Federal Law on Banks in the event that the level of participation of foreign capital in the aggregate authorized capital of credit institutions licensed to perform banking operations is less than 50 percent. The level of participation of foreign capital in the aggregate authorized capital of credit institutions licensed to perform banking operations is calculated by the Bank of Russia following the procedure it has established as of January 1 of each year. Information about the level of participation of foreign capital in the aggregate authorized capital of credit institutions licensed to perform banking operations and about the indicators used for its calculation is subject to publication in the official publication of the Bank of Russia, the Bulletin of the Bank of Russia, and it is also posted on the official website of the Bank of Russia no later than February 15 of the current year.
Singapore	2011q4	FDI	A new additional buyer's stamp duty (ABSD) was imposed on purchases of certain categories of residential property: (1) Foreigners and nonindividuals (corporate entities) that buy residential property must pay a 10 percent ABSD. (2) Permanent residents who own one residence and buy second and subsequent residential property must pay a 3 percent ABSD. (3) Singapore citizens (Singaporeans) who own two and buy third and subsequent residential property must pay a 3 percent ABSD. The ABSD is applied on top of the existing BSD rates, which have not been modified.

Singapore	2013q1	FDI	Additional Buyer's Stamp Duty (ABSD) is imposed on certain categories of residential property purchases as follows: (1) Foreigners and corporate entities buying residential property must pay ABSD of 15 percent (previously 10 percent). (2) Permanent residents (a) buying their first residential property must pay ABSD of 5 percent (previously zero); and (b) owning one and buying second and subsequent residential property must pay ABSD of 10 percent (previously 3 percent). (3) Singaporeans (a) owning one and buying a second residential property must pay ABSD of 7 percent (previously zero); and (b) owning two and buying a third or subsequent residential property must pay ABSD of 10 percent (previously 3 percent). The ABSD is applied on top of the existing Buyer's Stamp Duty rates, which have not been modified.
Switzerland	2006q3	Equity	Collective investment securities covering the technical reserves of an insurance company must be traded in a liquid market and be supervised by a qualified regulatory regime.
Thailand	2006q4	Debt	(1) Thai financial institutions were not allowed to issue or sell bills of exchange in baht of any maturity to nonresidents. (2) Investments of more than B 50 million a consolidated entity in short-term debt and related products (not exceeding six months) issued by local financial institutions in the primary market without underlying transactions are not allowed. (3) Financial institutions were not allowed to sell and buy foreign currencies to and from nonresidents or credit or debit their baht account resulting from investments in government or BOT debt securities if the duration of such investments was less than or equal to three months. (4) The limit of B 50 million was applied to debt securities with maturities not exceeding six months (previously, three months) issued by domestic financial institutions and sold to nonresidents without underlying transaction. (5) Financial institutions were not allowed to sell or buy any types of debt securities to and from nonresidents through sell-and-buy-back transactions for any maturity.
Thailand	2006q4	Equity	(1) A URR of 30 percent was put in place for certain types of capital inflows, except for FDI and amounts not exceeding $20,000. A full refund of the principal may be obtained if the funds remain in Thailand at least one year. For shorter periods, BOT approval is required to refund two-thirds of the URR.
Thailand	2008q1	Debt	The limit for investment by nonresidents in baht-denominated bonds or other debt securities issued by domestic financial institutions without underlying transactions was decreased to B 10 million an institution a group of nonresidents, regardless of maturities.
Turkey	1996q3	Debt	The reserve requirement ratios were set at 8 percent for domestic currency and at 11 percent for foreign currency deposits. Deposits and other liabilities in domestic currency were subject to a 6 percent liquidity ratio. Deposits and other liabilities in foreign currency were subject to a 3 percent liquidity ratio. These 2 ratios should be maintained in government bonds, T-bills, and borrowing instruments issued by the Collective Housing Fund and the Privatization Administration.
Ukraine	1998q3	Debt	Repayment of investments by nonresidents in treasury bills, which were not rescheduled, were blocked.
Ukraine	2005q2	Debt	Nonresidents were prohibited from purchasing government securities with a maturity of less than 12 months.
Ukraine	2010q1	Debt	Hryvnia funds from foreign investments in Ukraine must be deposited for five days in an analytical account of an authorized bank before conversion into foreign currency and transfer abroad. This requirement does not affect purchases of foreign currency from transactions by foreign investors involving securities from the first tier of listings on the Ukrainian stock exchanges, except for the transactions involving purchase and sale of these securities performed outside of the stock exchanges.
Ukraine	2010q1	Equity	Hryvnia funds from foreign investments in Ukraine must be deposited for five days in an analytical account of an authorized bank before conversion into foreign currency and transfer abroad. This requirement does not affect purchases of foreign currency from transactions by foreign investors involving securities from the first tier of listings on the Ukrainian stock exchanges, except for the transactions involving purchase and sale of these securities performed outside of the stock exchanges.
Ukraine	2010q1	FDI	Hryvnia funds from foreign investments in Ukraine must be deposited for five days in an analytical account of an authorized bank before conversion into foreign currency and transfer abroad. This requirement does not affect purchases of foreign currency from transactions by foreign investors involving securities from the first tier of listings on the Ukrainian stock exchanges, except for the transactions involving purchase and sale of these securities performed outside of the stock exchanges.
Ukraine	2013q3	FDI	FDI coming into Ukraine is subject to a 50 percent surrender requirement.
Ukraine	2014q3	FDI	The surrender requirement on inward FDI was increased from 50 percent to 100 percent.
Ukraine	2015q1	Debt	ADs were prohibited from transferring hryvnias from investment accounts for the purchase of Ukrainian government bonds except for the purchase of bonds on the stock exchange with hryvnias originating from the sale of foreign exchange or from the sale of and income from Ukrainian government bonds.
Ukraine	2015q1	Equity	The ban on transfers of dividends and proceeds from the sale of securities not traded on the stock exchange and from corporate rights not represented by shares was extended to dividends and proceeds from the sale of securities traded on the stock exchange (except for from the sale of debt securities in stock exchanges).
Ukraine	2015q1	FDI	The ban on transfers of dividends and proceeds from the sale of securities not traded on the stock exchange and from corporate rights not represented by shares was extended to dividends and proceeds from the sale of securities traded on the stock exchange (except for from the sale of debt securities in stock exchanges).
Uruguay	2012q4	Debt	The Central Bank of Uruguay imposes a 40 percent reserve requirement on the daily average (weekends and holidays included) of securities holdings in pesos (for the penultimate calendar month) in excess of the August 16, 2012, balance. The nominal value of the securities is taken into account for all applicable purposes. This reserve requirement applies to all institutions with a position in securities issued by the Central Bank of Uruguay denominated in local currency or inflation index units for and on behalf of nonresidents.
Uruguay	2013q3	Debt	The reserve requirement of 50 percent was introduced on the average daily securities holdings (for the penultimate calendar month) of locally issued government securities in excess of the balance of June 7, 2013 held for and on behalf of nonresidents. The reserve requirement applies on government securities denominated in local currency or inflation-indexed units, must be met in monthly fixed-term deposits in pesos and does not earn interest.
Vietnam	2007q1	Debt	The selling and issuing of foreign-currency-denominated bonds abroad by resident organizations were made subject to the rules applicable to residents' external borrowing and repayment of such loans.
Vietnam	2007q1	Equity	Firms' international bond issuance must comply with Government Decree No. 90/2011/N?-CP of October 14, 2011, on issuing corporate bonds.
Vietnam	2011q4	Debt	Ordinance No. 06/2013/UBTVQH13 of March 18, 2013, amending and supplementing Ordinance on Foreign Exchange No. 28/2005/PL-UBTVQH of December 13, 2005, introduced supplemental regulations on inward portfolio investment in Vietnam: it stipulates the responsibility of foreign investors in the use of dong accounts for portfolio investment, supplements guidance on the use of nonresident foreign investors' legitimate income, and prescribes State Bank of Vietnam authority to issue regulations on capital transfer transactions.
Vietnam	2014q1	Debt	Circular No. 05/2014/TT-NHNN confirmed that transactions related to inward portfolio investment in Vietnam must be executed in dong through an account at a legally licensed bank in Vietnam.
Vietnam	2014q1	Equity	All sales or issues of securities by residents abroad, except of bonds became subject to the approval of the SBV. Resident organization issuing or selling foreign-currency-denominated securities abroad were required to open a securities issuance account in foreign currency at an authorized credit institution. All payments and receipts related to the issuance of securities must be effected through this account.

Vietnam	2014q1	FDI	Ordinance No. 06/2013/UBTVQH13 of March 18, 2013, amending and supplementing Ordinance on Foreign Exchange No. 28/2005/PL-UBTVQH of December 13, 2005, introduced supplemental regulations on inward portfolio investment in Vietnam: it stipulates the responsibility of foreign investors in the use of dong accounts for portfolio investment, supplements guidance on the use of nonresident foreign investors' legitimate income, and prescribes State Bank of Vietnam authority to issue regulations on capital transfer transactions.
Vietnam	2014q2	Debt	Circular No. 05/2014/TT-NHNN confirmed that transactions related to inward portfolio investment in Vietnam must be executed in dong through an account at a legally licensed bank in Vietnam.
Vietnam	2014q2	Equity	Ordinance No. 06/2013/UBTVQH13 of March 18, 2013, amending and supplementing Ordinance on Foreign Exchange No. 28/2005/PL-UBTVQH of December 13, 2005 , introduced supplemental regulations on inward direct investment in Vietnam stipulating the responsibility of FDI enterprises on the use of direct investment capital accounts to implement FDI projects in Vietnam (used as a basis for compiling statistics and monitoring capital flows related to direct investment).
Vietnam	2014q3	FDI	Circular 19/2014 TT-NHNN of August 11, 2014, included further supplemental regulations on inward direct investment in Vietnam.
Argentina	2003q2	Other	The minimum maturity requirement for new external borrowing from nonresidents to residents was increased to 180 days from 90 days.
Argentina	2005q2	Other	(1) All new local market debts denominated in foreign currency and any new debts or rollover of existing debts by residents with external creditors were subject to a retention of 365 days.(2) A 30 percent unremunerated deposit requirement of one year was imposed on foreign portfolio investment, excluding initial public offerings, foreign direct investment, and trade finance flows.
Argentina	2009q2	Other	Communication A 4960 amended the conditions of access to the MULC for prepayment of the principal of the external debt of the nonfinancial private sector by reducing the period in which prepayments can be made from 365 days to 30 days prior to the due date.
Argentina	2012q1	Other	Communication A 5265 adopted new exchange rules applicable to financial debts. The local foreign exchange market may be accessed to pay financial debts only with a personal check or by debiting a demand account held by the debtor in a local financial institution.
Argentina	2013q1	Other	The deadline for advance payments on the principal of foreign financial debts was changed from 30 calendar days to 10 business days. Full or partial prepayment is allowed when financing is entirely through inward foreign exchange transactions by way of capital contributions, or when the payment is financed through inward transactions involving new borrowing from international organizations and their agencies, official foreign lending agencies, and foreign banks, as long as the payments are a condition for the issuance of new debt and do not result in an increase in the current value of the foreign borrowing of the debtor. The minimum applicable holding period must be met in all cases (Communication A 5397).
Brazil	1998q1	Other	The minimum average maturities for external loans were increased to two years for new loans and to one year for renewed loans.
Brazil	2011q1	Other	The IOF rate for inflows related to external loans with a maximum maturity of 360 days was increased from zero to 6 percent.
Brazil	2012q2	Other	(1) The maximum maturity of external loans subject to the 6 percent IOF rate was decreased from 1,800 days to 720 days.
Brazil	2012q4	Other	(1) The maximum maturity of external loans subject to the 6 percent IOF rate was decreased from 720 days to 360 days.
China	2007q1	Other	The SAFE reduced the 2007 short-term external debt quotas of Chinese-funded banks to 30 percent and those of nonbank financial institutions and foreign-funded banks to 60 percent of their 2006 equivalents. In addition, Chinese-funded banks were required to reduce their outstanding short-term external debts to 30 percent or less and nonbank financial institutions and foreign-funded banks to 60 percent or less of their 2006 quotas by March 31, 2008.
Colombia	1995q1	Other	The range of external debt prepayments subject to a deposit requirement was widened.
Colombia	1996q1	Other	Foreign loans with maturities ranging from 1 day to 3 years were subject to a nonremunerated deposit requirement of 50 percent of the loan. Loans of over 6 months for imports are subject to a nonremunerated deposit requirement; these deposits are held for 18 months.
Colombia	1997q1	Other	Under the "economic emergency," a tax was imposed on all foreign loans (rates between zero and 8 percent of the loan), which was revoked in March. The nonremunerated deposit requirement was reintroduced at 50 percent of the loan up to 60 months. URR reduced in 1998 and lifted in 2000.
Colombia	2007q2	Other	The overall gross exposure of each participant in the foreign exchange derivative market may not exceed 500 percent of its total capital. Advance payments of more than four months were made subject to a six-month 40 percent URR in U.S. dollars or pesos to be held in the BR. External borrowing to prefinance exports was made subject to a one-year 11 percent URR in U.S. dollars or pesos to be held in the BR. Foreign portfolio investments were made subject to a six-month URR of 40 percent to be held in the BR.
Colombia	2013q1	Other	Article 6 of External Resolution No. 3 of 2013 forbids foreign currency loans to residents from nonresident individuals.
Iceland	2012q1	Other	Act No. 17/2012 rescinded the exemption for payments from bankruptcy and payments of contractual claims in accordance with the composition of creditors' agreements in domestic currency when payment is disbursed from the payer's account with a financial institution in Iceland.
Iceland	2013q2	Other	Borrowing from nonresidents requires Central Bank of Iceland permission, except for loans in foreign currency with a maturity of at least two years (previously with a maturity of at least one year and not exceeding ISK 10 million a person a calendar year).
Iceland	2017q2	Other	The scope of exemptions related to cross-border movement of krónur was narrowed. As per the amendments, króna-denominated lending by nonresidents to residents is not exempt from the restrictions laid down in the Foreign Exchange Act when the proceeds of the loan are used, directly or indirectly, for investment options comparable to those falling under Article 2 of Rules No. 490/2016. The amendments were made to support the Rules No. 490/2016, on special reserve requirements for new foreign currency inflows. The amendment closed a potential loophole where financial products in domestic currency subject to the reserve requirement could be sold to investors for foreign currency, that is, without a prior FX/ISK currency exchange, without the investor having to meet the reserve requirement.
India	2003q4	Other	External borrowing in excess of the equivalent of US$50 million was permitted only for financing equipment imports and infrastructure projects. All borrowing was subject to maximum spreads over six-month LIBOR (150 basis points for normal projects, 250 basis points for infrastructure projects, and 300 basis points for other long-term projects).
India	2007q2	Other	Borrowing with an average maturity of three to five years is subject to a maximum spread of 150 basis points (previously, 200 basis points) over the six-month LIBOR of the currency in which the loans are raised or the applicable benchmark(s), and borrowing with more than five years average maturity is subject to a maximum spread of 250 basis points (previously, 350 basis points). Corporations can obtain ECB loans under the automatic route of an additional $250 million over and above the existing limit of $500 million with average maturity of more than 10 years under the approval route during a financial year.
India	2007q3	Other	(1) Borrowing up to $500 million for permissible end uses is allowed only for foreign currency exposure. (2) RBI approval is required for external borrowing up to $20 million.
India	2009q1	Other	The relaxation in all-in-cost ceilings allowed during the financial crisis period under the approval route was withdrawn. Accordingly, the all-in-cost ceilings under the approval route are as follows: (1) LIBOR plus 300 bps for an average maturity period from three years to five years; and (2) LIBOR plus 500 bps for an average maturity period of greater than five years.

India	2011q4	Other	Proceeds of the ECB raised abroad for rupee expenditures in India, such as local sourcing of capital goods, onlending to self-help groups or for microcredit, payment for spectrum allocation, etc., must be brought immediately for credit to rupee accounts with AD Category I banks in India.
India	2013q4	Other	The facility allowing eligible borrowers to raise external commercial borrowing at a higher all-in-cost to refinance/reschedule existing external commercial borrowing was discontinued. Refinancing/rescheduling of existing external commercial borrowing is allowed through new external commercial borrowing at lower all-in-cost than the existing external commercial borrowing.
Indonesia	2016q1	Other	(1) As per Bank Indonesia Regulation No. 16/21/PBI/2014 nonbank corporation which borrow abroad must hedge 25 percent (previously 20 percent) of net offshore liabilities through domestic banks. (2) In addition, nonbank corporation which borrow abroad must fulfill certain credit rating criteria.
Kazakhstan	2000q4	Other	An NBK license is required in order for credit extended to a resident by a nonresident to be loaned to a third party
Kazakhstan	2001q3	Other	The maximum maturity for operations exceeding the equivalent of $100,000 in value for which an NBK registration certificate is not required was shortened to 120 days from 180 days.
Pakistan	1998q3	Other	The facility of premature payment of usance bills was withdrawn.
Peru	2008q4	Other	The CRBP began charging a commission for registering transfers of CDs.
Romania	1998q2	Other	All credit operations became a subject of NBR authorization, except bank loans.
Thailand	2006q4	Other	A URR of 30 percent was put in place for certain types of capital inflows, except for FDI. A full refund of the principal may be obtained if the funds remain in Thailand at least one year. For shorter periods, BOT approval is required to refund two-thirds of the URR.
Thailand	2008q1	Other	The limit imposed on domestic financial institutions for borrowing or undertaking transactions comparable to borrowing from nonresidents without underlying trade or investment in Thailand was decreased to B 10 million an institution a group of nonresidents, regardless of maturities. The same limit was imposed on nonresidents lending in baht to domestic financial institutions, undertaking investment in baht-denominated bonds and other debt securities issued by domestic financial institutions, or undertaking foreign exchange derivatives transactions comparable to lending in baht to financial institutions, without underlying trade or investment in Thailand.
Turkey	1996q3	Other	A 4 percent tax, earmarked for the RUSF, was levied on credits obtained by banks from abroad.
Turkey	1997q1	Other	The RUSF fee was amended. A rate of 4 percent was set for loans obtained by banks and financial institutions from abroad, and a 6 percent fee was set for loans obtained by other residents from abroad.
Turkey	2009q2	Other	The restriction on obtaining foreign currency and foreign-currency-indexed consumer and mortgage credits from abroad by residents in Turkey, as well as from resident banks, was put in place by Decree No. 2009/15082, published in Official Gazette No. 27260 of June 16, 2009.
Ukraine	2005q3	Other	Banks were required to hold with the NBU 20 percent of foreign currency credits from nonresidents with a maturity of up to 180 days as unremunerated required reserves.
Ukraine	2008q3	Other	A 20 percent reserve requirement was introduced on deposits and loans in foreign currency from nonresidents for a term not exceeding 183 calendar days, with the exception of funds with a term of no more than one business day, or against government guarantees, or from international financial institutions of which Ukraine is a member.
Ukraine	2009q4	Other	(1)The NBU reestablished ceilings on interest rates (including commissions and fees set by the credit agreement) for borrowing of funds abroad for a period of more than one year in foreign currency in Group 1 of the Classification, which had been temporarily suspended beginning October 27, 2008. (2) Resident borrowers were prohibited from agreeing to early retirement of credits and loans from nonresidents in foreign currency.
Ukraine	2010q4	Other	The 20 percent reserve requirement was reinstated for the provisioning of funds by authorized banks in the NBU for short-term (up to six months) foreign currency deposits or loans from nonresidents. Previously, a zero reserve rate was in effect from October 13, 2008, through September 30, 2010.
Ukraine	2017q2	Other	The rule on the prohibition of consumer loans in foreign currency in Ukraine is also established by the Law of Ukraine "On consumer lending."
Vietnam	2011q3	Other	External loan contracts of economic groups and government general corporations became subject to the approval by the appropriate ministry and MOF appraisal and approval.
Vietnam	2014q1	Other	For short-term credit, borrowing firms must observe SBV conditions. For medium- and long-term loans, firms must register the borrowing and repayment schedules with the SBV before disbursement, within 30 working days of signing the loan contract. For extended loans, firms must register loans within 30 working days of signing an extension contract for short-term loans whose total period, including the extension, exceeds one year. Firms' external borrowing must be within the government-approved annual limit and meet the SBV's requirements. The borrowing and repayment schedules must be reported periodically to the SBV. Resident individuals were required to borrow and repay overseas loans based on the principle of self-borrowing and are self-liable in accordance with government regulations (Ordinance No. 06/2013/UBTVQH13 of March 18, 2013, amending and supplementing the Ordinance on Foreign Exchange No. 28/2005/PL-UBTVQH of December 13, 2005).
Vietnam	2014q4	Other	Enterprises with more than 50 percent state-owned charter capital receiving offshore loans without the government's guarantee are subject to stricter regulation under MOF Circular No.153/2014/TT-BTC of October 20, 2014, on reviewing, investigating, and approving offshore loans of enterprises with more than 50 percent state-owned charter capital.

Annex Table 2 – Variable Description and Sources

Variable	Description	Sources
Capital Controls	Changes in measures restricting non-resident gross inflows, excluding measures on derivatives.	IMF AREAER database.
Non-resident Gross Inflows	Non-resident capital inflows minus outflows (Net Flows and Net Flows as percent of GDP).	IMF's Financial Flow Analytics (FFA) database.
GDP growth Differential	Difference between domestic and U.S. real GDP growths.	IMF WEO database, Haver.
Interest Rate Differential	Difference between domestic and U.S. interest rates.	IMF WEO database, Haver.
Foreign Exchange Reserves	Foreign Exchange Reserves, as percentage of Nominal GDP.	IMF IFS.
Composite Risk Index	Composite Political, Financial, Economic Risk Rating for a country (CPFER). Ranging from Very High Risk (0 - 49.5) to Very Low Risk (80 - 100).	Political Risk Service (PRS).
FD	Financial Development Index.	Sahay and others (2015).
Inflow Restrictions Index	index of capital restrictions on non-resident inflows (All asset categories).	Fernandez and others (2018).
Contagion (BRICS)	For each of the BRICS, is the sum of the number of policy changes in any of the other BRICS in each quarter. For the non-BRICS (non-Advanced), the variable is the sum of the number of measures introduced by the regional BRICS country (i.e. Brazil for Latin America, China and India for Asia, Russia for emerging Europe and South Africa for Africa) in a given quarter. Advanced countries: the variable is the sum of the number of measures introduced by the Advanced countries in each quarter.	Pasricha and others (2018), authors' calculations.
Contagion (Risk, Return)	Computed as the flow weighted fraction of controls for countries in the group that tightened inflow controls. Groups are defined based on Real GDP growth (return) and the PRS composite risk index (risk).	Giordani and others (2017), authors' calculations.

Contagion (Regional)	Computed as the flow weighted fraction of controls for countries in the region that tightened inflow controls. We have 7 regional groups: Asia, Eastern Europe & Central Asia, Latin America & Caribbean, Middle East & North Africa, North America, Sub-Saharan Africa and Western Europe.	Giordani and others (2017), authors' calculations.

Annex Table 3 – Summary Statistics

Control variables	mean	s.d.	p50	min	max	N
Index of capital restrictions on NR inflows	0.44	0.32	0.45	0.00	1.00	14,720
GDP growth differential	0.42	1.76	0.38	-10.50	13.89	13,000
Interest Rate differential	6.89	13.19	4.25	-6.50	208.60	12,976
Foreign Reserves, percent of GDP	62.68	63.13	45.84	0.82	448.32	14,508
Financial Development Index	0.44	0.24	0.38	0.05	1.00	14,352
BRICS dummy variable	0.13	0.33	0.00	0.00	1.00	14,880
Contagion (BRICS, Gross Tightening)	0.22	0.74	0.00	0.00	7.00	14,880
Contagion (BRICS, Gross Easing)	1.18	2.28	0.00	0.00	20.00	14,880
Composite Risk Index	71.38	8.53	70.50	41.00	92.75	14,768
Risk Contagion (Flow weighted*)						
Time Variant (Gross Tightening)	0.12	1.23	0.00	-8.53	22.12	14,880
Time Variant (Gross Easing)	0.55	3.81	0.03	-95.18	91.70	14,880
Return Contagion (Flow weighted*)						
Time Variant (Gross Tightening)	0.13	1.00	0.00	-0.74	19.60	14,880
Time Variant (Gross Easing)	0.79	11.47	0.00	-9.99	246.47	14,880
Regional Contagion (Flow weighted*)						
Gross Tightening	-1.04	20.09	0.00	-353.49	32.80	14,880
Gross Easing	-2.94	55.78	0.00	-987.90	25.43	14,880

* Excludes controls on Derivatives

Annex 1. Methodology for the Identification of Surges

This annex discusses the methodology employed to identify the surge episodes considered in the analysis. For reference, we use the terminology gross inflows to refer to net non-resident flows (that is, transactions which create liabilities for the country's residents) and gross outflows for net resident flows (which correspond to assets in the residents' balance sheet). Net capital inflow refers to the difference between gross inflows and gross outflows. Further, we focus on private or nonofficial flows, and as such, flows resulting from FXI or from international financial institutions such as the IMF are not considered.

Starting Point: Net vs. Gross and Total vs. Asset

The issue of whether to use gross or net flows, has been widely discussed in the capital flows literature. Earlier work focused on net flows, as this measure directly affects a country's exchange rate, domestic credit, and the general availability of capital in the domestic economy. In contrast, more recent research has used gross positions and gross flows, as they may create vulnerabilities and mismatches which may have negative financial stability effects. Since the focus of our work is on assessing the effectiveness of capital controls on limiting nonresident inflow surge, we use gross definition—both at aggregate and asset level (debt, equity, FDI, and other) —to construct the surge variable.

Two Definitions and Related Issues

Crystallin and others (2015) have previously demonstrated how different ways of defining capital surges lead to significant differences in the number, duration, and intensity of the episodes identified. As they point out, there are at least two possible considerations when defining a surge in capital flows: whether the volume of flows is large in absolute terms and whether it is large when compared to the country's history. Many authors have used an HP-filter to capture long-run trends in capital flows and used deviations from these trends to define surges in each case. However, as Crystallin and others also point out, the choice of λ is not trivial, and results in marked differences in the deviations from the trends. Moreover, the usage of the HP filter also means that whether a particular episode is considered a surge or not is dependent on the entire sample of both past and future flows used to compute the HP filter, and so it may vary as more data becomes available (with particular sensibility to the endpoint when determining trends). Given these issues, and because detrending using the HP filter obscures some of the importance of the absolute magnitude of the flows, we instead explore two recent definitions of surges which take different approaches.

Forbes and Warnock (2012, 2021) categorize extreme capital flow episodes as either surges, stops, flights, or retrenchments based on gross flows. They are all defined symmetrically, varying only on the side of the balance sheet that they correspond to and whether they represent deviations from the trend in the negative or positive directions. The latter two correspond to extreme episodes of gross outflows (net resident flows), while the first two correspond to extreme inflows (of interest to us since we focus on capital controls affecting non-resident transactions). They use quarterly data adjusted by taking a year-on-year difference of the four-quarter rolling sum of capital flows. Their methodology uses a 5-year rolling window to calculate rolling means and standard deviations. To define surges, they "calculate year-over-year changes in four-quarter gross capital inflows and define episodes using three criteria: (1) current year-over-year changes in four-quarter gross capital inflows is more than two standard deviations above the historical average during at least one quarter of the episode; (2) the episode lasts for all consecutive quarters for which the year-over-year change in annual gross

capital flows is more than one standard deviation above the historical average; and (3) the length of the episode is greater than one quarter."

This definition is useful in that it considers the country's recent history through the comparison to historical averages. It also acknowledges that the surge has components of both varying intensity (at least one quarter must be two standard deviations above the mean) and persistence (the length of the episodes must be greater than one quarter).

Ghosh and others (2014) "define a surge as a net capital flow observation that lies in the top thirtieth percentile of both the country-specific and the full sample's distribution of net capital flows, expressed in percent of GDP." As such, even though they classify the surges as "primarily liability-driven" or "primarily assets-driven" their measure is of net flows. Their use of both country-specific and full-sample distributions means that they directly consider both the absolute and relative dimensions of the surge.

However, because the measure does not consider flow volumes in context, it would be sensitive to capturing large but very short-lived increases in flow volumes, particularly at the quarterly frequency: a mild surge that only lasts for a quarter and follows a mild reversal in flows would not necessarily put substantial pressure on the system. Moreover, the methodology is also dependent on the sample used to compute the distributions and percentiles.
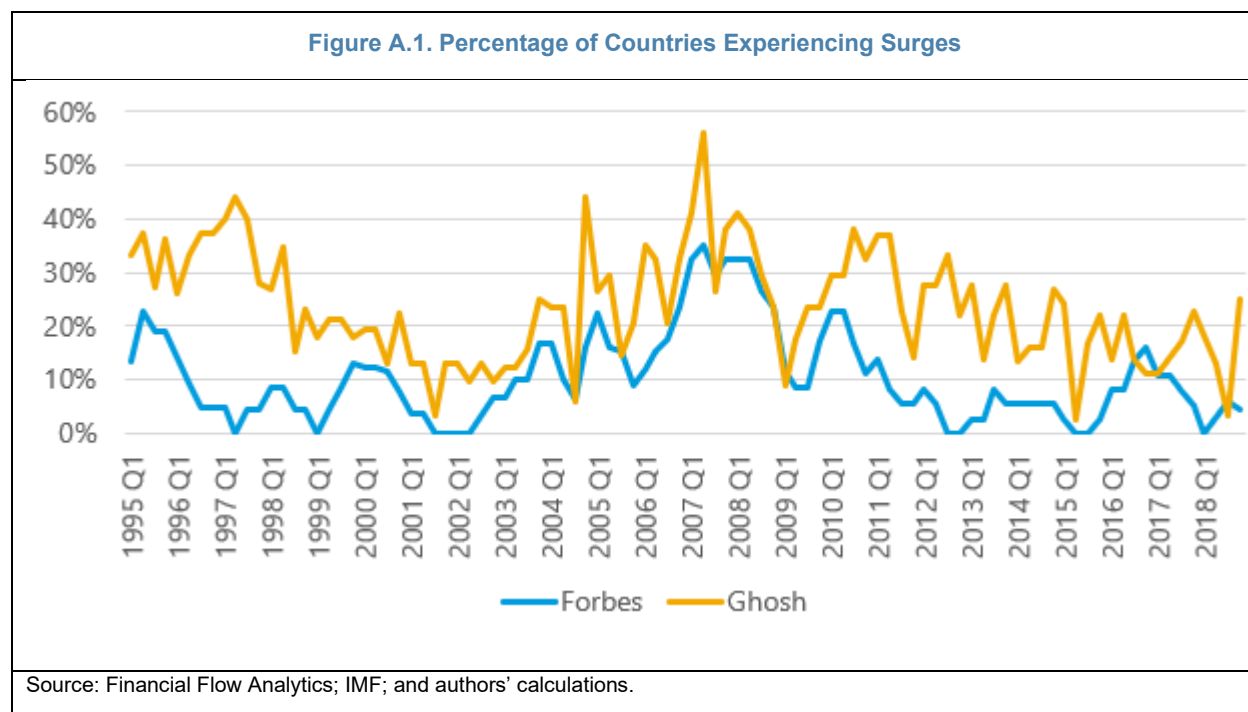
Data Sources and Availability

We use the IMF's Financial Flow Analytics (FFA) database, which draws from annual and quarterly Balance of Payments (BoP) and GDP WEO data up over the period 1995 to 2018.. Due to data gaps, we have 3,349 observations of net capital flows in our sample.
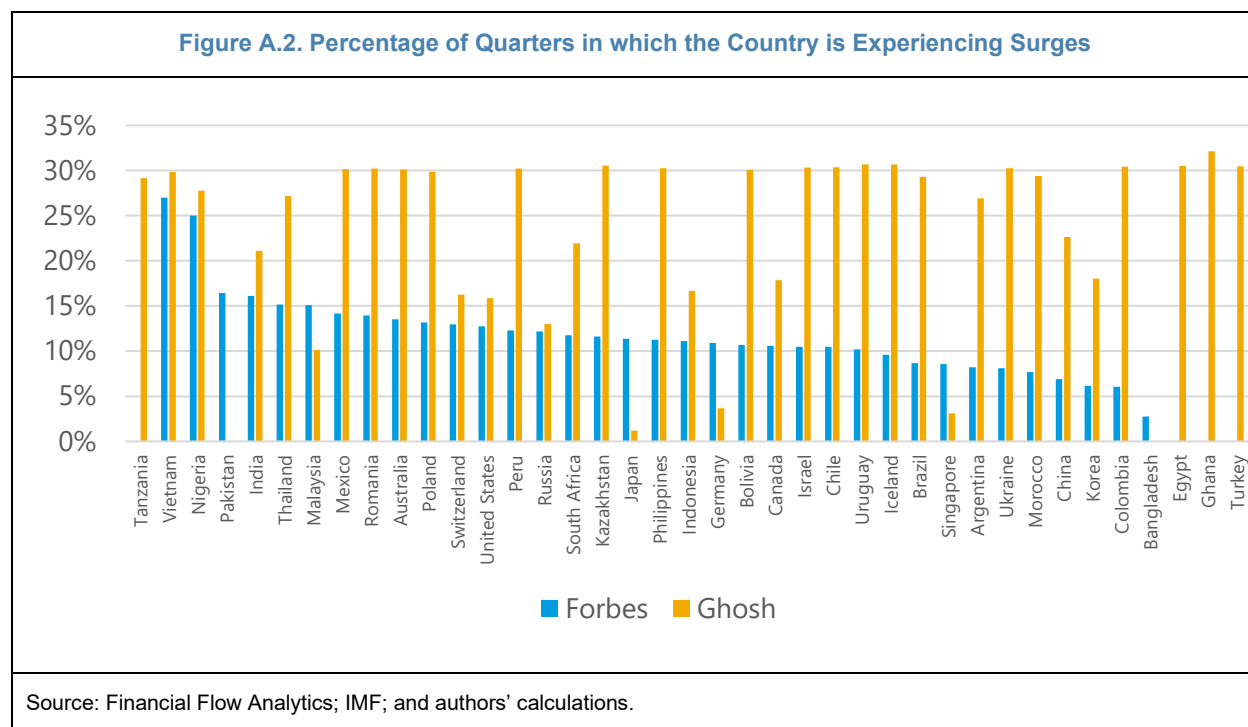
Despite this, each methodology fares differently in how many data points are identified as surges. Of the 3,075 observations considered in the Ghosh's methodology (the ones for which we have GDP data as well), 718 turn out to correspond to surges. Using the Forbes' definition, 2,969 observations are considered, and 318 of those classified as surges.

Comparing Results by Definition

Even though the two measures have a low correlation of 0.17, they capture similar trends, as demonstrated in Figure A.1, showing the fraction of countries experiencing a surge at a given time according to the two definitions.

Figure A.1. Percentage of Countries Experiencing Surges

Source: Financial Flow Analytics; IMF; and authors' calculations.

A look at the fraction of quarters that each country experiences surges confirms that the results vary by country and are not consistent across methodologies. Importantly, we do observe that for many countries, the fraction of observations corresponding to surges under the Ghosh definition is close to 30 percent.

Figure A.2. Percentage of Quarters in which the Country is Experiencing Surges

Source: Financial Flow Analytics; IMF; and authors' calculations.

A Simpler Approach: Constant Thresholds

Next, we consider a simple definition of surges, where a country is said to experience a surge if the net capital inflows are above a set threshold (3 percent or 5 percent of GDP). Additionally, we may require that the surge last for at least two quarters. The fraction of total observations (out of the 3,075 datapoints available) that is classified as a surge under this paradigm is presented in the following matrix:

Threshold / Minimum Duration	1 Quarter	2 Quarters
3 percent of GDP	42.0 percent	34.4 percent
5 percent of GDP	26.9 percent	19.5 percent

As can be seen, the fraction of periods corresponding to surges under this optic is relatively high, even under the stringent conditions of net inflows of 5 percent of GDP for at least two consecutive quarters.

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