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Exchange rate regimes as thresholds: The main determinants of capital inflows in emerging market economies

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Abstract

We investigate whether the impacts of the main push (global financial conditions, GFC) and pull (growth) factors on capital inflows are invariant to endogenously estimated thresholds for exchange rate regimes (ERRs) in emerging market economies. The impact of GFC is higher under more flexible ERRs for aggregate capital and portfolio inflows. FDI inflows are determined by growth. The sensitivity of aggregate and other investment inflows to growth is higher under more rigid ERRs. Our results also suggest that managed ERRs encourage capital inflows by allowing countries to import the monetary policy credibility of the anchored country and to provide an exchange rate guarantee.

JEL classification: F21; F30; F32; G01

Keywords: Capital inflows; Emerging market economies; Exchange rate regimes; Global financial conditions; Panel threshold model

1. Introduction

Capital flows and global financial conditions have often been found among the main determinants of growth in emerging market economies (EMEs) as suggested in the seminal contribution by Calvo et al. (1996). This important finding is strongly supported by other studies, including Erdem and Özmen (2015), Rey (2016), and Eichengreen et al. (2020). In the past two decades, capital flows have dramatically increased not only in advanced economies (AEs) but also in EMEs, leading to substantially higher international financial integration (Lane & Milesi-Ferretti, 2018). Consequently, investigating the basic determinants of capital inflows has become much more topical in international macroeconomics.

The recent literature often divides the determinants of capital flows mainly into country-specific (pull) and common global (push) factors. Pull factors are represented by domestic macroeconomic conditions whereas push factors primarily refer to changes in global financial conditions. In this study, we take a parsimonious approach and consider growth and global financial conditions proxied by the Chicago Board Options Exchange's equity option volatility index (VIX) as the main pull and push variables that explain capital inflows. As noted by Montiel (2014, p. 601), the pull and push factors "are likely to interact in nonlinear ways." Most of the studies, however, often tackle the nonlinearity issue with either ad hoc sample-splitting procedures that maintain that the break point is exogenous or some interaction specifications (Eichengreen et al., 2020; Obstfeld et al., 2019). The aim of this paper is to contribute to the literature by estimating endogenous thresholds for exchange rate regimes (ERRs) in explaining the determinants of capital inflows employing the panel threshold procedure by Hansen (1999).

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Obstfeld et al. (2019) and Eichengreen et al. (2020) suggest that flexible ERRs enable emerging markets to be insulated from external shocks. In the same vein, Erdem and Özmen (2015) find that the impacts of external and domestic variables are greater under managed ERRs than floats. But the literature has not yet investigated whether ERRs provide endogenous thresholds for the impacts of basic pull and push factors. The empirical studies often focus on the behavior of aggregate gross or net capital flows and ignore their main components. However, the growth impact of capital inflows may not be invariant to their type (Blanchard et al., 2017). In this context, we consider not only aggregate capital flows but also their main components (portfolio, foreign direct investment [FDI], and other types of investment).

Our results suggest that FDI flows are driven by pull factors, portfolio flows are driven by push factors, and other investment flows are driven both by pull and push factors. The impacts of pull and push factors appear to change with the prevailing ERR. Accordingly, the impact of the main pull factor is much higher in economies with pegged ERR. The sensitivity of capital flows to push factors tends to increase with ERR flexibility. An important policy implication of these results concerns the buffer interpretation of flexible ERR. Consistent with the impossible trinity proposition which states that countries cannot simultaneously achieve a fixed, exchange rate target and an independent monetary policy under international capital flows (Rey, 2015), flexible ERRs provide monetary policy independence under free capital mobility. However, during global financial turbulence, such as the 2008–2009 global financial crisis, flexible ERRs may enhance the impact of external shocks, instead of acting as a shock absorber.

The rest of this paper is organized as follows. Section 2 presents a brief literature review. Section 3 presents our empirical methodology and results. Finally, Section 4 summarizes our main findings.

2. A brief review of the literature

A large and growing literature has been produced on the determinants of capital flows (see, e.g., Avdjiev et al., 2017; Davis et al., 2021; Forbes & Warnock, 2012; Koepke, 2019; Montiel, 2014). Following the seminal contributions by Calvo et al. (1996) and Taylor and Sarno (1997), recent papers typically divide the determinants of capital flows into country-specific (pull) and common (push) factors. “Push” factors are primarily changes in global financial conditions and monetary policy stance in AEs. “Pull” factors are basically variables for domestic macroeconomic conditions, including growth, financial and trade openness, institutional quality, domestic policy stance, and interest rate differentials. Ahmed and Zlate (2014) support the notion that domestic pull factors (growth and interest rate differentials) and global risk appetite are both significant determinants of net capital flows to EMEs. Ghosh et al. (2014) suggest that, although global factors act as “gatekeepers,” pull factors, including financial openness and ERRs, determine the final magnitude of surges in capital inflows to EMEs.

Rey (2015, 2016) convincingly argues that the VIX proxies the global financial cycle, which is closely associated with capital flows, credit growth, and asset prices. In the same vein, Forbes and Warnock (2012) report that global financial conditions (GFC) are the only variable that explains surges and stops in capital flows. Cerutti et al. (2019a), in contrast, finds that GFC proxied by the VIX systematically explains only a small proportion of the variation in capital flows. Sarno et al. (2016) and Boero et al. (2019) suggest that global economic forces prevail over domestic variables in explaining movements in international portfolio flows. According to Rey (2016), capital inflows (except FDI) are negatively correlated with GFC. Avdjiev et al. (2017) finds that capital inflows are negatively associated with the VIX and positively associated with GDP growth across all capital flow types, except portfolio equity. Çepni et al. (2021, p. 183) state that “capital flows to Turkey are directly related to uncertainty in global economic policy.”

According to the conventional wisdom, credible managed ERRs encourage capital inflows as they allow countries to import monetary policy credibility (and lower inflation) of the anchored currency country, reduce transaction costs, and provide exchange rate guarantees (Ilzetzki et al., 2022; Rogoff et al., 2004). In this context, Eichengreen et al. (2020, p. 574) state: “more stable exchange rates are beneficial for promoting domestic credit conditions, asset price development, capital flows, and GDP growth in general.” Under international capital mobility, ERR flexibility gives economies greater ability to pursue an independent macroeconomic policy, as postulated by the impossible trinity in international macroeconomics. Edwards (2011), for instance, presents evidence that ERR flexibility allows countries to accommodate external shocks. Accordingly, the impacts of external shocks are amplified in countries that have more rigid ERRs (di Giovanni & Shambaugh, 2008). Passari and Rey (2015) suggests that the insulation properties of floating ERRs may have been overestimated. Obstfeld et al. (2019) and Eichengreen et al. (2020) hold that flexible ERRs are better at insulating emerging markets from external shocks. In the same vein, Erdem and Özmen (2015) find that the impacts of external real and financial shocks and domestic variables are significantly greater under managed regimes than floats.

The literature, however, provides mixed and often conflicting results for the impact of ERR on capital inflows. Magud et al. (2014) find that ERRs have no impact on capital flows in EMEs. According to Lu et al. (2022), flexible exchange rates stabilize capital inflows by allowing adjustment in the exchange rate when global risk aversion is low. Cerutti et al. (2019a) claim that the global financial cycle is not very important for explaining capital flows, and this result is robust to ERRs. Cerutti et al. (2019b), however, report that the impact of common global factors on portfolio bond inflows is higher in EMEs with more flexible ERRs. Obstfeld et al. (2019) suggest that in EMEs the transmission of global financial shocks and domestic pull factors are magnified under fixed ERRs in contrast to more flexible regimes. In a similar vein, Eichengreen et al. (2020) find that, the negative impact on

capital inflows of worsening global financial conditions is larger under pegged ERRs than free-floating regimes. According to Ghosh et al. (2014), countries with less flexible ERRs are more likely to experience surges in capital inflow.

Empirical studies often focus on the behavior of net capital flows, measured as the difference between purchases of domestic assets by nonresidents (gross inflows) and purchases of foreign assets by residents (gross outflows), which is the opposite of the current account balance. However, recent papers show that gross capital flows are much larger and more volatile than net capital flows and thus crucially important for growth and financial stability (Forbes & Warnock, 2012; Ghosh et al., 2014). Furthermore, some papers consider aggregate capital inflows and ignore their main components. Recent studies, including Blanchard et al. (2017), Eichengreen et al. (2018) and Koepke (2019), by contrast, convincingly stress the importance of the evolution, causes, and consequences of the main components of capital flows. For instance, Blanchard et al. (2017) reports that capital inflows can be expansionary or contractionary, depending on their type. Eichengreen et al. (2018) suggest that FDI is driven mainly by pull factors, portfolio flows seem to be driven mainly by push factors, and other investment flows are driven by both push and pull factors.

Montiel (2014, p. 601) states that pull and push factors "are likely to interact in nonlinear ways to determine the magnitude and allocation of capital flows" and this "has rarely been recognized in the literature." Papers that investigate the impact of ERRs on capital inflows often tackle the nonlinearity issue by using either ad hoc sample-splitting procedures, which maintain that the threshold level is exogenous, or some interaction specifications (see, e.g., Eichengreen et al., 2020; Obstfeld et al., 2019). However, the threshold levels for the sensitivity of capital inflows on ERRs would be better studied by using data-driven estimation methods. The literature has not yet investigated whether prevailing ERRs provide endogenous thresholds for the impacts of basic pull and push factors on capital inflows. In this context, this paper contributes to the literature by investigating this important issue empirically with a balanced panel of EMEs by employing the panel threshold model by Hansen (1999). To this end, in accordance with the main findings in recent literature, we postulate global financial conditions, proxied by ΔVIX, as the main push factor and real GDP growth as the main pull factor that explain aggregate capital inflows and their main components in EMEs.

3. Exchange rate regimes as thresholds: empirical results

3.1. Empirical methodology and data

To investigate the main determinants of gross capital inflows, we consider the following parsimonious benchmark equation:

$$CIF_{it} = a_0 + a_1 GROWTH_{i,t-1} + a_2 \Delta VIX_t + u1_{it} \quad (1)$$

In which i is the country, and t is the time, Δ is the difference operator, CIF is gross capital inflows and their main components scaled by GDP in current US dollars, GROWTH is the real GDP growth, and VIX is the natural log of the VIX as a proxy for the global financial cycle. All capital flows data, measured in US dollars, are from the International Financial Statistics of the International Monetary Fund (IMF). Following the IMF's *Balance of Payments Statistics Yearbooks*, capital inflows are defined as net purchases of domestic assets by foreign residents. The GDP data are from the World Bank, World Development Indicators. The VIX data are from the Chicago Board Options Exchange website. A decrease in the VIX is associated with a greater risk-appetite or better global financial conditions. We postulate that capital inflows may parsimoniously be explained by the main pull (GROWTH) and push (ΔVIX) factors. Following recent studies, including Obstfeld et al. (2019) and Avdjiev et al. (2017), we address the potential endogeneity of real GDP growth in the evolution of aggregate capital inflows and their main components by using lagged GDP growth in Equation (1).[1]

The benchmark Equation (1) maintains that the impacts of the main pull and push factors are invariant to the prevailing ERR. Alternatively, ERRs may be an endogenous threshold variable that magnifies the impacts of the main determinants of capital inflows. For the ERRs, we consider the *de facto* (actually followed, rather than officially declared) classification by Ilzetzki et al. (IRR; Ilzetzki et al. 2017, 2022). The classification by IRR divides the *de facto* regimes into 6 "coarse" (fixed, limited flexibility, managed floating, freely floating, freely falling, dual market in which parallel market data is missing) and 15 "fine" (ERR1, ERR2, …ERR15) categories. IRR note that classifying episodes of severe macroeconomic instability with very high inflation and exchange rate change as floating, intermediate, or pegged may be misleading as they could be incorrectly attributed to the ERRs and consider them "freely falling." In these classifications, higher values (up to 4 and 13, respectively, in the coarse and fine classifications) denote more flexible exchange rate arrangements. As it allows more flexibility in estimating the thresholds, we consider the "fine" classification of IRRs in our empirical analysis. However, we also interpret our results considering the "coarse" classification. Our effective estimation sample does not contain the fine (coarse) ERR classification greater than 13 (4). Our balanced annual panel data contain 35 EMEs over the period 1996–2019.[2] The updated ERR classification data by IRR are available until 2019. The choice of the sample is basically

[1] Yu and Phillips (2018, p. 50) consider panel threshold models with endogeneity in the regressors and thresholding variables and show that "both the threshold point and the threshold effect parameters are … identified without the need for instrumentation." Consequently, our estimations may be interpreted as valid even under the potential endogeneity of the variables. Our results, not reported to save space but available upon request, are mainly robust to the inclusion of the current values of GROWTH.

[2] The emerging market economies (EMEs) are Argentina, Bangladesh, Belarus, Bolivia, Botswana, Brazil, Bulgaria, Chile, China, Colombia, Costa Rica, Croatia, Czech Republic, Dominican Republic, Egypt, Hungary, India, Indonesia, Israel, Kenya, Mexico, Moldova, Morocco, North Macedonia, Pakistan, Peru, Philippines, Poland, Romania, Russian Federation, South Africa, South Korea, Thailand, Turkey, and Ukraine.

determined by the availability of balanced data, which is necessary for employing the Hansen (1999) procedure.

In the context of the panel fixed-effect threshold model by Hansen (1999), we represent the thresholding effect of ERRs as follows:

$$CIF_{it} = b_0 + \begin{cases} b_1 GROWTH_{i,t-1} + b_2 \Delta VIX_t & \text{if } ERR_{it} \le \lambda \\ b_3 GROWTH_{i,t-1} + b_4 \Delta VIX_t & \text{if } ERR_{it} > \lambda \end{cases} \quad (2)$$

We also estimate Equation (2) for the main components of gross capital (portfolio, FDI, and other investment) inflows. In Equation (2), λ is the endogenously estimated threshold value for the ERR. For $b_1 = b_3$ and $b_2 = b_4$ in Equation (2), λ is insignificant, and thus we obtain Equation (1). However, λ is unidentified under the null hypothesis. To address this issue, Hansen (1999) proposes a bootstrap method to obtain the asymptotic *p*-values of the *F*-test under the null hypothesis of no threshold. Hansen (1999) requires the omission of time-invariant fixed effects by demeaning the sample. The demeaned observations are then ordered from the smallest to the largest, based on the threshold variable. After trimming the 5 percent of the smallest and largest observations, we investigate the threshold by considering the rest of the observations as potential candidates. For each potential candidate, we determine the threshold value that minimizes sum of squared residuals from the panel least squares estimation of the demeaned sample. Given that there is an endogenous threshold, the sample of observations are divided into low and high regimes based on the estimated threshold. For instance, if ERR ≤ λ the estimated slope parameters pertain to the low regime—that is, more rigid ERRs. Otherwise, they are in the high regime, which comprises more flexible ERRs.

Table 1 presents some descriptive statistics for our variables of interest. According to the coefficient of variation, portfolio inflows appear to be the most volatile whereas FDI inflows, which are the basic component of capital inflows, are stable as might plausibly be expected. Because it also contains interbank short-term transactions, the volatility of other investment flows tends to be rather high. Growth rates are relatively stable around a mean of 4.5. In the same vein, the mean *de facto* ERR is ERR8 (*de facto* crawling band that is narrower than or equal to±2%), with relatively low variation.

3.2. Empirical results

We first consider the thresholding effect of ERRs for the main push factor:

$$CIF_{it} = b_0 + b_1 GROWTH_{it-1} + b_2 \Delta VIX_t \ (ERR_{it} \le \lambda) + b_3 \Delta VIX_t \ (ERR_{it} > \lambda) + u2_{it} \quad (3)$$

Table 2 presents the results of the estimation of Equation (3) employing the Hansen (1999) procedure. The equation specifies that the impact of the main push factor (GFC, proxied by ΔVIX) may change across the prevailing *de facto* ERRs. The trimming parameter for the Hansen procedure is set to be 0.05 at both ends of the threshold variable, but our results are robust for different plausible values. The results in Table 2 suggest that ERRs provide the data-driven estimated threshold for the impact of the main push factor on capital inflows. The endogenously estimated threshold is ERR8 (*de facto* crawling band that is narrower than or equal to±2%) for aggregate capital inflows and their main components. The threshold estimate for other investment inflows is insignificant. Almost 58 percent of our observations are in the low regime with "managed" ERR episodes according to *de facto* coarse classification by IRR. This may indicate that our endogenously estimated ERR thresholds divide the whole sample into managed (in the low regime) and floating (in the high regime) ERRs. The results suggest that the main push factor, ΔVIX, is not significantly negative for all capital inflow types in the low regime (more rigid ERRs). Worsening global financial conditions (an increase in the VIX) leads to an increase in aggregate capital inflows and the main components, except portfolio inflows. Exchange rate stability appears to be effective in preventing a decrease in these capital inflows in countries with more rigid ERRs. Worsening GFC, however, leads to a decrease in aggregate and portfolio inflows in EMEs that implement more flexible ERRs. This is consistent with the interpretation that worsening GFC leads to capital move from one EME to another that has a more rigid ERR (or to flight to safety concerns in AEs; Özmen & Taşdemir, 2021) due to exchange rate guarantees. The main pull factor (GROWTH), however, is positive and significant in explaining all capital inflow types, except portfolio inflows.

We now consider the alternative case that the impact of the pull factor (GROWTH) changes across the ERRs. To investigate whether prevailing ERRs provide data-driven estimated threshold for the impact of main pull factor on capital inflows, we consider the following equation:

$$CIF_{it} = c_0 + c_1 \Delta VIX_t + c_2 GROWTH_{i,t-1} \ (ERR_{it} \le \lambda) + c_3 GROWTH_{i,t-1} \ (ERR_{it} > \lambda) + u3_{it} \quad (4)$$

Table 3 presents the results of the estimation of Equation (4), which maintains ERR as a threshold for the impact of

Table 1
Main descriptive statistics.

	Aggregate capital inflows	Portfolio inflows	FDI inflows	Other investment inflows	Growth	ΔVIX	ERR
Mean	5.27	0.87	3.12	1.28	4.49	0.01	8
Median	4.70	0.56	2.60	0.92	4.17	−0.02	8
Standard deviation	5.86	2.85	3.42	3.24	7.65	0.25	3.34
Coefficient of variation	1.11	3.29	1.10	2.53	1.70	27.60	0.39
# of observations	840	840	840	840	840	840	840

Table 2
Exchange rate regimes and the impact of the push factor.

	Aggregate capital inflows	Portfolio inflows	FDI inflows	Other inv. inflows
Threshold ERR F_B[.]	8 5.00 [0.00]***	8 1.82 [0.00]***	8 2.32 [0.00]***	8 0.34 [0.67]
NT_{TH}	335	335	335	335
Mean (s.d.)[a]				
ERR ≤ λ	5.376 (6.577)	0.518 (3.192)	3.273 (4.062)	1.584 (3.460)
ERR > λ	5.104 (4.566)	1.390 (2.128)	2.890 (2.087)	0.824 (2.825)
Determinants of capital inflows				
$Growth_{i,t-1}$	0.094** (0.037	0.044 (0.027)	0.151** (0.055	0.235*** (0.045)
ΔVIX_t [$ERR_{it} \leq \lambda$]	2.251** (1.045)	−1.191** (0.436)	1.320*** (0.443	0.711* (0.442)
ΔVIX_t [$ERR_{it} > \lambda$]	−1.202* (0.737)	−2.282*** (0.482)	−0.045 (0.240)	0.206 (0.649)
Constant	4.832*** (0.170)	0.674*** (0.103	2.596*** (0.209)	0.365** (0.169)
Statistics	$N = 35$, $NT = 805$	$N = 35$, $NT = 805$	$N = 35$, $NT = 805$	$N = 35$, $NT = 805$
	$R^2 = 0.03$	$R^2 = 0.02$	$R^2 = 0.04$	$R^2 = 0.07$
	$F = 4.10$ [0.00]	$F = 10.1$ [0.00]	$F = 5.02$ [0.00]	$F = 10.34$ [0.00]

Notes: F_B is the bootstrapped *F*-test based on 1000 replications to test the statistical insignificance of the threshold level, and the numbers in square brackets [.] are the *p*-value of the test. The values in parentheses are robust standard errors. *, **, and ***, respectively, denote significance at 10%, 5%, and 1% levels. *N* is the number of countries, and *NT* is the effective number of observations. NT_{TH} reports the number of observations above the estimated threshold level.

[a] Mean (s.d.) is the mean (standard deviation) of the capital flow variables for observations at the estimated threshold level.

GROWTH on capital inflows. For FDI and portfolio inflows, the estimated threshold (ERR8 and ERR7, respectively) is statistically insignificant. Therefore, the ERRs appear not to provide a significant threshold for the impact of domestic growth on FDI and portfolio inflows. For aggregate capital and other investment inflows, by contrast, ERR5 (preannounced crawling peg; *de facto* moving band narrower than or equal to±1%) is estimated as the significant endogenous threshold. This threshold corresponds to mainly pegged ERRs in the "coarse" classification of IRR (2017). The impact of domestic economic conditions, proxied by GROWTH, appears to be substantially much higher on aggregate capital and other investment inflows under pegged ERRs than more flexible ERR arrangements. The effect of the main push factor is not significantly negative for the evolution of capital inflows and main components. This result is consistent with the empirical findings presented in Table 2, suggesting that ERRs provide thresholds for the impact of GFC. Consequently, ignoring these thresholds can produce misleading results. GFC, proxied by ΔVIX, however, is negative for portfolio inflows but positive for FDI inflows. The results for FDI inflows are consistent with the argument that higher global uncertainty tends to lead to a portfolio shift toward more stable investment instruments, as suggested by Jardet et al. (2022).

We next consider whether the prevailing ERRs provide data-driven estimated thresholds for the effects of the main pull and push factors on capital inflows. To this end, we estimate the following equation:

$$CIF_{it} = d_0 + (d_1 GROWTH_{it-1} + d_2 \Delta VIX_t)\ (ERR_{it} \leq \lambda) + (d_3 GROWTH_{it-1} + d_4 \Delta VIX_t)\ (ERR_{it} > \lambda) + u4_{it} \quad (5)$$

Table 4 presents the results. Accordingly, ERR8 (*de facto* crawling band that is narrower than or equal to±2%) provides the data-driven estimated threshold for the effects of the main pull and push factors on aggregate capital, portfolio, and FDI inflows. ERR6 (preannounced crawling band that is narrower than or equal to±2%) is the endogenously estimated threshold

Table 3
Exchange rate regimes and the impact of the pull factor.

	Aggregate capital inflows	Portfolio inflows	FDI inflows	Other inv. inflows
Threshold ERR F_B[.]	5 7.84 [0.00]***	7 0.05 [0.98]	8 4.45 [0.23]	5 18.09 [0.00]***
NT_{TH}	658	533	335	658
Mean (s.d.)++				
ERR ≤ λ	7.106 (6.717)	0.656 (1.894)	3.273 (4.062)	2.218 (4.076)
ERR > λ	4.759 (5.493)	0.987 (3.268)	2.890 (2.087)	1.021 (2.920)
Determinants of capital inflows				
ΔVIX_t	−0.245 (0.713)	−1.603*** (0.336)	0.753* (0.446)	0.553 (0.425)
$Growth_{i,t-1}$ [$ERR_{it} \leq \lambda$]	0.670*** (0.161)	0.037 (0.046)	0.204*** (0.043)	0.432*** (0.057)
$Growth_{i,t-1}$ [$ERR_{it} > \lambda$]	0.354*** (0.081)	0.049 (0.036)	0.078* (0.050)	0.170*** (0.037)
Constant	3.634*** (0.289)	0.675*** (0.102)	2.555*** (0.173)	0.371** (0.164)
Statistics	$N = 35$, $NT = 805$	$N = 35$, $NT = 805$	$N = 35$, $NT = 805$	$N = 35$, $NT = 805$
	$R^2 = 0.07$	$R^2 = 0.02$	$R^2 = 0.04$	$R^2 = 0.09$
	$F = 11.55$ [0.00]	$F = 8.58$ [0.00]	$F = 10.22$ [0.00]	$F = 24.75$ [0.00]

Notes: See Table 1.

Table 4
Exchange rate regimes and the impacts of the push and pull factors.

	Aggregate capital inflows	Portfolio inflows	FDI inflows	Other inv. inflows
Threshold ERR F_B[.]	8 5.29 [0.00]***	8 1.91 [0.00]***	8 5.92 [0.00]***	6 16.78 [0.00]***
NT_{TH}	335	335	335	654
Mean (s.d.)$^{++}$				
ERR $\leq \lambda$	5.376 (6.577)	0.518 (3.192)	3.273 (4.062)	2.152 (4.059)
ERR $> \lambda$	5.104 (4.566)	1.390 (2.128)	2.890 (2.087)	1.033 (2.925)
Determinants of capital inflows				
$Growth_{i,t-1}$ [$ERR_{it} \leq \lambda$]	0.186** (0.044)	0.037 (0.031)	0.198** (0.083)	0.426*** (0.081)
$Growth_{i,t-1}$ [$ERR_{it} > \lambda$]	0.114** (0.053)	0.054 (0.034)	0.084** (0.033)	0.171*** (0.046)
ΔVIX_t [$ERR_{it} \leq \lambda$]	2.250** (1.046)	−1.169** (0.442)	1.173** (0.446)	0.117 (1.257)
ΔVIX_t [$ERR_{it} > \lambda$]	−1.153* (0.723)	−2.301*** (0.493)	0.080 (0.250)	0.689 (0.469)
Constant	4.827*** (0.162)	0.679*** (0.104)	2.562*** (0.229)	0.368** (0.143)
Statistics	$N = 35$, $NT = 805$	$N = 35$, $NT = 805$	$N = 35$, $NT = 805$	$N = 35$, $NT = 805$
	$R^2 = 0.03$	$R^2 = 0.02$	$R^2 = 0.04$	$R^2 = 0.09$
	$F = 3.47$ [0.00]	$F = 7.62$ [0.00]	$F = 4.24$ [0.00]	$F = 14.3$ [0.00]

Notes: See Table 1.

for other investment inflows. The main pull factor represented by GROWTH is positive in both regimes, except portfolio inflows. This result suggests that an increase in GDP growth leads to higher capital inflows, although the procyclicality of capital inflows is much higher in the low regime with managed ERR observations. The impact of the main push factor on capital inflows changes with the prevailing ERRs. Worsening GFCs (an increase in ΔVIX) leads to higher capital inflows, except portfolio, in the low regime with managed ERRs. However, in the high regime, including floating ERRs, worsening GFCs tend to reduce aggregate capital and portfolio inflows. The results in Table 4 are virtually the same as those presented by Tables 2 and 3.

4. Concluding notes

Recent literature often maintains that the drivers of capital inflows may change with ERRs. In this context, we investigate whether the impacts of the main push (global financial conditions captured by ΔVIX) and pull (growth) factors on capital inflows are invariant to the prevailing *de facto* ERRs in EMEs.

We find that FDI is driven mainly by pull factors, portfolio flows tend to be driven mainly by push factors, and other investment flows are determined by both push and pull factors. ERRs often matter for the impacts of the main push and pull factors. ERR5 (preannounced crawling peg) is the threshold for the impact of growth on aggregate capital and other investment inflows. The effect of growth is substantially higher under pegged ERRs. This is consistent with the literature including Accominotti and Eichengreen (2016), indicating that the procyclicality of capital flows appears to hold mostly under pegged ERRs.

The *de facto* crawling band (ERR8) is estimated as the threshold for the impact of GFC on aggregate capital, portfolio, and FDI inflows. GFC is positively associated with the main components of capital (except portfolio) inflows under managed ERRs, but it is negatively related to aggregate capital and portfolio inflows under floating ERRs. The sensitivity of capital inflows to the external financial conditions increases with ERR flexibility. Our results support the postulation by Passari and Rey (2015) that the insulation properties of floating ERRs may have been overestimated.

To conclude, ERRs appear to matter for the impacts of the main global push and country-specific pull factors on the evolution of capital inflows to EMEs. ERR flexibility, though it potentially offers a buffer against external shocks by allowing more monetary policy independence, has uncertainty and exchange rate risk, which discourage capital inflows during episodes of global financial turbulence.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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