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Financial Account Determinants Of Exchange Rate Regime Switching In Developing Countries*

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Abstract:
The paper explores the interconnections between foreign capital flows and the exchange rate regime switching in developing countries. We formulate the exchange rate regime switching as annual time series of binary/ordered variables employing de facto classification of exchange rate arrangements and regress them on the financial account capital flows for a panel of 28 developing countries which experienced change in their exchange rate regime during the period 2000–2016. Employing probit and logit regression, we discover the FDI, portfolio flows and changes in reserve assets to precede and/or coincide with switching. Specifically, accumulation of foreign reserves increases the probability of switching from floating to peg, while their spending coincides with exits from pegged regimes; at the same time, outflows of FDI and portfolio investments tend to accompany exchange rate regime liberalization, although the evidence on that is less consistent.

Keywords: financial account, exchange rate regime, foreign capital flows, currency crisis, reserve assets
JEL Codes: F21, F31, G15

1. Introduction

The choice of exchange rate regime (ERR) is the monetary authorities' pivotal task which directly affects the country's international trade and capital flows. However, the inability of countries to comply with their ERR choice is also a remarkable phenomenon: the knowledge

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we possess on the exchange rate policies around the world clearly indicates that countries tend to change their ERRs fairly often (Rogoff et al., 2004; Jurek, 2018). Moreover, the changes in the ERRs are by far not always a result of deliberate, thought-out and fundamental-based choice, as the disorderly exits from particular exchange rate arrangements (i.e., abandonment of an ERR as a result of a financial crisis) are similarly numerous as the planned and elaborated ERR adjustments implemented in order to benefit the countries' external economic relations (Lin and Ye, 2011).

Among the identified determinants of the ERR choice there are the flows of foreign capital captured by the financial account of national balance of payments (BoP). Countries are observed to adjust their ERR policies in hopes of being more attractive for foreign investment flows; at the same time, reliable supply of foreign capital may stimulate the countries to switch to some form of managed ERR and adds to such ERRs' durability (Husain et al., 2005; Magud, 2010). Alternatively, reversals in the capital flows or so-called sudden stops often undermine the stability of the implemented exchange rate arrangements and may spur currency crises (Bizuneh, 2021). These interconnections are particularly persistent in so-called emerging markets and developing economies (EMDEs) as such countries both experience more volatile foreign capital flows and are known for more frequent readjustments of their exchange rate policies (Ndikumana, 2003; Tamgac, 2013).

However, the changes of ERRs (which we are to refer to as ERR switching) have attracted relatively little academic attention compared to the analysis of the ERR impact on the financial account capital flows. In this paper, we aim to reduce this gap by constructing a theoretical framework of interconnections between capital flows and ERR switching and subsequently testing these relations empirically.

To do that, we analyse the development of ERRs for an array of EMDEs with the help of the intelligible *de facto* ERR classification developed by Reinhart and Rogoff (the latest version is presented in Ilzetzki, Reinhart and Rogoff, 2019, which further in text will be referred to as IRR). We single out 28 countries that went through a change in their ERR in 2000–2016 and formulate the ERR switching as both binary (separating for peg-to-floating and floating-to-peg changes) and ordered variables as is habitual in analyses of ERR policies. Thereafter, we regress the time series of ERR changes on the individual types of foreign capital flows drawn from the countries' BoP financial accounts utilizing probit and logit regression and controlling for other ERR switching determinants. We run separate regressions for distinct types of switching, including different capital flow variables individually and jointly and employing different iterations of the ERR change dependent. Our findings indicate that some of the BoP items –

specifically foreign exchange reserves and direct investment flows – do affect the probability of ERR change largely in line with theoretical predispositions, while other capital flows appear to have mixed effects.

To the best of our knowledge, this is the first attempt to evaluate the nexus between foreign capital flows and change in ERRs with the dependent – regime change – formulated as ordered/binary and not proxied by indices of monetary policy actions[2]. The outputs of our estimations contribute to the relatively scarce body of literature on ERR switching and enable researchers and policymakers to assess the potential durability of exchange rate arrangements by looking into the readily available BoP statistics.

2. Theoretical Debate and Prior Literature

As our inquiry targets the circumstances that either coerce or prompt countries to change their ERR, we draw extensively from two strands of research into exchange rate policies. The first is a massive amount of empirical evidence on the determinants of ERRs in the developing world. The second is the scarcer (in terms of volume but not quality) surveys of specific factors and events that lead to or cause change of ERRs.

The former came into prominence in the 1990s, and, since then, the items of the BoP financial account hold a crucial place among the factors that shape the ERR policies in the EMDEs. The inflows of debt capital are considered to be associated with pegged regimes by, for instance, Levy-Yeyati et al. (2010), who attributed the preference of pegs over floatings to the foreign currency indebting common for developing countries, or Magud (2010), who argued that massive borrowings (often in foreign currency) may add to the durability of pegged regimes due to the economic authorities being eager to use the acquired funds in order to defend the exchange rate from depreciating pressures. Furthermore, the empirical proof of the debt accumulation contributing to the durability of pegs is provided by Fiess and Shankar (2009). Additionally, the indirect evidence in support of the debt inflows-fixed regimes nexus was presented by Berg and Borensztein (2000), who considered that inflows of borrowings into the EMDEs contribute to those countries' dollarization, which naturally requires a less flexible exchange rate arrangement. These claims are contradicted by, for instance, Rogoff et al. (2004), Tamgac (2013) or Bizuneh (2021), who have argued that higher short-term debt inflows are more prevalent among countries with floating or intermediate

2 Such as performed by, for example, the thorough work of Fiess and Shankar (2009), whose sophisticated methodology generates consistent and robust results but is too data-demanding to replicate for a broader set of countries.

regimes. Non-debt short-term inflows are also stated to be higher among countries with flexible ERRs, as they are usually attracted by generally more liberalized and financially open countries that may be reluctant to control their exchange rates (Ndikumana, 2003; Lin and Ye, 2011). Conversely, the supposedly long-term FDI flows are rather enticed by developing countries with pegged or intermediate arrangements, and a persistently positive balance of the incoming direct investment is stated to reinforce the durability of fixed regimes (Abbot et al., 2012; Bizuneh, 2021). Lastly, the longevity of pegged and managed ERRs is much higher in countries with considerable stock of foreign reserves (Aliyev, 2015; Jurek, 2018). As the reserves are required to protect the controlled exchange rate against speculative attacks or unfavourable changes of external economic factors, countries that have been able to amass higher reserves are more capable of defending the fixed rate by outliving the impact of those negative factors (Jurek, 2018).

The evidence on the occurrences of ERR changes is less voluminous, but still sufficient to establish linkages between the foreign capital flows and (both orderly and disorderly) readjustments of ERR policies. Moreover, despite the findings tending to differ considerably depending on the examined period and country sample, there is a handful of capital flow-related tendencies that are consensually agreed upon to trigger ERR switching. The first and most elaborated is exhaustion of foreign reserves. As a massive amount of foreign reserves is among the most reliable determinants of the stability of fixed regimes, their decrease has been discovered to be a natural precursor of the peg collapse (Penati and Pennacchi, 1989; Iwata and Tanner, 2003; Von Hagen and Zhou, 2005). This effect holds across different groups of countries and time periods, and depletion of the central banks' reserves is stated to either lead to currency crises (and disorderly abandonments of the fixed regime) or to induce the monetary authorities to conduct a precautionary ERR liberalization in order to prevent a future collapse (Iwata and Tanner, 2003; Bizuneh, 2021). Another acknowledged interconnection between financial account items and ERR switching is tied to the sudden stops of foreign capital, resulting in a forced change of the ERR. It holds especially relevant for the short-term capital inflows into the EMDEs, which are quick to react to changes in external or internal conditions and, in the wake of a financial crisis, may spur the abandonment of the fixed regime (Hausman et al., 1999; Ndikumana, 2003; Iwata and Tanner, 2003). At the same time, there is also evidence of high inflows of both equity and debt capital, leading countries to liberalize their ERR (Von Hagen and Zhou, 2005; Lin and Ye, 2011). This passthrough is linked to the fact that capital inflows often lead to the appreciation of the real exchange rate, and, in order to mitigate its potential destabilizing pressures, monetary authorities may abandon control over the exchange rate (Combes et al., 2012). More indirect support of capital flows being accountable for

ERR liberalization stems from the fact that peg-to-floating shifts are frequently preceded by an increase in equity prices, which may be fuelled by an influx of portfolio capital (Fiess and Shankar, 2009).

The above clearly indicates that the stability of exchange rate regimes is contingent upon financial capital flows, but it does not provide us with an unambiguous framework of the causal relations between foreign capital flows and changes in ERRs. In most cases, there is enough empirical and theoretical evidence to support both directions of effects of capital flows on ERR switching, which we summarize as follows:

- As positive FDI inflows are stated to contribute to the stability of fixed regimes, it may be speculated that outflows of FDI would cause the opposite – abandonment of pegged ERR (Abbbot et al., 2012; Bizuneh, 2021). Such effects may be attributed to the fact that the maintenance of a fixed ERR requires inflows of foreign exchange, which the more successful EMDEs often secure in the form of FDI; accordingly, when the investment inflows halt (or even turn to negative, meaning that investors are withdrawing their funds), the fixed exchange rate becomes unsustainable, and monetary authorities decide on an exit from the pegged arrangement (Bizuneh, 2021). Nevertheless, the contrary impact (i.e., inflows of FDI leading to ERR liberalization) cannot be ruled out as there is a number of instances when massive FDI inflows coincided with the targeted countries switching to a more flexible form of the exchange rate arrangement (Von Hagen and Zhou, 2005).
- As for portfolio investment flows, the mainstream consideration is to link a decrease in portfolio inflows with peg-to-floating switching via sudden stops and currency crises – i.e., situations when an abrupt decrease in short-term inflows/increase in outflows creates such a pressure on the foreign exchange market that the monetary authorities are coerced to exit from intervention-controlled peg (Hausman et al., 1999; Ndikumana, 2003). Furthermore, the country may choose an orderly abandonment of peg as it realizes its potential unsustainability in the wake of the declining foreign exchange inflows (Lin and Ye, 2011; Tsangarides, 2012). The opposite passthrough – i.e., a rise in portfolio capital inflows as the cause of floating-to-peg switching – is grounded in the same argumentation as in the presented case of FDI: foreign capital inflows reassure the monetary authorities of their ability to have the exchange rate under control – in other words, they make (often costly) pegged regimes more affordable (Berg and Borensztein, 2000; Magud, 2010). The opposite direction of influence – an increase in portfolio inflows spurring a shift to more flexible ERR – can be justified by the assumption that forward-looking monetary authorities, acknowledging the potential destabilizing effects of the heightening portfolio inflows, conduct a pre-emptive transition to a regime which is more suitable

to accommodate the consequences of portfolio flow volatility (Husain et al., 2005). This claim is indirectly bolstered by the fact that numerous exits from pegs have been preceded by a steep growth of portfolio asset prices, which might have led to the accumulated imbalance subsequently launching peg-to-floating switching (Fiess and Shankar, 2009).

- The impact of other investment flows on ERR switching is principally similar to the portfolio capital-ERR interconnections. We argue that an increase in this type of capital flows presses on floating-to-peg transition as they create a perception of stability in the eyes of monetary authorities (Berg and Borensztein, 2000). Accordingly, if this passthrough holds, it would be natural that the slump in other investment inflows would lead to the opposite ERR transition as the preservation of more rigid regime becomes harder (Tsangarides, 2012). However, there is also some evidence indicating that the passthrough between other investment flows and ERR switching is at times inversed: rising inflows leading to higher flexibility of ERR policies. Firstly, the inflows of this type of capital are frequently associated with enhancement of countries' overall financial development, of which peg-to-floating switching is a usual component (Lin and Ye, 2011). Secondly, given the level of discreditation faced by pegged regimes during the last decades, the EMDEs may decide to float in order to appear as more credible borrowers (Rogoff et al., 2004). Lastly, the short-term financial inflows may undermine the monetary authorities' commitment to the fixed regime as they would welcome appreciation due to its anti-inflationary and pro-real consumption effects (Eichengreen and Razo-Garcia, 2012; Frenkel, 2012).
- The traditionally prominent role of foreign exchange reserves in exchange rate policies across the EMDEs sets them aside from other financial account items in terms of their significance for the object of our interest (Rogoff et al., 2004). As a high amount of reserves is a prerequisite of pegged rate stability, floating-to-peg switching can be associated with accumulation of reserve assets (Iwata and Tanner, 2003; Rogoff et al., 2004). In such cases, the reserves may enable the national monetary authorities to intervene with the exchange rate, resulting in a change of *de facto* ERR. Alternatively, the accumulation of reserves coincides with orderly and thought-out ERR fixing in order to prevent appreciation that would have been otherwise spurred by the inflows of foreign exchange which serve as a source of increasing reserve in the first place (Aliyev, 2015). Accordingly, exits from peg – especially disorderly ones – are commonly set off by depletion of reserve assets (Penati and Pennacchi, 1989; Von Hagen and Zhou, 2005; Jurek, 2018).

3. Empirical Framework

In order to assess the interconnections presented in the previous section, we estimate the impact of BoP financial account capital flows on the changes in the exchange rate regime that occurred in a sample of EMDEs. We model the ERR switching as a binary/multinominal ordinal time series using a *de facto* ERR classification by IRR and subsequently regress them on the different foreign capital flows both separately and jointly utilizing binary probit and multinominal logit regression and employing viable controls. Therefore, our results are to represent changes in the probability of ERR switching given a change in the respective financial account capital flows.

3.1 Exchange rate regime

The preparatory errand which needs to be addressed and which, in turn, determines the framework of our subsequent empirical inquiry, is the selection of an exchange rate regime classification. Following the logic of the relatively recent studies which utilize the ERR type either as a variable or for the formulation of ERR-based variables (see, e.g., Bearce, 2014; Bizuneh, 2021), we abstain from the use of the IMF's *de jure* taxonomy as it has been described as being "little better than random" (Ilzetzki et al., 2019). It leaves us with several options of so-called *de facto* – based on actual ER policies rather than monetary authorities' declarations – ERR categorizations, of which two – the statistically-based one by Levy-Yeyati and Sturzenegger (LYS), and the one discerning between the flurry of ERRs according to the exchange rate policy actions and developed by Reinhart and Rogoff (IRR) – stand out as the most applicable empirically (Bearce, 2014; Bizuneh, 2021). Given the design of our research, the latter appears preferable due to the following considerations:

a) the IRR classification spans over a longer time period, providing data on ERRs for up to the end of 2016;

b) it identifies the ERRs for almost all the countries, while the methodology of the LYS labels a solid share of ERR country-year observations as "inconclusive";

c) the IRR classification detects the moment of the ERR switching with maximum precision (up to a specific date), which allows us to utilize it for the construction of ERR and ERR time series of higher than annual frequency;

d) the theoretical methods behind the LYS identification of *de facto* regimes incorporate the assessment of the countries' reserve assets and their changes, which, given the role of this indicator in our framework, may potentially bias the results.

Table 1: De facto exchange rate regime categories by Ilzetzki, Reinhart and Rogoff

ERR fine category	ERR coarse category	ERR coarse category, numerical value
No separate legal tender	Peg	1
Pre-announced peg or currency board		
Pre-announced horizontal band		
De facto peg		
Pre-announced crawling peg	Intermediate/ soft peg/ managed	2
Pre-announced crawling band		
De facto crawling peg		
De facto narrow crawling band		
Pre-announced wide crawling band		
De facto wide crawling band		
Non-crawling band		
Managed floating		
Freely floating	Floating	3
Freely falling	Freely falling	4

Source: Ilzetzki et al., 2019

A prominent feature of the IRR classification is its ability to discern between 14 ERR types. While it allows one to distinguish between the subtleties of exchange rate regime policies, such a taxonomy is often viewed as too elaborate for the traditional ERR studies as the differences between certain types of these ER arrangements are close to negligible (Bleaney et al., 2016). To override it, this broad classification – sometimes labelled as fine – is commonly reduced to a lower number of categories representing basic types of ERRs; such a "reduced" categorization is often marked as coarse (Sokolov et al., 2011; Bizuneh, 2021). We follow the logic of Sokolov et al. (2011) and collapse the 14 ERRs of the fine classification into 4 groups (see Table 1), which, with a certain degree of approximation, can be marked as "pegs", "intermediate regimes", "floating" and "freely falling" – a special category adduced by the IRR taxonomy and related to the cases of countries in severe currency crises (Ilzetzki et al., 2019).

3.2 Data sample

We limit our analysis to the period 2000–2016 with the upper bound set by the availability of information on the *de facto* ER arrangements, while the start of the examined timespan is selected in order for the results being more relevant for the current context of exchange rate policies. To be more concrete, our intention is for the findings to be devoid of impact of the foreign capital flow liberalization and subsequent waves of currency crises of the 1990s as we consider it to be a one-time event rather than a recurring pattern (Hausman et al., 1999). At the same time, a more recent time period would reflect the actual paradigm of the ERR choice and switching in the EMDEs such as, for instance, the reversal of the global peg-to-floating switching trend of the 1990s and the higher popularity of previously scarcer intermediate regimes (Tamgac, 2013; Jurek, 2018).

As previously noted, the estimations are to be conducted for a sample of solely emerging markets and developing countries as the outlined causal relations between foreign capital flows and ERR switching are either weaker or nearly absent for high-income advanced economies. Drawing from the *de facto* ERR dataset of IRR, we earmark all the EMDEs that went through a change in their coarse ERR category during this time period. Out of this sample, we expel countries with non-convertible currencies, as well as those that do not publish their balance of payments statistics required to obtain the financial account capital flow data. It leaves us with a selection of 28 countries for which we can identify the ERR switching moments and subsequently transform them into time series of binary/ordinal variables.

3.3 Dependent variables

For both quarterly and annual regression, we formulate two types of dependent variables. Firstly, the ERR switching is captured by a time series of binary variables which take a value of 1 when the current ERR is different from the ERR in the previous time period, and 0 otherwise. To distinguish between the direction of the ERR switching (either peg-to-floating or floating-to-peg), we also employ a separate time series of binary peg-to-floating and floating-to-peg switching. In order to additionally discern the magnitude of the ERR switching[3] (whether the change is between adjacent ERR categories or not), we construct an additional time series of ERR switching as differences between numerical values of the new and previous ERRs assigned to them by the coarse classification. Accordingly, positive values represent peg-to-

3 The importance of ERR switching magnitude rests upon a plausible assumption that a shift from hard peg to soft peg represents less significant change than, for instance, switching from hard peg to floating.

floating switching, while negative values are for floating-to-peg switching; moreover, higher absolute value is associated with switching between more distant ERR categories. The incidence of ERR switching as depicted by binary and ordered variables is shown in Table 1.

Table 2: Incidence of ERR switching in 2000–2016

ERR switching as binary variables				
	Total country-year observations	**ERR switching cases**	**ERR switching cases: peg-to-floating**	**ERR switching cases: floating-to-peg**
Country-year observations	448	47	24	23
% of total	100	10.5	5.37	5.13

ERR switching as ordered variables								
Value		–3	–2	–1	0	1	2	3
Country-year observations	448	2	15	7	401	7	13	3
% of total	100	0.5	3.3	1.6	89.4	1.6	2.9	0.7

Source: Ilzetzki et al., 2019, author's calculations

3.4 Explanatory variables

Considering the scope of our research and theoretical underpinnings behind it, the choice of the explanatory variables largely reflects the formulations of Section 2: we employ the net flows of foreign capital as recorded by the financial account of the examined countries' balance of payments. We distinguish between foreign direct investment, portfolio investment, other investment and reserve assets; we add the value of the "financial derivatives" item to the portfolio investment flows as suggested by Levy-Yeyati et al. (2010) due to the insignificant volume of the former.

In all the cases, we utilize the values of net capital flows in relation to the respective values of GDP. Keeping to the conventional BoP presentation format, positive values of the capital flow variables signify net outflows of capital in the cases of direct, portfolio and other investment, and net accumulation of foreign reserves; accordingly, negative signs of the variables represent net inflows and spending of reserves.

3.5 Control variables

As conventional wisdom and prior research into ERR switching clearly states that financial account capital flows are not the sole factors responsible for changes in countries' ERRs, the financial flows-ERR nexus is examined with inclusion of viable controls, which serve as determinants of ERR switching established by the relevant literature. For their sources and description, see Appendix.

For the estimations with annual data, we include change in the terms of trade index, suggesting that its worsening may lead either to a currency crisis or an orderly exit from peg in order to instil some flexibility in the wake of deteriorating trade balance (Bordo, 2003; Tsangarides, 2012). As the change of ERR is the most frequent during economic downturns, we proxy them with GDP growth rate and assume that its increase should be naturally associated with a lower probability of ERR switching (Iwata and Tanner, 2003; Lin and Ye, 2011). Moreover, to reflect the crisis-switching linkages and proceeding from the fact that currency crises are best predicted with an analysis of real exchange rate (RER) movements, we incorporate this factor by employing RER volatility as a control variable. We calculate annual RER volatility as the standard deviation of monthly real effective exchange rates for each individual country-year observation. We use lagged values of this variable as its potential interactions with the dependent variables (i.e., ERR switching may be triggered by RER volatility, but may also induce RER volatility itself) suggest a high chance of it being endogenous. Additionally, we include a lagged (pre-switching) ERR type as a control variable in order to account for lower stability and stronger predispositions towards changes observed for certain ERR categories (Rogoff et al., 2004; Jurek, 2018). Furthermore, we attempted to include current account balance variables as controls due to their undeniable impact on exchange rate dynamics per se, but the most relevant variables of this sphere, such as the current account balance and trade account balance as share of GDP, exhibit fairly high correlation (≥ 0.6) with the explored financial account items, specifically foreign direct investment, other investment flows and changes in reserve assets. However, while the absence of current account items in our estimations may be viewed as a drawback, we believe it not to be critical as, firstly, the ERR switching is, technically, induced by the flows of foreign exchange, which are already captured by financial account explanatory variables; and, secondly, terms of trade being an acceptable proxy for current account flows in developing countries.

4. Estimation Methods and Results

We run separate regressions for each individual BoP financial acc ount capital flow and then include all of them in a single estimation. It allows us to assess the persistence of the effects and also reduces the potential omitted variable bias for instances where the ERR switching was induced by joint influence of several types of financial flows. Subsequently, we conduct separate estimations with dependent variables formulated as time series of peg-to-floating and floating-to-peg switching.

For all the estimations, we test separately the financial account independent variables and their lagged values as it is both a common tool against potential endogeneity concerns (see Levy-Yeyati et al., 2010, for the execution of such an approach in ERR analysis) and justified theoretically given that the financial account trigger of the ERR switching may be "pulled" during the period preceding the switching itself.

For the estimations with dependent variables defined as binary variables which equal 1 in the case of ERR switching (either in general, peg-to-floating, or floating-to-peg) and 0 otherwise, we utilize probit regression discrete choice models conceptually related to, for instance, the research conducted by Eichengreen and Razo-Garcia (2012) or Bearce (2014), who explored the gaps between *de jure* and *de facto* exchange rate regimes. The estimations are carried out employing clustered robust standard errors with no inclusion of country fixed effects due to the attenuation bias and inconsistency problems they generate, as noted by Bearce (2014). The estimations are formulated as follows, with Equations (1) and (2) being the models with individual foreign capital flows in the current/previous time period as explanatory variables of interest, and Equations (3) and (4) including all the capital flows jointly in the current/previous time period:

$$Switching_t^{binary} = \beta_1 \bullet Financial\ account\ item_t + \beta_x \bullet Controls_{t/(t-1)} \quad (1)$$

$$Switching_t^{binary} = \beta_1 \bullet Financial\ account\ item_{t-1} + \beta_x \bullet Controls_{t/(t-1)} \quad (2)$$

$$Switching_t^{binary} = \beta_1 \bullet Direct\ investment_t + \beta_2 \bullet Portfolio\ investment_t + \\ + \beta_3 \bullet Other\ investment_t + \beta_4 \bullet Reserve\ assets_t + \beta_x \bullet Controls_{t/(t-1)} \quad (3)$$

$$Switching_t^{binary} = \beta_1 \bullet Direct\ investment_{t-1} + \beta_2 \bullet Portfolio\ investment_{t-1} + \\ + \beta_3 \bullet Other\ investment_{t-1} + \beta_4 \bullet Reserve\ assets_{t-1} + \beta_x \bullet Controls_{t/(t-1)} \quad (4),$$

where $Switching_t^{binary}$ is the dependent variable with the value of 1 in the case of ERR change (general, peg-to-floating, or floating-to-peg) and 0 otherwise, t is the number of time periods, and $\beta_{[1;\,x]}$ is the coefficients depicting the change in switching probability caused by the change in the values of explanatory/control variables.

Alternatively, when the dependent variables are formulated as differences between the assigned numerical values of the new and previous ERRs and therefore are of ordered yet non-binary nature, we conduct the estimations employing multinominal ordered logit regression for balanced panels (see, e.g., Aliyev, 2015, for a discussion of the utility of this method for ERR analysis). Therefore, the dissimilar nature of the ERR switching (i.e., peg-to-floating or floating-to-peg) is to be represented by different values and signs of the dependent. In such a case, the estimations are formulated as follows (Equations (5) and (6) are the models with individual foreign capital flows in the current/previous time period, and Equations (7) and (8) include all the capital flows jointly in the current/previous time period):

$$Switching_t^{ordered} = \beta_1 \bullet Financial\ account\ item_t + \beta_x \bullet Controls_{t/(t-1)} \tag{5}$$

$$Switching_t^{ordered} = \beta_1 \bullet Financial\ account\ item_{t-1} + \beta_x \bullet Controls_{t/(t-1)} \tag{6}$$

$$\begin{aligned} Switching_t^{ordered} &= \beta_1 \bullet Direct\ investment_t + \beta_2 \bullet Portfolio\ investment_t + \\ &+ \beta_3 \bullet Other\ investment_t + \beta_4 \bullet Reserve\ assets_t + \beta_x \bullet Controls_{t/(t-1)} \end{aligned} \tag{7}$$

$$\begin{aligned} Switching_t^{ordered} &= \beta_1 \bullet Direct\ investment_{t-1} + \beta_2 \bullet Portfolio\ investment_{t-1} + \\ &+ \beta_3 \bullet Other\ investment_{t-1} + \beta_4 \bullet Reserve\ assets_{t-1} + \beta_x \bullet Controls_{t/(t-1)} \end{aligned} \tag{8},$$

where $Switching_t^{ordered}$ is the dependent variable depicting the difference in numerical values of ERR in current and previous time periods, t is the number of time periods, and $\beta_{[1;\,x]}$ is the coefficients depicting the magnitude of switching (in numerical values of the differences between ERR in current and previous time periods) caused by the change in the values of explanatory/control variables.

The panel dataset employed for the annual data estimations covers the timespan 2000–2016 and is composed of 28 EMDEs[4] that went through a change of their *de facto* exchange

4 Albania, Angola, Argentina, Azerbaijan, Bangladesh, Belarus, Bolivia, China, Democratic Republic of Congo, Costa Rica, Egypt, Ethiopia, Ghana, Kazakhstan, Kuwait, Liberia, Malawi, Malaysia, Morocco, Mozambique, Nigeria, Romania, Russia, Tajikistan, Tanzania, Turkey, Ukraine, Zambia.

rate regime during the noted period. The results of the probit regressions with binary dependent variables with both current and lagged values of the foreign capital flows explanatory variables are in Table 3. Tables 4 and 5 present the estimations with dependent variables being peg-to-floating and floating-to-peg switching.

The signs and directions of control variables in the estimations with binary dependent variables are largely in line with theoretical predispositions. The probability of ERR switching in general is reduced when the country is experiencing both an increasing tempo of its GDP growth and an improvement in its terms of trade, with the latter, however, inducing such effects only for peg-to-floating switching. For the former, the justification rests upon the fact that the examined ERR switching episodes were either plainly disorderly (i.e., caused by crisis) or served as an *ex-ante* reaction to the disequilibrium accumulation. For the terms of trade, it is reasonable to expect that a country will be more eager to liberalize its ERR in the wake of improving foreign trade conditions. At the same time, their deterioration can force the country to stick to the pegged regime in order to have better control over exchange rate, which can be adjusted to the benefit of foreign trade. Additionally, the countries' pre-switching ERR naturally affects the probability and direction of ERR change: countries with less flexible regimes are more inclined towards peg-to-floating changes, while the opposite direction of switching occurs more frequently in countries with more liberal ERR policies. Finally, higher RER volatility is discovered to make countries more likely to abandon flexible ER arrangements, which is in line with the common logic and conventional expectations that fixed ERRs are helpful for RER stabilization

Table 3: Impact of financial account capital flows on ERR switching

Binary dependent		(1)		(2)		(3)		(4)		(5)		(6)		(7)		(8)		(9)		(10)	
Independent variable		**Coeff.**	**Z-stat**	**Coeff.**	**Z-stat**	**Coeff.**	**Z-stat**	**Coeff.**	**Z-stat**	**Coeff.**	**Z-stat**	**Coeff.**	**Z-stat**	**Coeff.**	**Z-stat**	**Coeff.**	**Z-stat**	**Coeff.**	**Z-stat**	**Coeff.**	**Z-stat**
Terms of trade change		−0.01***	−6.38	−0.01***	−6.40	−0.02***	−6.17	−0.01***	−6,13	−0.02***	−6.05	−0.02***	−5.93	−0.02***	−5.97	−0.02***	−5,91	−0.03***	−5.98	−0.02***	−5.43
GDP growth		−0.03*	−1.85	−0.04*	−1.78	−0.05*	−1.85	−0.04**	−2,35	−0.05*	−1.82	−0.06*	−1.90	−0.05	−1.53	−0.05*	−0,07	−0.03	−1.01	−0.05	−1.46
RER volatility[x]		0.01	1.13	0.01	1.10	0.02	1.27	0.01	1,21	0.02	1.27	0.02	1.26	0.02	0.22	0.02	0,21	0.01	1.11	0.01	1.12
ERR type[x]		0.20**	2.26	0.21**	2.40	0.43**	2.57	0.15*	1,80	0.41**	2.43	0.39**	2.35	0.39**	2.30	0.38**	2,29	0.49*	2.77	0.43**	2.46
Direct investment		3.28*	1.76															6.69*	1.71		
Direct investment[x]				4.17**	2.10															7.34*	0.08
Portfolio investment						6.11*	1.78											4.38	1.21		
Portfolio investment[x]								−1.10	−0,47											−2.99	0.61
Other investment										2.38*	1.67							−0.13	−0.06		
Other investment[x]												0.32	0.16							−0.25	−0.10
Reserve assets														−6.59***	−2.92			−7.26**	−2.38		
Reserve assets[x]																−1.39	−0,52			−1.72	−0.52
Goodness of fit	**H-L stat.**	19.20**		19.18**		24.10***		31.06***		29.25***		27.33***		59.45***		27.74***		22.73***		16.82**	
	Andrews stat.	74.18***		29.36***		22.83**		40.64***		31.19***		34.66***		109.93***		35.46***		69.46***		23.80***	
AUC		0.65		0.64		0.62		0.61		0.58		0.59		0.66		0.67		0.56		0.56	
Time period[z]		2001–2016		2001–2016		2001–2016		2001–2016		2001–2016		2001–2016		2001–2016		2001–2016		2001–2016		2001–2016	
Number of observations		448		448		448		448		448		448		448		448		448		448	

Notes: [x] first lag of the variable; [z] including lags. Statistical significance indicated by: *p ≤ 0.10, **p ≤ 0.05 and ***p ≤ 0.01

Source: author's calculations

Table 4: Impact of financial account capital flows on ERR switching: peg to floating

Binary dependent: peg-to-floating		(1)		(2)		(3)		(4)		(5)		(6)		(7)		(8)		(9)		(10)	
Independent variable		**Coeff.**	**Z-stat**	**Coeff.**	**Z-stat**	**Coeff.**	**Z-stat**	**Coeff.**	**Z-stat**	**Coeff.**	**Z-stat**	**Coeff.**	**Z-stat**	**Coeff.**	**Z-stat**	**Coeff.**	**Z-stat**	**Coeff.**	**Z-stat**	**Coeff.**	**Z-stat**
Terms of trade change		0.02***	6.35	0.02***	6.35	0.02***	6.26	0.02***	6.19	0.02***	6.29	0.02***	6.31	0.02***	6.25	0.02***	6.26	0.02***	6.11	0.02***	6.14
GDP growth		−0.07***	−3.39	−0.07***	−3.45	−0.08***	−4.16	−0.09***	−4.21	−0.09***	−4.12	−0.09***	−4.16	−0.08***	−3.94	−0.09***	−4.20	−0.07***	−3.09	−0.08***	−3.62
RER volatility[x]		−0.16***	−3.01	−0.14***	−2.88	−0.15***	−3.07	−0.15***	−3.03	−0.15***	−3.07	−0.16***	−3.08	−0.15***	−3.10	−0.15***	−3.06	−0.16***	−3.03	−0.14***	−2.77
ERR type[x]		0.67***	5.10	0.66***	5.09	0.59***	4.74	0.59***	4.70	0.59***	4.76	0.58***	4.77	0.58***	4.70	0.60***	4.78	0.66***	5.00	0.69***	5.02
Direct investment		6.74**	2.28															7.21**	2.36		
Direct investment[x]				6.12**	2.26															6.48***	2.33
Portfolio investment						−1.09	−0.29											−2.05	−0.50		
Portfolio investment[x]								6.19*	1.71											5.86	1.68
Other investment										0.27	0.19							−0.17	−0.10		
Other investment[x]												0.56	0.35							0.50	0.26
Reserve assets														−1.43	−0.66			−2.29	−0.90		
Reserve assets[x]																1.31	0.72			1.88	0.86
Goodness of fit	**H-L stat.**	18.99**		19.01**		24.79***		26.11***		29.79***		28.01***		63.44***		31.22***		21.16***		24.06***	
	Andrews stat.	57.88***		33.26***		21.17**		38.88***		32.64***		36.29***		107.45***		38.36***		66.87***		24.06***	
AUC		0.64		0.64		0.60		0.59		0.59		0.60		0.61		0.61		0.57		0.57	
Time period[z]		2001–2016		2001–2016		2001–2016		2001–2016		2001–2016		2001–2016		2001–2016		2001–2016		2001–2016		2001–2016	
Number of observations		448		448		448		448		448		448		448		448		448		448	

Notes: [x] first lag of the variable; [z] including lags. Statistical significance indicated by: *p ≤ 0.10, **p ≤ 0.05 and ***p ≤ 0.01

Source: author's calculations

Table 5: Impact of financial account capital flows on ERR switching: floating to peg

Binary dependent: floating-to-peg		(1)		(2)		(3)		(4)		(5)		(6)		(7)		(8)		(9)		(10)	
Independent variable		**Coeff.**	**Z-stat**	**Coeff.**	**Z-stat**	**Coeff.**	**Z-stat**	**Coeff.**	**Z-stat**	**Coeff.**	**Z-stat**	**Coeff.**	**Z-stat**	**Coeff.**	**Z-stat**	**Coeff.**	**Z-stat**	**Coeff.**	**Z-stat**	**Coeff.**	**Z-stat**
Terms of trade change		−0.01***	−2.95	−0.01***	−2.96	−0.01***	−3.14	−0.01***	−2.80	−0.01***	−3.06	−0.01***	−2.82	−0.01***	−2.86	−0.01***	−2.86	−0.01***	−2.67	−0.01***	−2.23
GDP growth		0.01	0.38	0.01	0.45	0.01	0.31	0.01	0.36	0.01	0.35	0.01	0.36	0.01	−0.54	0.01	0.42	0.01	0.61	0.01	0.56
RER volatility[x]		0.04**	2.53	0.04**	2.47	0.04**	2.46	0.04**	2.56	0.04**	2.48	0.04**	2.57	0.04**	2.21	0.04**	2.47	0.04**	2.11	0.04**	2.35
ERR type[x]		−0.59***	−3.65	−0.58***	−3.55	−0.56***	−3.39	−0.61***	−3.70	−0.58***	−3.57	−0.61***	−3.76	−0.59***	−3.67	−0.61***	−3.81	−0.58***	−3.22	−0.63***	−3.57
Direct investment		0.51	0.31															1.15	0.55		
Direct investment[x]				1.57	0.66															2.08	0.78
Portfolio investment						2.42*	1.69											1.36	0.62		
Portfolio investment[x]								−0.01	−0.05											−0.86	−0.32
Other investment										0.88	0.91							−1.08	−0.77		
Other investment[x]												−0.30	−0.23							−1.27	−0.82
Reserve assets														−3.73**	−2.41			−4.68**	−2.29		
Reserve assets[x]																−1.65	−1.03			−2.85	−1.35
Goodness of fit	**H-L stat.**	19.17**		19.49**		25.11***		25.84***		31.07***		28.77***		61.53***		28.81***		20.38***		17.21**	
	Andrews stat.	19.17**		32.26***		20.01**		40.72***		34.62***		36.89***		109.31***		39.61***		65.82***		25.07***	
AUC		0.62		0.63		0.60		0.59		0.60		0.61		0.67		0.66		0.58		0.58	
Time period[z]		2001–2016		2001–2016		2001–2016		2001–2016		2001–2016		2001–2016		2001–2016		2001–2016		2001–2016		2001–2016	
Number of observations		448		448		448		448		448		448		448		448		448		448	

Notes: [x] first lag of the variable; [z] including lags. Statistical significance indicated by: *p ≤ 0.10, **p ≤ 0.05 and ***p ≤ 0.01

Source: author's calculations

Table 6: Impact of financial account capital flows on ERR switching: non-binary dependent

Ordered dependent	(1)		(2)		(3)		(4)		(5)		(6)		(7)		(8)		(9)		(10)	
Independent variable	**Coeff.**	**Z-stat**	**Coeff.**	**Z-stat**	**Coeff.**	**Z-stat**	**Coeff.**	**Z-stat**	**Coeff.**	**Z-stat**	**Coeff.**	**Z-stat**	**Coeff.**	**Z-stat**	**Coeff.**	**Z-stat**	**Coeff.**	**Z-stat**	**Coeff.**	**Z-stat**
Terms of trade change	0.01*	1.68	0.01*	1.72	0.01*	1.82	0.01*	1.78	0.01*	1.87	0.01*	1.66	0.01*	1.73	0.01*	1.70	0.01*	1.69	0.01	1.42
GDP growth	−0.02	−0.65	−0.02	−0.68	−0.02	−0.69	−0.02	−0.72	−0.02	−0.74	−0.02	−0.69	−0.03	−0.91	−0.03	−0.83	−0.03	−0.82	−0.03	−0.83
RER volatility^{x}	−0.04***	−3.51	−0.04***	−3.50	−0.04***	−3.50	−0.04***	−3.50	−0.04***	−3.50	−0.04***	−3.50	−0.04***	−3.51	−0.04***	−3.50	−0.04***	−3.52	−0.04***	−3.50
ERR type^{x}	−1.79***	−8.05	−1.79***	−8.03	−1.77***	−7.95	−1.78***	−7.96	−1.78***	−8.01	−1.79***	−8.04	−1.85***	−8.15	−1.82***	−8.09	−1.84***	−8.02	−1.85***	−7.98
Direct investment	0.90	0.47															1.34	0.69		
Direct investment^{x}			0.18	0.09															0.20	0.10
Portfolio investment					−1.69	−0.52											−1.21	−0.36		
Portfolio investment^{x}							−0.99	−0.28											−0.36	−0.10
Other investment									−1.48	−0.73							−0.42	−0.21		
Other investment^{x}											0.69	0.34							1.99	0.99
Reserve assets													4.73**	2.29			4.67**	2.04		
Reserve assets^{x}															2.98*	1.71			4.14*	1.76
Pseudo R^2	0.20		0.20		0.20		0.20		0.20		0.20		0.21		0.20		0.21		0.20	
LR stat.	89.46***		89.26***		89.51***		89.33***		89.76***		89.37***		93.26***		90.95***		93.86***		92.03***	
Time period^{z}	2001–2016		2001–2016		2001–2016		2001–2016		2001–2016		2001–2016		2001–2016		2001–2016		2001–2016		2001–2016	
Number of observations	448		448		448		448		448		448		448		448		448		448	

Notes: ^{x} first lag of the variable; ^{z} including lags. Statistical significance indicated by: *p ≤ 0.10, **p ≤ 0.05 and ***p ≤ 0.01

Source: author's calculations

As for the explanatory variables of interest, the findings indicate that the probability of ERR switching is higher in the wake of net outflows of foreign capital – be it in the form of FDI, portfolio or other capital. In the case of FDI, the statistically significant impact is also recorded for its lagged value, which, considering the long-term nature of direct investment, highlights that the ERR switching may be spurred not only by sudden outflows of short-term capital, but also by gradual deterioration of domestic investment attractivity epitomized by FDI outflows. The results are in line with both the assumption of the capital outflows' destabilizing impacts on the ERRs, and logical contemplation that the country's monetary authorities may perceive the change of ERR as unnecessary if they experience a high enough foreign exchange influx. However, if we look into the direction of ERR switching (Tables 4 and 5), the above holds mostly for peg-to-floating switching, i.e., countries are more likely to abandon the pegged regime in the wake of capital outflows but can "afford" to hold to it when experiencing inflows of foreign direct and portfolio investments. Additionally, we discover the ERR switching to be more probable in the wake of the foreign reserve spending, which is in accordance with a vast mass of the literature with alike findings, as well as our theoretical reasoning (Penati and Pennnachi, 1988; Von Hagen and Zhou, 2005; Tamgac, 2013). More specifically, spending of the reserves is associated with ERR pegging, as the reserves are conventionally utilized in order to stabilize the exchange rate. Alternatively, accumulation of reserves reduces the probability of pegging, but does not affect the probability of peg-to-floating switching, i.e., countries do not feel any need either to relax or to rigidize their ERR policies. When the dependent variables are regressed on all the financial account capital flows jointly, the signs and statistical significance are retained only for the FDI and reserve assets, which may be either perceived as the principal impact of these items on the ERR switching or attributed to the higher robustness of these causal relations.

Table 6 contains the results of the multinominal logit estimations with ERR switching formulated as an ordinal non-binary variable; the employed calculation method (see Section 3.4.) results in peg-to-floating changes captured by positive values of the dependent variable (i.e., the shift is from "higher-value" to "lower-value" ERR), while floating-to-peg occurs when the dependent variable is negative (shift from "lower-value" to "higher-value" ERR). Due to that, as well as to the very uneven distribution of the dependent variables' values, both the significance and the potential interpretative value of the results is arguably lower than for the estimations with binary dependent variables. In all the cases, the controls are of the same sign across the estimations; with improving terms of trade being discovered to contribute to the ERR liberalization, while higher RER volatility potentially instigates monetary authorities to reduce the degree of ER freedom. Moreover, less rigid exchange rates appear to be more prone to floating-to-peg switching and vice versa.

For the financial account items, the statistically significant impact on the ERR switching is associated with changes in reserve assets, with accumulation of reserves producing peg-to-floating switching; or, what seems to be a more plausible explanation, spending of reserves causes the pegging process. The argumentation is quite simple: foreign exchange interventions – which in the context of EMDEs are frequently related to attempts to divert depreciating pressures – are a reliable marker of the *de facto* pegged regimes, and spending of the reserves may be conducted in order to manage the previously flexible exchange rate. Importantly, the results of our estimations with non-binary variables are largely consistent to those achieved with the binary peg-to-floating and floating-to-peg dependent variables, which implies higher overall robustness of our findings.

In all the instances, the results are not devoid of a basis for criticism. Firstly, their validity can be assumed only for a relatively limited sample of countries, as we evaluated only the countries that experienced ERR switching during the examined timespan. Therefore, the articulated capital flow movements may not produce alike effects upon the ERRs for countries with more credible ER policies in the first place, or, considering the dissimilarities between the results with the varying size of country samples, the effects may be of a different direction. This issue may be rooted in the omitted variable bias, which, in our case, is extremely difficult to overcome due to the lack of proper controls. To surmount those matters, one would require more extensive statistics on the countries' financial account capital flows and other macroeconomic variables, the availability of which leaves much to be desired. Moreover, while our findings with regard to the binary ERR switching appear to be in line with theory and certain works of other authors, we believe the inability to distinguish between the nature of switching to be a serious deficiency; however, an attempt to solve it with the dependent variables formulated as differences between the ERR numerical values proved less successful in terms of the consistence of the results.

5. Conclusion

Changes in foreign capital movements are believed to induce adjustments of ERR policies and to spur switching between different types of ER arrangements. In this paper, we attempted to scrutinize these issues by empirically evaluating the linkages between foreign capital flows captured by national BoP financial accounts and the switching between *de facto* exchange rate regimes.

For this inquiry, we outlined the potential passthrough channels between foreign capital flows and ERR switching, drawing from theoretical contemplations and empirical findings of other authors. Subsequently, we examined the episodes of ERR changes across EMDEs with the help of the *de facto* ERR methodology by Reinhart and Rogoff (2004) and earmarked a panel

of countries that went through the ERR switching during 2000–2016. For those countries, we formulated the ERR switching as binary variables (1 if there was a change of ERR between two consecutive time periods – either in general or as peg-to-floating and floating-to-peg switching episodes – and 0 otherwise) and ordered variables (as a difference between the numerical values of the post- and pre-switching ERR categories assigned to them in a manner common for ERR studies). Using probit and multinominal logit regression, we thereafter regressed the ERR switching variables on financial account capital flows employing annual time series, adding to the regressions viable controls such as the ERR type, RER volatility, GDP growth rate and change in the terms of trade index. To the best of our knowledge, this is the first attempt at an explanation of ERR changes in a framework where they are formulated as binary/ordered variables and subsequently regressed on their presumed financial account determinants.

In the instances where the dependent variable is formulated as binary (i.e., either ERR switching happens or not), our results suggest that there are statistically significant changes in the financial account capital flows both preceding and coinciding with the change of the countries' exchange rate arrangements. Specifically, peg-to-floating ERR switching was discovered to be ushered by outflows of foreign direct investment registered both before and during the period when switching occurs. It corresponds with the fact that a solid share of ERR switching episodes were of a disorderly nature, and the outflows of FDI could have served either as symptoms or causes of the currency crises which led to the changes in ER arrangements. Short-term capital flows – portfolio and other investment flows – also contributed to the probability of ERR switching, largely in accordance with theoretical predispositions that capital outflows and so-called sudden stops tend to destabilize ERRs and induce exits from pegged regimes. Additionally, our findings provide relatively straightforward evidence on the central bank reserve assets decreasing both before and during the ERR floating-to-peg switching, adding to the conventional wisdom about countries spending their reserves in order to fix a previously more liberal exchange rate arrangement.

When we define ERR switching as a non-binary ordinal variable computed as the difference between the ERR categories' numerical values discerning between ERR switching in a dissimilar direction (floating-to-peg or peg-to-floating), we arrive at less conclusive results, which still deserve mention. Given the scattered values of the dependent variable, the only financial account variable proven to be significant across the estimations is the foreign reserves; and its sign suggests that countries tend to spend their reserves in the wake of floating-to-peg switching, which is consistent with the estimations with binary dependent variables, and logically ties the exhaustion of reserves to the *de facto* deliberalization of the ERR policy. Other financial flows appeared to be largely without any statistically significant effect on ERR change in this

environment, implying that the adopted empirical framework may be less suitable when the dependent variables are expressed as ordered instead of binary.

Considering the above, we argue that our findings do contribute to the existing body of knowledge on the determinants of ERR switching by presenting additional evidence in favour of the pivotal role of foreign capital flows in the choice and adjustments of ERR policies across EMDEs. Despite certain methodological drawbacks typical of inquiries of this kind, there are reasons to regard the financial account capital movements as predictors of ERR (in)stability, which, given that the data on financial flows are largely available, provides useful implications for policymakers or researchers assessing the durability of exchange rate arrangements in developing countries.

References

Abbott, A., Cushman, D. O., De Vita, G. (2012). Exchange Rate Regimes and Foreign Direct Investment Flows to Developing Countries. *Review of International Economics,* 20(1), 95–107. https://doi.org/10.1111/j.1467-9396.2011.01010.x

Aliyev, R. (2015). Determinants of the Choice of Exchange Rate Regime in Resource-Rich Countries. *SSRN Electronic Journal*. https://doi.org/10.2139/ssrn.2555469

Berg, A., Borensztein, E. (2000). The Choice of Exchange Rate Regime and Monetary Target in Highly Dollarized Economies. *Journal of Applied Economics*, 3(2), 285–324. https://doi.org/10.1080/15140326.2000.12040552

Bizuneh, M. (2021). Are We Floating Yet? Duration of Fixed Exchange Rate Regimes. *Eastern Economic Journal*. https://doi.org/10.1057/s41302-021-00206-7

Bearce, D. H. (2014). A Political Explanation for Exchange-Rate Regime Gaps. *The Journal of Politics*, 76(1), 58–72. https://doi.org/10.1017/s0022381613001047

Bleaney, M. F., Tian, M.,Yin, L. (2016). De Facto Exchange Rate Regime Classifications: An Evaluation. *Open Economies Review*, 28(2), 369–382. https://doi.org/10.1007/s11079-016-9427-7

Bordo, M. D. (2003). Exchange Rate Regime Choice in Historical Perspective. *SSRN Electronic Journal*. https://doi.org/10.2139/ssrn.879236

Combes, J. L., Kinda, T.. Plane, P. (2012). Capital Flows, Exchange Rate Flexibility, and the Real Exchange Rate. *Journal of Macroeconomics*, 34(4), 1034–1043. https://doi.org/10.1016/j.jmacro.2012.08.001

Eichengreen, B., Razo-Garcia, R. (2012). How Reliable Are de Facto Exchange Rate Regime Classifications? *International Journal of Financial Economics*, 18(3), 216–239. https://doi.org/10.1002/ijfe.1456

Fiess, N., Shankar, R. (2009). Determinants of Exchange Rate Regime Switching. *Journal of International Money and Finance*, 28(1), 68–98. https://doi.org/10.1016/j.jimonfin.2007.08.002

Frankel, J. A. (2012). Choosing an Exchange Rate Regime. *Handbook of Exchange Rates*, 767–784. https://doi.org/10.1002/9781118445785.ch28

Hausmann, R., Gavin, M., Pages-Serra, C., Stein, E. (1999). Financial Turmoil and Choice of Exchange Rate Regime. *SSRN Electronic Journal*. https://doi.org/10.2139/ssrn.1817197

Husain, A. M., Mody, A., Rogoff, K. S. (2005). Exchange Rate Regime Durability and Performance in Developing Versus Advanced Economies. *Journal of Monetary Economics*, 52(1), 35–64. https://doi.org/10.1016/j.jmoneco.2004.07.001

Ilzetzki, E., Reinhart, C. M., Rogoff, K. S. (2019). Exchange Arrangements Entering the Twenty-First Century: Which Anchor will Hold? *The Quarterly Journal of Economics*, 134(2), 599–646. https://doi.org/10.1093/qje/qjy033

Jurek, M. (2018). Choosing the Exchange Rate Regime-a Case for Intermediate Regimes for Emerging and Developing Economies. *Economics and Business Review*, 4(4), 46–63. https://doi.org/10.18559/ebr.2018.4.3

Levy-Yeyati, E., Sturzenegger, F., Reggio, I. (2010). On the Endogeneity of Exchange Rate Regimes. *European Economic Review*, 54(5), 659–677. https://doi.org/10.1016/j.euroecorev.2009.12.004

Lin, S., Ye, H. (2011). The Role of Financial Development in Exchange Rate Regime Choices. *Journal of International Money and Finance*, 30(4), 641–659. https://doi.org/10.1016/j.jimonfin.2011.02.005

Magud, N. E. (2010). Currency Mismatch, Openness and Exchange Rate Regime Choice. *Journal of Macroeconomics*, 32(1), 68–89. https://doi.org/10.1016/j.jmacro.2009.08.003

Ndikumana, L. (2003). Capital Flows, Capital Account Regimes, and Foreign Exchange Rate Regimes in Africa. *SSRN Electronic Journal*. https://doi.org/10.2139/ssrn.378900

Penati, A., Pennacchi, G. (1989). Optimal Portfolio Choice and the Collapse of a Fixed-exchange Rate Regime. *Journal of International Economics*, 27(1–2), 1–24. https://doi.org/10.1016/0022-1996(89)90075-5

Rogoff, K. S., Husain, A., Mody, A., Brooks, R., Oomes, N. (2003). Evolution and Performance of Exchange Rate Regimes. *SSRN Electronic Journal*. https://doi.org/10.2139/ssrn.880953

Reinhart, C. M., Rogoff, K. S. (2004). The Modern History of Exchange Rate Arrangements: A Reinterpretation. *The Quarterly Journal of Economics*, 119(1), 1–48. https://doi.org/10.1162/003355304772839515

Sokolov, V., Lee, B. J., Mark, N. C. (2011). Linkages Between Exchange Rate Policy And Macroeconomic Performance. *Pacific Economic Review*, 16(4), 395–420. https://doi.org/10.1111/j.1468-0106.2011.00556.x

Tamgac, U. (2013). Duration of Fixed Exchange Rate Regimes in Emerging Economies. *Journal of International Money and Finance*, 37, 439–467. https://doi.org/10.1016/j.jimonfin.2013.06.015

Tsangarides, C. G. (2012). Crisis and Recovery: Role of the Exchange Rate Regime in Emerging Market Economies. *Journal of Macroeconomics*, 34(2), 470–488. https://doi.org/10.1016/j.jmacro.2012.01.005

Von Hagen, J., Zhou, J. (2005). The Choice of Exchange Rate Regime: An Empirical Analysis for Transition Economies. *Economics of Transition*, 13(4), 679–703. https://doi.org/10.1111/j.0967-0750.2005.00237.x

Appendix

Table A1: Variables description and sources

Variable	Unit of measurement/ values	Notes	Source
Dependent variables			
Binary ERR switching	Binary (0;1)	1 in case of the coarse *de facto* ERR change and 0 otherwise	Ilzetzki et al. (2019); coarse ERR classification is in Table 1.
Binary ERR peg-to-floating switching	Binary (0;1)		Ilzetzki et al. (2019); coarse ERR classification is in Table 1.
Binary ERR floating-to-peg switching	Binary (0;1)		Ilzetzki et al. (2019); coarse ERR classification is in Table 1.
Ordinal ERR switching	[-3,3]	Difference between the numerical values of the coarse *de facto* ERR types. Positive values signify peg-to-floating switching; negative values signify floating-to-peg switching.	Ilzetzki et al. (2019); coarse ERR classification is in Table 1.
Explanatory variables			
Direct investment	Current US dollars, divided by GDP.	Positive values signify net outflows; negative values signify net inflows.	IMF
Portfolio investment	Current US dollars, divided by GDP.	Positive values signify net outflows; negative values signify net inflows.	IMF
Other investment	Current US dollars, divided by GDP.	Positive values signify net outflows; negative values signify net inflows.	IMF
Reserve assets	Current US dollars, divided by GDP.	Positive values signify net increase; negative values signify net decrease.	IMF
Controls			
Terms of trade change	Year-to-year change in index values, for which 2000=100.	Positive values represent improvement in the terms of trade; negative values represent worsening.	World Bank World Development Indicators
GDP growth	Year-to-year change in GDP, %.		World Bank World Development Indicators
RER volatility	Standard deviation of indexed values, for which 2007=100.	Standard deviations of monthly RER values within a given country-year observation. RER is in effective terms.	BRUEGEL Real Effective Exchange Rates Database
ERR type	[1,4]	Numerical value of the coarse *de facto* ERR category. Values increase with ERR flexibility.	Ilzetzki et al. (2019); coarse ERR classification is in Table 1.