

Dudzich, Viktor

**Article**

## Determinants of De Jure: De facto exchange rate regime gaps

Journal of Central Banking Theory and Practice

**Provided in Cooperation with:**

Central Bank of Montenegro, Podgorica

*Suggested Citation:* Dudzich, Viktor (2022) : Determinants of De Jure: De facto exchange rate regime gaps, Journal of Central Banking Theory and Practice, ISSN 2336-9205, Sciendo, Warsaw, Vol. 11, Iss. 1, pp. 151-177,  
<https://doi.org/10.2478/jcbtp-2022-0007>

This Version is available at:

<https://hdl.handle.net/10419/299035>

**Standard-Nutzungsbedingungen:**

Die Dokumente auf EconStor dürfen zu eigenen wissenschaftlichen Zwecken und zum Privatgebrauch gespeichert und kopiert werden.

Sie dürfen die Dokumente nicht für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, öffentlich zugänglich machen, vertreiben oder anderweitig nutzen.

Sofern die Verfasser die Dokumente unter Open-Content-Lizenzen (insbesondere CC-Lizenzen) zur Verfügung gestellt haben sollten, gelten abweichend von diesen Nutzungsbedingungen die in der dort genannten Lizenz gewährten Nutzungsrechte.

**Terms of use:**

*Documents in EconStor may be saved and copied for your personal and scholarly purposes.*

*You are not to copy documents for public or commercial purposes, to exhibit the documents publicly, to make them publicly available on the internet, or to distribute or otherwise use the documents in public.*

*If the documents have been made available under an Open Content Licence (especially Creative Commons Licences), you may exercise further usage rights as specified in the indicated licence.*



<https://creativecommons.org/licenses/by-nc-nd/4.0/>



UDK: 339.74

DOI: 10.2478/jcbtp-2022-0007

*Journal of Central Banking Theory and Practice*, 2022, 1, pp. 151-177

Received: 05 June 2020; accepted: 28 September 2020

**Viktar Dudzich \***\* University of Economics,  
Prague, Czech RepublicE-mail:  
vit12tt@gmail.com

## Determinants of De Jure – De Facto Exchange Rate Regime Gaps<sup>1</sup>

**Abstract:** This paper investigates inconsistencies between countries' official exchange rate regime declarations (the so-called *de jure* exchange rate regimes) and their actual policy (*de facto* exchange rate regimes). These exchange rate regime gaps decrease the credibility of monetary policy and are considered an overall negative economic phenomenon. In this paper, I attempt to disclose the determinants of these gaps using the data on several *de facto* classifications and a wide array of explanatory variables of economic and institutional nature. The results suggest that a number of macroeconomic factors such as foreign exchange reserves, current account balance and economic openness influence the probability of monetary authorities breaking commitment to their official exchange rate regime. At the same time, I also discover that the exchange rate regime gaps are less frequent in more democratic and institutionally advanced countries although the results tend to differ depending on the *de facto* classification used and the nature of gap (either *de jure* floating – *de facto* fixed or *de jure* fixed – *de facto* floating).

**Keywords:** exchange rate regime, *de facto* exchange rate regime, fixed exchange rate, floating exchange rate.

**JEL Classification:** E02, F31.

---

<sup>1</sup> This work was supported by the internal grant IG VSE F1/3/2020 of the University of Economics, Prague.

## 1. Introduction

Every IMF member country is required to declare an exchange rate regime (ERR), with information on those regimes presented in the IMF's annual reports. Officially proclaimed ERRs have been deliberately labelled as *de jure*, with standing assumption that commitment to the official ERRs cannot be expected from all member states. Up until the 2000s, it was the only existing classification of the ERRs, but its reliability was already undermined by numerous researchers pointing out that many countries had not complied with the regime they claimed to have had in place. This issue created the demand for a classification that was not based on the declarations of the IMF members but on the actual behaviour of the countries' monetary authorities and their exchange rates (ERs). Academic world's reaction resulted in emergence of numerous classifications of *de facto* ERRs; with most prominent being the ones from Shambaugh (2004); Reinhart and Rogoff (2004); Levy-Yeyati and Sturzenegger (2005). The IMF also came out with its own *de facto* classification shortly afterwards (Habermeier, Kokenyne, Veyrune and Anderson, 2009). Those classifications disproved a solid portion of already existent conventional wisdom about a gradual shift to more flexible ERRs occurring in the developing world and even deflated the perception of many global currencies being truly flexible (Ilzetzki, Reinhart and Rogoff, 2019).

Attempts to capture the actual behaviour of the ERs disclosed that commitment to floating was far more infrequent than it had been believed; and situations of *de jure* floating combined with *de facto* pegs were denoted as "fear of floating" (Calvo and Reinhart, 2002). The opposite was less common, but the state of affairs when monetary authorities claimed to peg but nevertheless were not willing to give up a domestic autonomy was identified as a "fear of pegging" (Alesina and Wagner, 2006; Bearce, 2014). Non-declining occurrence of such situations, that are commonly labelled as exchange rate regime gaps (ERR gaps), raised the question about their impact on monetary policy's credibility and effectiveness, while causes of those gaps were subjected to research (Alesina and Wagner; Bearce).

Still, literature on the existence and origins of the ERR gaps is rather scarce. Some of the most popular papers include Alesina and Wagner (2006); Eichengreen and Razo-Garcia (2012); Bearce (2014). While academics tend to assent that ERR gap is an overall negative phenomenon for both monetary policy and real economy<sup>2</sup>, their approach and findings leave room for further research.

---

<sup>2</sup> One of the few empirical papers on this topic by Guisinger and Singer (2010) discovers, for example, that presence of the ERR gap weakens the effect of monetary authorities' proclamations and reduces their ability to conduct monetary policy that is in line with their exchange rate regime.

In our opinion, the up-to-date state of things on this matter is based on several assumptions that do not always hold. Firstly, the common presumption is that countries choose *de facto* ERR as they do with *de jure*. Although we cannot deny the existence of such situations, there are reasons to believe that a large portion of ERR gaps results from unfavourable economic developments when monetary authorities are forced to adjust their ER policy (meaning to allow their ERs to behave the way they are officially not “supposed to”) in order to prevent a possible impact of ERR on the economy if left unattended. These may be the cases of both “fear of floating” (country stabilizing their nominally floating ER during economic turbulence) and “fear of pegging” (country letting their fixed ER loose when no more able to preserve it); and they could be emerging not from the monetary authorities’ free will, nor are they desirable<sup>3</sup>. Such assumption leads to another one – the ERR gaps are of institutional nature: countries with “bad” institutions are willing to renege on their official ERR, while “good” ones will stick to it<sup>4</sup>. Even if both assumptions hold and *de facto* regimes are indeed chosen, and such choices are conducted in countries with institutions weak enough to allow it, this choice must be viewed the same way the choice of *de jure* regime is – and there is an abundance of literature on ERR determinants that states that those determinants are mainly of economic origin. This paper seeks to shed light on macroeconomic causes of ERR gaps along with the institutional ones.

The paper is structured as follows. The first section briefly summarizes the existing literature on the topic. The second section discusses the causes of ERR gaps and outlines the substance of this research. Subsequently, we present the data on ERR gaps using different *de facto* classification; and the determinants of ERR gaps are estimated using probit regression and employing a set of explanatory variables of both economic and institutional nature. Lastly, we present the results and discuss the limitations of the research.

## 2. Literature review

The issue of commitment to the exchange rate policy and exchange rate regime is relatively new and only became an object of very limited research in the 1990s when the Asian crisis indicated a fix-to-floating shift in many developing coun-

---

<sup>3</sup> The reasons why countries behave this way (using the monetary policy not as they are supposed to) are stated in Vegh and Vuletin (2012) and are dependent on the policymakers’ preferences, qualification and commitment.

<sup>4</sup> Institutional explanation of the ERR gaps is the cornerstone of both Alesina and Wagner (2006) and Bearce (2014), even though their findings, in a way, are conflicting with each other.

tries (Reinhart and Rogoff, 2004). But the actual behaviour of the ERs in these countries disclosed that their ERRs didn't resemble what had been understood as floating in countries with more advanced and qualified monetary policy (Reinhart and Rogoff; Levy-Yeyati and Sturzenegger, 2005). Nevertheless, at that time it did not capture the IMF's attention, which was still creating its classification based on the official ERR declarations of the member-states (Habermeier, Kokenyne, Veyrune and Anderson, 2009). The need for new, coherent and reality-depicting classification emerged. Although individual attempts to analyse the actual exchange rate behaviour in countries that were perceived as not committing to their official ERR were already made in the 1990s (their outline and basic principles are captured by Levy-Yeyati and Sturzenegger, 2005), it was as late as the 2000s when comprehensive *de facto* classifications started to appear. Calvo and Reinhart (2002) introduced the term "fear of floating" to depict the situation when country practices less flexible ER arrangement than it proclaims to have. Shambaugh (2004) divided ERRs into *de facto* pegs and non-pegs based on the actual volatility of the exchange rates. Even more extensive approach was developed by Levy-Yeyati and Sturzenegger (2005), which classified *de facto* ERRs based on the exchange rate' changes, the volatility of these changes and the volatility of reserves, while also discussing the emergence of ERR gaps between different types of regimes. Another onset on the IMF classification<sup>5</sup> was successfully (in terms of its later adoption) performed by Reinhart and Rogoff (2004)<sup>6</sup> with their analysis focusing not only on movements of the official ERs but also on the presence of dual or black-market foreign exchange arrangements, convertibility restrictions and countries' monetary policy actions influencing the actual ERR. Shortly afterwards the IMF developed its own *de facto* classification which, nevertheless, was strongly tied to their *de jure* classification and subjected to a portion of criticism for its less comprehensive methodology<sup>7</sup>.

The actual depiction of the countries' ERR policy enabled the researchers to focus on two issues: the impact of ERR gaps on economic performance and monetary policy's effectiveness; and the origins of ERR gaps (with relevancy of the latter highlighted by the existence of the former). Nevertheless, only limited attempts were made to ascertain both roots and outcomes of the ERR gaps. The importance of sticking to commitments was tested by Bearce (2008) and Guisinger and

<sup>5</sup> Which is stated to be "only a little better than random" (Reinhart and Rogoff, 2004).

<sup>6</sup> The update of this classification (in terms of both the data and the methodology) was conducted by Ilzetzi, Reinhart and Rogoff (IRR) in 2019. In this paper, we use the more up-to-date one, but the methodology was developed by Reinhart and Rogoff (2004).

<sup>7</sup> For the IMF's *de facto* methodology, see Habermeier, Kokenyne, Veyrune, and Anderson (2009). For its comparison with other *de facto* classifications, see Bleaney, Tian and Lin (2016).

Singer (2010), coming to the same conclusion that when monetary authorities “practice what they preach” (basically meaning the absence of *de jure* – *de facto* gap), they greatly enhance the credibility of their policies and their ability to pursue the goals their ERRs should be enabling (connoting, for example, that fixed rates hinder inflation better when they are fixed both *de jure* and *de facto*; while the same applies to floating rates’ ability to absorb real shocks). Even with these findings posing enough motivation to take the ERR gaps as a negative monetary phenomenon<sup>8</sup>, only few papers attempted to identify the origins of gaps, with the ones by Alesina and Wagner (2006) and Bearce (2014) being arguably among the most comprehensive. Alesina’s and Wagner’s research tied the gaps to the level of institutional development, with “fear of floating” stated as a prerogative of institutionally more advanced countries and “fear of pegging” resulting from poor institutions. Bearce (2014) presented contradictory findings that gaps are artificial and deliberate, being the tools of democratic governments with the need to appeal to several groups of interest at once. He argues that the character of gaps (basically, if countries float more then they “should” or intervene into what is supposed to be free floating) is based on the needs of the parties that influence the political process; and the government accedes to gap in order to retain the voters from several parties.

In both cases, it is indirectly presumed that the ERR gap is being chosen, not forced. Even though this assumption reflects the reality in some cases, there is no reasons to doubt that it is violated when countries adjust their ERR in response to external shocks – so the ERR gaps emerge as forced if *de facto* ERR is changed and *de jure* remains the same<sup>9</sup>. In the same moment, this assumption leads to another one, which should be paid attention to: if *de facto* ERR is chosen (not forced), the choice is probably based on the same criterions as the choice of *de jure* regime – meaning that, once again, the roots of ERR gaps are not only institutional, but economic. This paper embraces the premise that ERR gaps may be of both deliberate and forced nature, and thus their origins may lie both in institutions and economic fundamentals.

Based on that, we may view ERR gaps determinants (at least partly) in the manner we view *de jure* regime determinants. This topic is relatively well-covered,

---

<sup>8</sup> Although there is still limited literature on the ERR gaps’ negative impact on the real economy, their power to reduce the credibility of monetary authorities’ actions is already an important issue.

<sup>9</sup> Vegh and Vuletin (2012), along with Calvo and Reinhart (2002), explain why a change of the official ERR often poses a task requiring too much political will and thus not easily performed. On the other hand, *de facto* adjustment may get through unnoticed and become more appealing to the policymakers.

with the abundance of literature (comprehensive reviews are presented, among others, by Bordo, 2003; Magud, 2010; Berdiev, Kim and Chang, 2012) disclosing the relations between economic fundamentals and the process of the ERR choice, with inflation rate, reserve assets stock, foreign debt and economic openness being the factors to which countries pay attention when selecting their ER arrangements. At the same time, to capture a possibility of ERR gap being forced, not chosen, attention should be paid to researchs focusing on the situations when states have to abruptly change their ER policy – for example, both Calvo and Reinhart (2002) and Vegh and Vuletin (2012) associate the ERR changes with the cyclicity of economic development (the former state that economic downturns are the times when countries rarely commit to the official ER; the latter point to the monetary policy procyclicality meaning that during good times the ERR will be the one more appealing to the short-term goals of the economic policy, while in crisis it could be changed to the opposite). The approach by Klein and Shambaugh (2008) takes into account the longevity of ER regimes arguing that with longer period of existence there is a decreasing probability of ERR change in most states. Although the authors use the *de jure* classification, the same could be assumed for the *de facto* one and, therefore, the ERR gaps.

A sideline task encountered when analysing ERR gaps are the methodological and taxonomic discrepancies between the *de jure* and various *de facto* classifications. While the IMF divides the ERRs into ten groups (which are often collapsed into three – hard pegs, soft pegs and floatings), Levy-Yeyati and Sturzenegger's (2016) *de facto* approach distinguishes between fixes, intermediates and floatings; Reinhart and Rogoff (2004) present a taxonomy even wider than the one of the IMF, but not quite harmonized with it. A number of papers attempted to explain the reasons for the classifications' disagreement and came to a conclusion that in order to study the ERR gaps, one cannot be content with the usage of only single *de facto* classification (Eichengreen and Razo-Garcia, 2012; Bleaney, Tian and Yin, 2016).

### 3. Determinants of the ERR gaps

Empirical estimation of the ERR gaps poses an insidious task. The literature dealing with it is limited to few above-mentioned sources; and the principles of their approach (defining the gap as dummy variable and using probit regression – Alesina and Wagner, 2006; Bearce, 2014) will be adopted in this research. Our novelty resides in a different economic explanation of the employed variables and broader definition of the ERR gap.

This section is structured the next way: firstly, we select several *de facto* classifications and define the ERR gaps. Then we explain the choice of independent variables and their interactions with the ERR gap. Afterwards, we present the methodology and the outputs of the regression. Subsequent discussion debates the results and outlines the limitations of the research.

### 3.1. Selecting the classifications

A variety of *de facto* classifications has emerged since the 2000s, but the most prominent (and fit for econometrical research<sup>10</sup>) are limited to just a handful of options. For this paper, we relied on the “traditional” *de facto* taxonomy by the IMF as the one being the most harmonized with the *de jure* classification (Habermeier, Kokenyne, Veyrune, and Anderson et al., 2009). At the same time, as the IMF classification is the most subjected to criticism (see below), the alternatives were reviewed also – with Levy-Yeyati and Sturzenegger (LYS); and Ilzetzki, Reinhart and Rogoff (IRR) emerging as the most eligible (Eichengreen and Razo-Garcia, 2012). The selection was made in order to obtain the ERR gaps from different-basis *de facto* classifications – the one by the IMF is statistical and experts’ opinion-based; LYS employ a purely statistical approach, but evaluate the FX reserves volatility additionally to the volatility of the ERs themselves; IRR apply sophisticated statistical methods that allow for more in-detail classification than the others.

The usage of the IMF *de facto* classification could be justified by two facts: firstly, it is not purely statistics-based and is focusing on the monetary policy actions and their appropriateness given the *de jure* regime rather than merely evaluating the movements of the ER; secondly, it succeeds in dividing the *de facto* regimes into a wide number of ER arrangements, while other classifications may be successful in distinguishing floats from fixes, but unable to identify the intermediate regimes (Bleaney, Tian and Yin, 2016). In the same moment, this classification is influenced by judgements of the IMF officials and, therefore, may be viewed as less reliable by those who seek a transparent methodology. Another drawback is the presence of numerous residual categories formed of the ERRs that do not fall into the basic classes<sup>11</sup>. The robustness of this classification is further under-

---

<sup>10</sup> Meaning that they are kept up-to-date and available for a broad set of countries, with transparent methodology being an additional affirmative.

<sup>11</sup> It is a common problem of most *de facto* classifications, but independent ones (for example, Levy-Yeyati and Sturzenegger, 2016) disengage from the usage of residual categories and classify those regimes *ad-hoc*.



mined by its concurrence (meaning a lower number of gaps) with the *de jure* one, which implies its lesser strictness.

*De facto* classification by LYS was one of the first to be developed and among the most widely empirically tested (Alesina and Wagner, 2006; Eichengreen and Razo-Garcia, 2012; Bleaney, Tian and Yin, 2016). This classification is based on the country cluster analysis according to three criteria: the volatility of their exchange rate, the volatility of the ER changes and the volatility of reserves (Levy-Yeyati and Sturzenegger, 2016). The ERRs are classified as fixed when exhibiting low ER volatility, but high volatility of reserves. Floatings are required to express low volatility of the reserves, but volatile exchange rate; and those in between are labelled as intermediate regimes. This approach proved to be one of the most popular, with its relative simplicity being able to depict the actual behaviour of the ER policy. However, its purely statistical nature leads to significant discrepancies between this taxonomy and other *de facto* classifications (Eichengreen and Razo-Garcia; Bleaney, Tian and Yin). While the LYS classification is highly accurate in capturing the *de facto* ERRs on the basis of the ERs' actual development, it struggles both with more in-detail classification (such as that of the IMF) and with identifying the ERR when the reserves' behaviour of the ER and the reserves doesn't fall into the authors' statistical scheme<sup>12</sup> (Levy-Yeyati and Sturzenegger, 2016).

The most complex classification was developed by Reinhart and Rogoff (2004) and subsequently updated by Ilzetzki, Reinhart and Rogoff (2019). Its cogent brief summarization can be found in Bleaney, Tian and Yin (2016): "focusing on the tails of distribution of monthly exchange rate changes against a reference currency, ERR is classified as peg when the 80 % of observations fall within the range  $\pm 0,01$ ; while the ERR is stated as band when 80 % of observations are in range of  $\pm 0,02$ ". The ER arrangements are further distributed into 14 categories, putting this classification on the same level of elaboration as the one by the IMF.

There are several reasons to employ more than one *de facto* classification. Given that a degree of concurrence between them is at best moderate, the usage of differently-based classifications to get the *de jure* – *de facto* gaps will significantly add to the robustness of the results if the explanatory variables' impact on gaps does not vary over the regressions. At the same time, it is reasonable to expect that the results (or at least part of them) will differ across the estimations given the divergent nature of the *de facto* classifications, and their cross-taxonomy

---

<sup>12</sup> For example, when *de jure* floating expresses low volatility not due to monetary authorities' interventions, but solely because of the supply-demand equilibrium.

differences and similarities may shed some light onto the validity of theoretical approaches those classifications are based on.

### 3.2. Defining the gap

As already stated, the ERR gap is the situation when a country's *de jure* exchange rate regime differs from its *de facto* regime. The problem arises from the fact that there are numerous (quite different) *de facto* classifications and their taxonomy is not unified – for example, the IMF's approach divides the ERRs into 10 categories; LYS use only 3, while IRR come with 14 *de facto* ERRs. If one wishes to conduct research employing several *de facto* classifications, and given that their ERR categories do not match, the first issue to deal with is the “harmonization” of the classifications. This task was already performed by Alesina and Wagner (2006) and Bearce (2014), and this paper adapts their approaches with several modifications.

I use complete in-detail IMF classification to determine the gaps between the IMF's *de jure* and *de facto* classifications. To match the IMF classification with LYS, I reduce its 14 categories to 3<sup>13</sup> (Table 1). To do that, all the pegged ERRs are collapsed into one category which is to correspond with the LYS fixed regimes, ignoring the differences between the IMF's hard and soft pegs due to the following reasons:

- *De jure* – *de facto* gaps between different pegged regimes are rather rare; and gaps between *de jure* soft pegs and *de facto* hard pegs are non-existent<sup>14</sup>, while LYS do not differentiate between individual fixed regime categories.
- ERRs are classified as fixed by LYS when they exhibit low ER volatility and high volatility of reserves. With the classification being based on cluster analysis, it is reasonable to believe that different IMF pegs would belong to a single category if categorized by the LYS methodology.

Subsequently, managed floating by IMF is tallied with intermediate regimes by LYS due to the authors' remarks about intermediate regimes representing mainly numerous dirty floatings; and the fact that in LYS this category consists of the regimes with volatile exchange rate and volatile reserves, which is in accordance

<sup>13</sup> This “LYS-adjusted” IMF classification will be referred to as the IMF reduced.

<sup>14</sup> In fact, hard pegs such as currency boards or foreign currency usage cannot exist as *de facto* only. In the same moment, *de jure* hard pegs are always *de facto* hard pegs also.

with the perception of managed floating as flexible arrangement combined with monetary authorities' interventions.

IRR offer more detailed classification: their 14 categories were matched with the complete IMF classification in a manner presented in Table 1. Both taxonomies have a wide range of residual categories of fixed ERRs, and several of them are merged into one group in order to capture 7 basic regimes<sup>15</sup>. A similar yet simplified matching was employed by Alesina and Wagner (2006), but congeniality of these two classifications allowed us more precise segmentation.

**Table 1: De jure and de facto exchange rate regime classifications matching**

IMF	LYS	IMF	IRR
No separate legal tender; Currency board; Conventional peg; Stabilized arrangement; Crawling peg; Crawling band; Pegged with horizontal bands; Other managed;	Fixed	No separate legal tender	No separate legal tender
		Currency board	Currency board
		Conventional peg; Stabilized arrangement; Other managed <sup>16</sup>	Pre-announced horizontal band that is narrower than or equal to $\pm 2$ %; De facto peg
		Crawling peg	Pre-announced crawling peg; De facto moving band narrower or equal to $\pm 1$ %; Pre-announced crawling band that is narrower than or equal to $\pm 2$ ; or de facto horizontal band that is narrower than or equal to $\pm 2$ ; De facto crawling peg
		Crawling band; Pegged with horizontal bands	De facto crawling band that is narrower than or equal to $\pm 2$ ; Pre-announced crawling band that is wider than or equal to $\pm 2$ ; De facto crawling band that is narrower than or equal to $\pm 5$ ; Moving band that is narrower than or equal to $\pm 2$
Managed floating	Intermediate (dirty)	Managed floating	De facto moving band $\pm 5$ ; Managed floating
Free floating	Floating	Free floating	Free floating

Source: author's calculations

<sup>15</sup> No separate legal tender; currency boards; fixed arrangements and other non-moving pegs; crawling pegs; crawling bands; managed floatings and free floatings.

<sup>16</sup> Although the IMF classification puts this regime next to managed floating, which presumes its higher flexibility, this arrangement is very infrequent and encounters only in few country-observations. Their *ad-hoc* analysis revealed that their ERRs were actually relatively hard pegs, just not classifiable.

The gap itself was defined as the situation when the *de jure* regime does not match *de facto*. Besides that and taking into account the previous researches on the ERRs, we also distinguish between the gaps of different nature – so-called “fear of floating” (when the *de jure* regime is more flexible than *de facto*) and “fear of pegging” (when the ERR is less flexible *de jure* than *de facto*).

The occurrence of gaps was examined in a sample of 142 countries<sup>17</sup> for the period from 2000 to 2016 (or, in case of LYS, 2013, which is the last year for which this classification is available). The data on ERR gaps were drawn from above-mentioned papers, the information on the IMF *de jure* and IMF *de facto* ERRs are available in the AREAER IMF database.

The prevalence of ERR gaps varies greatly depending on the *de facto* classification employed (Table 2). The IMF contains the least number of gaps, with the majority of them being “fears of floating”. Insubstantial differences in gap occurrence between the complete and the reduced IMF classifications indicate that most of the gaps are between either free and managed floating or floating and some form of peg; and the gaps between different pegged regimes are infrequent.

According to the IMF, the gaps are more common in the developing world<sup>18</sup>, while developed nations are more likely to commit to their official ERR.

Both independent classifications exhibit not only a higher number of ERR gaps, but considerable (in comparison with the IMF) differences regarding the gaps’ nature and occurrence. Purely statistical LYS approach reveals that “fear of pegging” cases are more prevalent than “fear of floating”, meaning there is a considerable number of countries that claim to peg, but do not control their ER enough to be classified as *de facto* peg (and it remains unnoticed by the IMF).

---

<sup>17</sup> The dataset includes all countries except for:

- Countries with non-convertible currency based on Article VIII of IMF;
- Countries with population less than 200,000;
- Countries with no data on a significant part of explanatory variables (see below);
- The USA are excluded.

<sup>18</sup> The occurrence of gaps in developing countries is higher (in all *de facto* classifications used in this paper) if the euro area countries are not taken into account. The euro area holds a very specific position in terms of exchange rate regime – while all the *de facto* classifications label euro area’s ERR as freely floating (and thus detect no gaps), it is rather questionable if the individual euro area members are able to enjoy the benefits of the flexible currency (especially given the fact that they are predominantly unable to implement independent monetary policy; nor the euro’s ER adjusts to the member-states’ trade and capital flows the way a floating would). There are opinions that in terms of ERR there is little difference between euro area member Portugal and dollar-using Panama (Ilzetzki, Reinhart and Rogoff, 2019).

The LYS gaps also differ in terms of the countries' level of economic development they are associated with. While the IMF considers the ERR gaps to be a prerogative of developing countries, the LYS taxonomy detects a similar relative occurrence of gaps in both developing and advanced nations; and, surprisingly, "fear of floating" is discovered to be more common among the developed countries. At the same time, the developing world is expressing more "fear of pegging", meaning these countries are often unable (or, perhaps, unwilling) to fix their currency even when they claim to do so.

IRR disagree with the IMF on the spread of gaps and with LYS on their nature. According to IRR, during the analysed period, countries did not commit to their *de jure* regime in more than half cases and gaps were equally common in both developing and advanced countries (if the euro area is excluded). But, unlike statistically based LYS, IRR mostly register "fear of floating".

The differences between the classifications impel to several notions. Firstly, possible determinants of the ERR gaps could vary depending on the classification used. At the same time, usage of several classifications is not only a conventional approach to studying the ERR gaps (see Alesina and Wagner, 2006; Eichengreen and Razo-Garcia, 2012; and others), but a possibility to identify the robust determinants if they hold across the estimations. And, albeit the classifications differ in both the methodology and the number of gaps, it is still justified to assume that they are "more alike than not", especially taking into account the researches on discrepancies between *de facto* classifications and employing correct control variables (Bleaney, Tian and Yin, 2016).

**Table 2: Exchange rate regime gaps\***

Country-observations		IMF de facto			IMF de facto reduced to 3 categories			LYS		IRR	
Total	LYS	Country-observations	% of total	% of gaps	Country-observations	% of total	% of gaps	Country-observations	% of total	Country-observations	% of total
All countries	1988	2414	Gap	584	24.2%	520	21.5%	776	39.0%	1273	52.7%
			Fear of floating	557	23.1%	511	21.2%	337	17.0%	1182	49.0%
			Fear of pegging	27	1.1%	9	0.4%	439	22.1%	91	3.8%
											7.1%
Developing	1512	1836	Gap	522	28.4%	458	24.9%	634	41.9%	1055	57.5%
			Fear of floating	503	27.4%	457	24.9%	251	16.6%	993	54.1%
			Fear of pegging	19	1.0%	1	0.1%	383	25.3%	62	3.4%
											5.9%
Developed	462	561	Gap	62	11.1%	62	11.1%	133	28.8%	218	38.9%
			Fear of Floating	54	9.6%	54	9.6%	77	16.7%	189	33.7%
			Fear of pegging	8	1.4%	8	1.4%	56	12.1%	29	5.2%
											13.3%
Developed non-euro area	279	328	Gap	62	18.9%	62	18.9%	114	40.9%	218	66.5%
			Fear of Floating	54	16.5%	54	16.5%	64	22.9%	189	57.6%
			Fear of pegging	8	2.4%	8	2.4%	50	17.9%	29	8.8%
											13.3%

Source: author's calculations

\* The level of development is specified according to the classification by IMF

**Table 3: Exchange rate regime gaps concurrence**

	IMF – LYS			IMF – IRR			LYS – IRR			IMF – LYS – IRR		
	Number	Share	Number	Share	Number	Share	Number	Share	Number	Share	Number	Share
Agreement	1229	0.622	1621	0.671	1313	0.665	914	0.463				
Disagreement	745	0.378	793	0.329	661	0.335	1060	0.537				
Total	1974	1	2414	1	1974	1	1974	1				

Source: author's calculations

Additionally, Table 3 presents data on the degree of concurrence between ERR gaps when different classifications are used. In all cases, about two thirds of gaps are observed in the same country-observations (meaning that a specific observation is defined either as a gap or as the absence of gap by two classifications in the same time), while one third differs depending on the ERR classification. All three classifications agree only on 47% of gaps/non-gaps. It increases the possibility of the gap determinants being different across classifications and affirms the necessity of multiple classifications usage if one seeks to achieve robust results.

### 3.3. Explanatory variables

To determine the factors that may lead to the ERR gaps, I employed a vast array of explanatory variables of both institutional and economic character. The role of institutional determinants of the ERR gaps has already been elaborately covered by Alesina and Wagner (2006), which generally state that institutionally poor states are more likely to renege from their ERR; and this assertion is indirectly confirmed by a number of studies on the ERR choice, which associate poor institutions with pegged regimes<sup>19</sup> (see, for example, Bordo, 2003; or Berdiev, Kim and Chang, 2012). In this research, the following institutional variables are employed:

- A self-constructed “general freedom” index based on data from Freedom House, calculated as an average of Freedom House indexes of political freedom and civil liberties; the index ranges from 1 to 7, with higher value representing less freedom;
- An index of monetary freedom by Heritage Foundation (2020), which evaluates independence, qualifications and policy commitment of the monetary authorities, with higher value signifying more monetary freedom.
- An index of capital controls and capital account openness constructed by Chinn and Ito (2008); higher value of index meaning more openness.

To control for non-institutional determinants of the gaps, I also included a broad range of macroeconomic indicators that may either incline or force the country to break the commitment to its *de jure* regime. The employed variables are presented as follows<sup>20</sup>:

<sup>19</sup> As the majority of the ERR gaps represents “fear of floating” (meaning that countries tend to have their *de facto* ERR less flexible than *de jure*), and underdeveloped institutions tend to incline to pegs (either *de jure* or *de facto*), simple inference allows to assume that poor institutions may be leading to the ERR gaps.

<sup>20</sup> Unless stated otherwise, the data were obtained from World Bank’s World Development Indicators Database.

- Inflation rate;
- Foreign debt to GDP;
- Foreign reserves to GDP;
- GDP per capita;
- Capital account balance;
- Trade account balance;
- Economic openness calculated as the sum of exports and imports to GDP;
- Broad money growth rate;
- Economic cycle dummy (with value of 1 if the GDP growth rate exceeds a long-term average and 0 otherwise).

Additionally, a number of specific control dummies were employed to control for the factors crucial for the ERR gaps, but surprisingly not covered by any past researches:

- Presence of multiple/dual exchange rates – this issue has been stated to produce *de facto* – *de jure* gaps first by Reinhart and Rogoff (2004) and subsequently by Ilzetzi, Reinhart and Rogoff (2019); and though the number of monetary systems with multiple (or black-market) exchange rates gradually declines over time, it is still substantial and should be taken into consideration if estimating the gaps' determinants. The variable takes the value of 1 if there are multiple/black-market ERs present and 0 otherwise.
- Adoption of inflation targeting – while inflation targeting formally requires a floating ERR, countries implementing this policy may be unwilling to abandon the control over their ER and therefore produce ERR gaps (Guisinger and Singer, 2010; Ilzetzi, Reinhart and Rogoff, 2019); the variable equals 1 if country is targeting inflation and 0 otherwise.
- Change of *de jure* ERR regime – there is evidence of the ERR being more persistent with greater longevity, meaning that the ERR will last longer if it has already “survived” for some period of time; and if one assumes that *de jure* ERR change does not necessarily reflect the actual change, this may signal that *de jure* ERR change may lead to the emergence of the ERR gap (Klein and Shambaugh, 2008). The variable equals 1 if there was a *de jure* regime change this year and 0 if not.

Table 4 presents simple correlations of the above-described variables in order to identify potential multicollinearity in the estimations. Some of the variables appear to be relatively strongly correlated with the others; and their inclusion into the model should be conducted with some caution. GDP per capita is relatively strongly tied to some institutional variables, as is trade account balance. At the same time, trade account balance is positively correlated with current account; thus, usage of both variables may be inappropriate. Based on that, I had to make some adjustments to the model specifications (see section 3.4 below).



Table 4: Correlation matrix of the independent variables\*

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1 Current Account Balance	1	0.1708	-0.0284	0.0900	0.1531	0.0145	0.0076	<b>0.5655</b>	0.1926	-0.0693	0.0886	-0.0189	-0.0335	0.0754	0.4591
2 Capital Controls	0.1708	1	0.0218	0.1586	0.2703	-0.4310	-0.0181	0.1633	0.0601	-0.1697	0.3521	-0.2507	-0.1543	0.1028	<b>0.5309</b>
3 Economic Cycle Dummy	-0.0284	0.0218	1	0.0013	-0.0050	-0.0095	-0.0103	-0.0418	-0.0340	-0.0059	0.0066	0.0950	-0.0349	-0.0287	-0.0393
4 Foreign Debt	0.0900	0.1586	0.0013	1	0.3956	-0.1649	-0.0332	0.1874	-0.0521	-0.0186	0.0848	-0.0763	-0.0319	-0.0417	0.3646
5 Economic Openness	0.1531	0.2703	-0.0050	0.3956	1	-0.1289	-0.0069	0.1906	0.4328	-0.0861	0.1647	-0.0557	-0.0573	-0.1088	0.4166
6 Freedom House	0.0145	-0.4310	-0.0095	-0.1649	-0.1289	1	0.0501	-0.0157	0.1030	0.2132	-0.3969	0.2623	0.1658	-0.3138	-0.3300
7 ERR Change	0.0076	-0.0181	-0.0103	-0.0332	-0.0069	0.0501	1	-0.0012	-0.0189	0.0445	-0.0778	0.0860	0.0636	-0.0345	-0.0930
8 Trade Account Balance	<b>0.5655</b>	0.1633	-0.0418	0.1874	0.1906	-0.0157	-0.0012	1	0.0812	-0.0585	0.0944	-0.0465	-0.0234	0.1133	<b>0.5522</b>
9 Foreign Reserves	0.1926	0.0600	-0.0340	-0.0521	0.4328	0.1029	-0.0189	0.0812	1	-0.0136	0.0821	-0.0652	-0.0819	-0.0018	0.1425
10 Multiple ERs	-0.0693	-0.1697	-0.0059	-0.0186	-0.0861	0.2132	0.0445	-0.0585	-0.0136	1	-0.2716	0.1604	0.1163	-0.1409	-0.1304
11 Monetary Freedom	0.0886	0.3521	0.0066	0.0848	0.1647	-0.3969	-0.0778	0.0944	0.0821	-0.2716	1	-0.4204	-0.4141	0.1255	0.3013
12 Money Growth Rate	-0.0189	-0.2507	0.0950	-0.0763	-0.0557	0.2623	0.0860	-0.0465	-0.0652	0.1604	-0.4204	1	<b>0.5071</b>	-0.1031	-0.2105
13 Inflation Rate	-0.0335	-0.1543	-0.0349	-0.0319	-0.0573	0.1658	0.0636	-0.0234	-0.0819	0.1163	-0.4141	<b>0.5071</b>	1	-0.0065	-0.1350
14 Inflation Targeting	0.0754	0.1028	-0.0287	-0.0417	-0.1088	-0.3138	-0.0345	0.1133	-0.0018	-0.1409	0.1255	-0.1031	-0.0652	1	0.1540
15 GDP per capita	0.4510	<b>0.5309</b>	-0.0393	0.3646	0.4166	-0.3300	-0.0930	<b>0.5522</b>	0.1425	-0.1304	0.3013	-0.2105	-0.1349	0.1540	1

\* Potential multicollinearity in bold

### 3.4. Methodology and regression outputs

To estimate the ERR gaps determinants, I used an ordered probit regression and 14 model specifications with dependent variable specified as dummy with value “1” in case of ERR gap and “0” in case of gap’s absence. I did not include the cross-section fixed effects due to potential attenuation bias because of short time series used in the model; and thus, assumed that the country sample heterogeneity is dealt with by a relatively large number of explanatory variables and different model specifications (Green, 2004).

For the robustness of the results, we conducted a number of estimations using three ERR classifications, various definitions of the ERR gaps and different country samples. The specifications are presented below:

- 3 base estimations including all countries (conditioned by the data availability) and all gaps between *de jure* and *de facto* ERRs as classified by the IMF, LYS, and IRR.
- 3 estimations with the same ERR classifications and only “fear of floating” gaps (dependent equals 1 if *de jure* is more flexible than *de facto*).
- 2 estimations with LYS and IRR classifications and only “fear of pegging” gaps (dependent equals 1 if *de facto* is more flexible than *de jure*). This specification was not estimated with the IMF’s *de facto* classification due to insufficient incidence of “fear of pegging” cases in this taxonomy.
- 3 estimations with developing countries only (with the level of development being assigned based on the IMF’s definition).
- 3 estimations with developed countries only (euro area excluded for the reasons stated in section 3.2 and Ilzetzi, Reinhart and Rogoff, 2019).

The estimations contained 13 explanatory variables (the results are presented in Tables 5, 6 and 7). In some estimations, certain variables were excluded due to their irrelevancy in regard to the country sample (for example, there were no multiple exchange rates among the developed countries during the analysed time period). GDP per capita and trade account balance were not included into the regressions due to potential bias caused by multicollinearity. Additionally, I conducted the base estimations using only single institutional variable at once and reached very similar results – those estimations are not reported for space considerations. I also attempted the regression with year fixed effects, but the results did not express any substantially differences results – once again, I do not present them in the paper due to their similarity and questionable economic justification of the year fixed effects given the paper’s context. I disengaged from the usage of lagged dependent variables due to strong conviction about the ERR gaps being

caused by the *current* economic/institutional situation because of the ERR gap's emergence being the monetary authorities' immediate response to a change in economic/institutional conditions; therefore, the usage of lagged variables could bias the estimations and, in my opinion, does not have a conclusive economic interpretation.

I received very mixed results, with some variables appearing to be both statistically significant across most estimations and with their signs in compliance with theory and conventional wisdom. On the other hand, a number of variables differ either in their signs or their significance from estimation to estimation (meaning from one classification or country sample to another).

The results may be considered to have some consensus on the role of institutional environment in the ERR gaps occurrence. More monetary free countries tend to evince ERR gaps less frequently; with this variable being statistically significant in all but 2 estimations<sup>21</sup>. The same (at least partly) holds for overall freedom and institutional conditions captured by the Freedom House index: less institutionally developed countries are more eager to incline to ERR gaps. The opposite (less free countries being less probable to have gaps) stands for the LYS classification, which is of different methodology; the same applies to developed nations and the IRR classification.

---

<sup>21</sup> This variable appears to be insignificant among the developed countries, which arguably have a high enough level of monetary freedom for its difference to be of no influence on gaps.

Table 5: ERR gaps' determinants estimation, IMF gap as dependent variable

Independent variable	All countries			Fear of floating			Developing only			Developed only, euro area excluded		
	Coefficient	Std.Error		Coefficient	Std.Error		Coefficient	Std.Error		Coefficient	Std.Error	
Capital Controls	0.0989	0.0933		0.0770	0.0943		0.3162***	0.1012		0.2590	0.6353	
Economic Cycle Dummy	-0.0355	0.0607		-0.0496	0.0615		-0.0151	0.0666		-0.4426**	0.2193	
Freedom House	0.1709***	0.0184		0.1921***	0.0188		0.1400***	0.0214		0.5329***	0.1616	
Monetary Freedom	-0.0215***	0.0015		-0.0220***	0.0015		-0.0146***	0.0018		-0.0583***	0.0127	
Multiple ERs	0.1075	0.0988		0.0817	0.0996		0.2872***	0.1044				
Inflation Targeting	0.6076***	0.0872		0.5919***	0.0888		0.1828*	0.1100		3.2024***	0.6177	
ERR Change	0.2035*	0.1187		0.1432	0.1216		0.1964	0.1270		-0.2652	0.5563	
Inflation Rate	0.0002	0.0019		-0.0003	0.0019		0.0017	0.0021		-0.0840	0.0688	
Money Growth Rate	-0.0023	0.0019		-0.0042**	0.0020		-0.0018	0.0021		-0.0107	0.0143	
Foreign Debt	-0.0016***	0.0004		-0.0012***	0.0004		-0.0085***	0.0011		0.0014	0.0010	
Foreign Reserves	1.2130***	0.2174		1.2215***	0.2193		0.3990*	0.2487		4.0934***	1.0309	
Economic Openness	0.0005	0.0008		-2.23E-05	0.0008		0.0007	0.0010		-0.0023	0.0029	
Current Account Balance	-0.0128***	0.0032		-0.0135***	0.0032		-0.0170***	0.0036		-0.0172	0.0195	
Time period	2000–2016			2000–2016			2000–2016			2000–2016		
Number of observations	2371			2371			1793			328		

Source: author's calculations

\*\*\*Significant at 1%. \*\*Significant at 5%. \*Significant at 10%

Table 6: ERR gaps' determinants estimation, LYS gap as dependent variable

Independent variable	All countries		Fear of floating		Fear of pegging		Developing only		Developed only, euro area excluded	
	Coefficient	Std.Error	Coefficient	Std.Error	Coefficient	Std.Error	Coefficient	Std.Error	Coefficient	Std.Error
Capital Controls	0.1521	0.0950	0.0941	0.1079	0.1807*	0.1060	0.2916***	0.1053	-1.0594**	0.4894
Economic Cycle Dummy	0.1164*	0.0620	-0.0078	0.0709	0.1015	0.0690	0.1991***	0.0715	-0.1223	0.1727
Freedom House	-0.0134	0.0189	-0.0462**	0.0217	-0.0284	0.0210	-0.0406*	0.0225	0.2000	0.1367
Monetary Freedom	-0.0131***	0.0015	-0.0150***	0.0016	-0.0157***	0.0017	-0.0132***	0.0017	-0.0003	0.0067
Multiple ERs	0.1647	0.1037	0.1733	0.1131	0.1886*	0.1141	0.1798	0.1120		
Inflation Targeting	0.2977***	0.0889	0.3098***	0.0988	-0.0153	0.1032	0.1023	0.1171	0.2442	0.1731
ERR Change	0.3662***	0.1188	0.1119	0.1330	0.3687***	0.1204	0.4555***	0.1285	-0.3266	0.3930
Inflation Rate	0.0234***	0.0040	0.0093**	0.0037	0.0007	0.0019	0.0212***	0.0041	0.1255***	0.0410
Money Growth Rate	0.0040*	0.0022	0.0016	0.0024	0.0028	0.0020	0.0041*	0.0024	-0.0008	0.0064
Foreign Debt	-5.29E-05	0.0001	0.0002**	8.09E-05	-0.0047***	0.0007	0.0014*	0.0008	0.0004	0.0007
Foreign Reserves	1.8661***	0.2364	1.4042***	0.2562	0.9325***	0.2542	2.0361***	0.2851	-1.0285	0.8980
Economic Openness	-0.0010	0.0007	-0.0023***	0.0008	0.0043***	0.0009	-0.0021**	0.0011	0.0023	0.0024
Current Account Balance	-0.0202***	0.0034	-0.0114***	0.0037	-0.0135***	0.0036	-0.0195***	0.0039	0.0223*	0.0131
Time period	2000-2013		2000-2013		2000-2013		2000-2013		2000-2013	
Number of observations	1937		1937		1937		1461		279	

Source: author's calculations

\*\*\*Significant at 1%. \*\*Significant at 5%. \*Significant at 10%

Table 7: ERR gaps' determinants estimation, IRR gap as dependent variable

Independent variable	All countries			Fear of floating			Fear of pegging			Developing only			Developed only, euro area excluded		
	Coefficient	Std. Error		Coefficient	Std. Error		Coefficient	Std. Error		Coefficient	Std. Error		Coefficient	Std. Error	
Capital Controls	0.1609*	0.0872		0.1364	0.0872		0.0816	0.1802		0.3092***	0.0961		-0.4918	0.5000	
Economic Cycle Dummy	0.1236**	0.0565		0.1011*	0.0565		0.0915	0.1100		0.1117*	0.0632		0.3974**	0.1786	
Freedom House	0.0827***	0.0168		0.1015***	0.0168		-0.1480***	0.0318		0.0791***	0.0194		-0.5695***	0.1690	
Monetary Freedom	-0.0080***	0.0013		-0.0086***	0.0013		-0.0216***	0.0025		-0.0074***	0.0015		0.0105	0.0068	
Multiple ERs	0.7734***	0.1043		0.5513***	0.0980		0.6707***	0.1524		0.7508***	0.1120				
Inflation Targeting	1.2297***	0.0881		1.3270***	0.0883					0.9102***	0.1119		1.0756***	0.1755	
ERR Change	0.6733***	0.1257		0.3233***	0.1159		0.8094***	0.1460		0.6490***	0.1342		0.7158	0.4931	
Inflation Rate	0.0008	0.0019		-0.0004	0.0017		-0.0011	0.0033		0.0008	0.0019		0.1193***	0.0414	
Money Growth Rate	0.0041**	0.0018		0.0021	0.0017		0.0034	0.0029		0.0040**	0.0019		0.0049	0.0079	
Foreign Debt	-0.0017***	0.0004		-0.0012***	0.0004		-0.0047***	0.0011		-0.0018***	0.0007		0.0002	0.0007	
Foreign Reserves	1.4006***	0.2171		1.7089***	0.2212		-2.3948***	0.6343		1.2598***	0.2574		-0.3177	0.7190	
Economic Openness	-0.0030***	0.0008		-0.0045***	0.0008		0.0074***	0.0015		-0.0035***	0.0010		-0.0036*	0.0020	
Current Account Balance	-0.0181***	0.0032		-0.0198***	0.0031		0.0091	0.0064		-0.0221***	0.0035		0.0725***	0.0165	
Time period	2000–2016			2000–2016			2000–2016			2000–2016			2000–2016		
Number of observations	2371			2371			237			1793			328		

Source: author's calculations

\*\*\*Significant at 1%. \*\*Significant at 5%. \*Significant at 10%

Table 8: Summary of the estimations: signs and statistical significance

Variable	IMF	IMF FoFI	IMF developing	IMF developed	LYS	LYS FoFI	LYS FoP	LYS developing	LYS developed	IRR	IRR FoFI	IRR FoP	IRR developing	IRR developed
Monetary Freedom	***	***	***	***	***	***	***	***	***	***	***	***	***	***
Foreign Reserves	***	***	***	***	***	***	***	***	***	***	***	***	***	***
Current Account	***	***	***	***	***	***	***	***	***	***	***	***	***	***
Freedom House	***	***	***	***	***	***	***	***	***	***	***	***	***	***
Inflation Targeting	***	***	***	***	***	***	***	***	***	***	***	***	***	***
Foreign Debt	***	***	***	***	***	***	***	***	***	***	***	***	***	***
ERR Change	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Economic Openness														
Economic Cycle Dummy														
Capital Controls														
Multiple Rates														
Inflation Rate														
Money Growth Rate														

Source: author's calculations

\*\*\*Significant at 1%. \*\*Significant at 5%. \*Significant at 10%

Surprisingly, countries with less capital controls are also more probable to have ERR gaps, meaning that foreign capital flows may be influencing the ER enough to make it renege from its *de jure* properties.

There are unequivocal conclusions about inflation targeting and multiple exchange rates' presence: both issues are estimated to be associated with gaps. While multiple rates themselves already imply *de jure* – *de facto* discrepancy, one may be surprised by the fact that inflation targeting evokes the ERR gaps – this may mean that while inflation targeting is formally supposed to be combined with flexible rate, it appears that many targeting countries are unwilling to abandon the control over their ER and thus assent to having different *de facto* and *de jure* regimes. Relatively unambiguous conclusions could be made about the role of the *de jure* ERR persistence on the gaps: the change of *de jure* regime does not necessarily imply (an equal) change of *de facto* regime and, therefore, increases the probability of the gap to emerge.

The impact of the economic conditions on the ERR gaps is less clear-cut and seems to be dependent on the nature of gap (either fear of floating or fear of pegging) and the countries' level of development. For example, current account surplus decreases the occurrence of gaps in general (meaning that countries with active current account are more likely to commit to their ERR policy), but it does not apply to the developed world, where an opposite situation is present – the higher the surplus, the more probable the gap. Similarly, the role of economic openness is also ambiguous: while more actively trading states are less likely to have different *de jure* and *de facto* ERRs, this does not apply to less common “fear of pegging” cases, which seem to be linked to higher trade volume<sup>22</sup>.

Subsequently, the results highlight the fact that countries with massive foreign reserves are more often to break their *de jure* commitment; with this variable being statistically significant and positive-signed across the majority of estimations. Presumably, larger reserves induce the policymakers to intervene even when their *de jure* regime does not allow them to, while low reserves could be found in purely floating countries that are neither willing nor able (given the low reserves) to control their ER anyhow.

In most cases, a higher level of foreign debt also reduces the ERR gap probability, possibly meaning that indebtedness may bear a disciplining function for the

---

<sup>22</sup> Which is certainly in compliance with conventional wisdom: it is reasonable to expect that economically open countries would prefer to let their ERR float in order to prevent macroeconomic imbalance accumulation; even in cases when they have to peg *de jure* for some other reasons.



countries' monetary authorities. At the same time, foreign debt invokes gaps if the LYS classification is taken into account. Given the statistical nature of this *de facto* taxonomy, we may speculate about the heavily indebted countries behaving differently in terms of their ERR policy than they are expected to by the LYS classification: for example, a floating country could have volatile foreign reserves (and thus be classified as pegging by LYS) due to their usage for foreign debt management.

Additionally, higher inflation appears to be increasing the probability of the ERR gaps, with countries more likely to renege from their *de jure* regime when facing the need of inflation containment. The same partly applies to the money growth rate; although both these variables express statistical significance only in a handful of estimations.

Economic cycles also proved to be positively associated with the ERR gaps – during the conjuncture, countries are less likely to hold to their ERR policy and use their ER the way they are not officially supposed to; but economic slumps force the monetary authorities to stick to their *de jure* arrangement.

The results could be subjected to certain limitations. Firstly, the usage of various classifications with different number of the ERR categories complicates the comparability of the results; with the values of the variables' coefficients being hard to interpret given that their differences across the estimations. Secondly, the presented model is not able to capture the depth of gaps: being defined as dummy variables, all gaps enter the model the same way despite substantial difference between, for example, managed floating-soft peg gap and pure floating-hard peg gap. Furthermore, several model specifications (especially those including developing countries only) differ from the base model in a number of observations, and thus the results' divergence may be rather invoked by the model properties than by underlying (economic or institutional) fundamental factors. Nevertheless, the results appear to be relatively robust given that a number of theoretically important variables is proved to be of impact on the ERR gaps no matter which *de facto* classification or country sample is employed.

## Conclusion

Mismatches between *de jure* and *de facto* exchange rate regimes (or so-called ERR gaps) have been a long-standing issue with confirmed negative effects on the credibility of monetary policy, but their causes received only a very limited attention from the academic world. To my knowledge, there is only a handful of papers (Alesina and Wagner, 2006; Guisinger and Singer, 2010; Bearce, 2014) that attempt to estimate the determinants of ERR gaps, but they are either outdated or employing a questionable methodology based on the premise that the ERR gaps' nature is purely institutional.

In this paper, I argue that the roots of ERR gaps are of both economic and institutional character, and thus empirical tests should include a wider range of explanatory variables. Based on that, I estimated the determinants of ERR gaps using a panel dataset for 142 countries for the period of 2000–2016. For the robustness of the results, I modelled the gaps using several *de facto* ERR classifications with different methodology on the definition of *de facto* regimes: the “official” one from the IMF; a well-known cluster-analysis classification by Levy-Yeyati and Sturzenegger; and the most up-to-date and elaborate one from Ilzetzki, Reinhart and Rogoff.

I specified the ERR gap as dummy variable with its values depending on the countries' commitment to their *de jure* ERR. Different definitions of the ERR gaps (so-called “fear of floating” and “fear of pegging”) were used as proposed by the above-mentioned papers and the estimations for different country samples were made by dividing them according to their level of economic development.

With the help of ordered probit regression, I found that a number of institutional and statistical factors have a statistically significant impact on ERR gaps. As expected, more institutionally developed countries are less probable to evince the ERR gaps although this effect is less notable among economically advanced states. Additionally, I discovered that multiple exchange rates, inflation targeting and a change of *de jure* regime in general increase the ERR gaps' occurrence. Furthermore, I received relatively ambiguous results regarding the economic determinants of ERR gaps. According to the estimations, the level of foreign reserves, inflation and broad money growth rate tend to be associated with discrepancies between *de jure* and *de facto* regimes, while current account surplus and the level of foreign debt (with notable exclusions) reduce the probability of ERR gaps. More economically open countries also tend to break their *de jure* commitment less often, while economic conjuncture is estimated to be of positive impact on the gaps' emergence.

## References

1. Alesina, A. & Wagner, A.F. (2006). Choosing (and Reneging on) Exchange Rate Regimes. *Journal of the European Economic Association*, 4(4), pp.770–799.
2. Bearce, D.H. (2008). Not Complements, But Substitutes: Fixed Exchange Rate Commitments, Central Bank Independence, and External Currency Stability. *International Studies Quarterly*, 52(4), pp.807–824.
3. Bearce, D.H. (2014). A Political Explanation for Exchange-Rate Regime Gaps. *The Journal of Politics*, 76(1), pp.58–72.
4. Berdiev, A.N., Kim, Y. & Chang, C.P. (2012). The Political Economy of Exchange Rate Regimes in Developed and Developing Countries. *European Journal of Political Economy*, 28(1), pp.38–53.
5. Bleaney, M.F., Tian, M. & Yin, L. (2016). De Facto Exchange Rate Regime Classifications: An Evaluation. *Open Economies Review*, 28(2), pp.369–382.
6. Bordo, M. (2003). Exchange Rate Regime Choice in Historical Perspective. *National Bureau of Economic Research Working Paper* 9654.
7. Calvo, G.A. & Reinhart, C.M. (2002). Fear of Floating. *The Quarterly Journal of Economics*, 117(2), pp.379–408.
8. Chinn, M. D. & Ito, H. (2008). A New Measure of Financial Openness. *Journal of Comparative Policy Analysis: Research and Practice*, 10(3), 309–322.
9. Eichengreen, B. & Razo-Garcia, R. (2012). How Reliable Are de Facto Exchange Rate Regime Classifications? *International Journal of Finance & Economics*, 18(3), pp.216–239.
10. Greene, W. (2004). The Behaviour of the Maximum Likelihood Estimator of Limited Dependent Variable Models in the Presence of Fixed Effects. *The Econometrics Journal*, 7(1), pp.98–119.
11. Guisinger, A. & Singer, D.A. (2010). Exchange Rate Proclamations and Inflation-Fighting Credibility. *International Organization*, 64(2), pp.313–337.
12. Habermeier, K., Kokenyne, A., Veyrune, R. & Anderson, H. (2009). Revised System for the Classification of Exchange Rate Arrangements. *IMF Working Paper* 09(211).
13. Ilzetzi, 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), pp.599–646.
14. Klein, M.W. & Shambaugh, J.C. (2008). The Dynamics of Exchange Rate Regimes: Fixes, Floats, and Flips. *Journal of International Economics*, 75(1), pp.70–92.

15. Levy-Yeyati, E. & Sturzenegger, F. (2005). Classifying Exchange Rate Regimes: Deeds vs. Words. *European Economic Review*, 49(6), pp.1603–1635.
16. Levy-Yeyati, E. & Sturzenegger, F. (2016). Classifying Exchange Rate Regimes: 15 Years Later. *SSRN Electronic Journal*. doi: [10.2139/ssrn.2820762](https://doi.org/10.2139/ssrn.2820762).
17. Magud, N.E. (2010). Currency Mismatch, Openness and Exchange Rate Regime Choice. *Journal of Macroeconomics*, 32(1), pp.68–89.
18. Reinhart, C.M. & Rogoff, K.S. (2004). The Modern History of Exchange Rate Arrangements: A Reinterpretation. *The Quarterly Journal of Economics*, 119(1), pp.1–48.
19. Shambaugh, J.C. (2004). The Effect of Fixed Exchange Rates on Monetary Policy. *Quarterly Journal of Economics* 119(1), pp.301–352.
20. Vegh, C. & Vuletin, G. (2012). Overcoming the Fear of Free Falling: Monetary Policy Graduation in Emerging Markets. *National Bureau of Economic Research Working Paper* 18175.