

# Prudential Regulation, Currency Mismatches and Exchange Rate Regimes in Latin America and the Caribbean

Martín Tobal  
November 2014

**Research Papers**

**17**

**PRUDENTIAL REGULATION, CURRENCY MISMATCHES  
AND EXCHANGE RATE REGIMES IN LATIN AMERICA  
AND THE CARIBBEAN**

*Research  
papers*

**17**

**Author:**

Martín Tobal

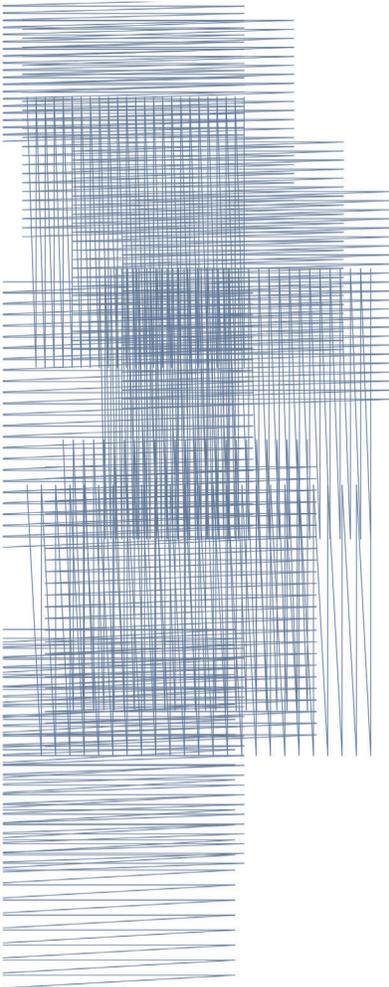
---

First edition, 2014

© 2014 Center for Latin American Monetary Studies (CEMLA)  
Durango 54, Colonia Roma Norte, Delegación Cuauhtémoc, 06700 México D. F.,  
México.  
E-mail: publicaciones@cemla.org  
<http://www.cemla.org>

The views expressed herein are those of the authors and do not necessarily  
reflect those of the CEMLA or its members.

---



# Prudential Regulation, Currency Mismatches and Exchange Rate Regimes in Latin America and the Caribbean

---

MARTÍN TOBAL, CEMLA

The author would like to thank the officials of the various central banks that participated actively in the survey. Luisa Silva (Banco de la República, Colombia), Pablo Villalobos (Banco Central de Costa Rica,) Julieta Suazo (Banco Central de Honduras), Brian Langrin (Central Bank of Jamaica), Laura D'Amato (Banco Central de la República Argentina), Luis Opazo (Banco Central de Chile) Marvin Miranda (Banco Central de Nicaragua), Raúl Alderete (Banco Central de Paraguay), Jorge Muñoz (Banco Central de la Reserva del Perú), Daniel Araujo (Banco Central do Brasil), Carolina Pagliacci (Banco Central de Venezuela), Edwina Matos and Sherina Arends (Central Bank of Aruba), Oswaldo Irusta (Banco Central de Bolivia), Jorge Ponce and Pablo Bazerque (Banco Central del Uruguay), and Daniel Sámano (Banco de Mexico).

[martin.tobal@banxico.org.mx](mailto:martin.tobal@banxico.org.mx)

## ABSTRACT

In this paper, the author reports some of the results from a survey on limits and reserve requirements involving FX positions and the flexibility of their exchange rate regimes. The survey reveals new facts. Countries that have more intensively implemented these measures have taken the bulk of their policies in the transition towards exchange rate flexibility.

**Keywords:** Prudential regulation, currency mismatches, exchange rate regimes, Latin America, Caribbean.

**JEL classification:** E58, F31.

The author shows that, in flexible regimes, policy-makers have higher motivations for implementing FX regulation to achieve exchange rate stability. Yet, policy-makers' concerns differ substantially across countries and implementation characteristics are heterogeneous across policies constraining the same relationship in the balance sheet.

## 1. INTRODUCTION

It is often argued that the latest financial crisis has changed the spirit of prudential regulation. Prudential policies are currently being used with a new macroprudential perspective to preserve and enhance financial stability (Terrier et al., 2012). However, little attention has been paid to FX-related policies in this debate. This paper conducts a survey on several dimensions of limits and reserve requirements involving FX positions in the banking sector. The information contained in the survey enables me to investigate whether the prudential under study have changed in spirit over time.

In the first part of the survey, I request policymakers: *i)* to identify the status of limits and reserve requirements involving FX positions in 1992; *ii)* to track all relevant regulatory changes until 2012; *iii)* to describe the implementation characteristics of the policies under study; and *iv)* to identify the goal of each of these policies within a list of six potential goals.<sup>1</sup> In the second part of the survey, I request the officials in the central banks to define the flexibility degree of the exchange rate regimes their country has

---

<sup>1</sup> Refinements and consolidation procedures are not considered as relevant regulatory changes.

adopted since 1992. The period I study refers to the last two decades and, therefore, I am able to perform the investigation in two distinct periods of time: the period preceding the Asian and Russian crises of the late 1990s and the period preceding these crises. A potential disadvantage of the survey is that it does not cover policies that have solely dealt with financial derivatives markets (see Tobal, 2013, for a role of financial derivatives in the Latin American and the Caribbean).

The answers to the survey show that there are differences in terms of the number of policies implemented across countries and over time. Brazil, Colombia, Costa Rica and Peru are the economies that have more intensively used limits and reserve requirements involving FX positions. A common pattern emerges across three of the former four economies: Brazil, Colombia and Costa Rica have implemented the bulk of their policies in the transition toward more flexible exchange rate regimes. This conclusion stands whether the transition occurred during the crises of the late 1990s, such as in the cases of Brazil and Colombia, or whether the transition occurred in the mid-2000s, such as in the case of Costa Rica. In contrast with the cases of Brazil, Colombia and Costa Rica, the policies implemented by Peru have not been concentrated in a short period of time. This fact may respond to the attempt of the authorities to avoid fluctuations of the exchange rate at different points in time (see Section 3).

The outcomes of the survey also reveal evidence on policymakers' concerns and implementation characteristics. A common pattern is that most policies tightened the limit on the short or the long FX position of banks. However, responding to differences in policymakers' concerns, implementation characteristics differ substantially across countries. For instance, whereas the Bank of Mexico has been mostly concerned with both short and long FX positions, the Central Bank of Brazil has been particularly interested in controlling short positions. Furthermore, there are also differences across policies constraining the same types of relations in the balance sheet. Taking another example, the National Banking and Insurance Commission of Honduras have established differentiated limits on the short and long positions but the Central Bank of Costa Rica has imposed a single limit on open positions.<sup>2</sup>

In order to gain better understanding on policymakers' concerns, I also present evidence on the goals of the policies. This evidence shows that reducing currency mismatch is the main goal when implementing limits and reserve requirements, and that achieving exchange rate stability is the second most important goal. Central banks have also reported to be interested in reducing maturity mismatches in FX positions and in reducing financial

---

<sup>2</sup> Open FX positions are defined as the absolute value difference between FX assets and FX liabilities.

dollarization to improve the efficiency of conventional monetary policy and to preserve financial stability.

I connect the evidence on policy goals with information on the degree of flexibility of the exchange rate regimes that I have collected in the second part of the survey. In particular, I show that: *i*) exchange rate regimes have effectively been more flexible in the 2000s than in the 1990s (I also check this result using Reinhart and Rogoff's coarse classification of exchange rate regimes); *ii*) the policies have been more strongly motivated by exchange rate stability in the 2000s than in the 1990s and *iii*) the higher the degree of flexibility of an exchange rate regime, the more intensively limits and reserve are used.

The paper is structured as follows. Section 2 reviews the policies implemented in Latin America and the Caribbean over 1992-2012. Section 3 studies differences in the implementation characteristics and the theoretical impact of the policies. Section 4 reviews the literature on potential goals of FX regulation, links these goals with an experience in Latin America and the Caribbean and presents results on the goals of the policies taken over 1992-2012. Section 5 deals with the interaction between exchange rate flexibility and the use of FX regulation. Section 6 concludes.

## 2. HISTORICAL PERSPECTIVE

The analysis focuses on limits on FX positions and the reserve requirements implemented by the Central Bank of Brazil over the period 1992-2012.<sup>3,4</sup> For simplicity, I will indistinguishably refer to their implementation and to changes in the level of these limits/requirements as *policies* hereafter.

The study of FX regulation across countries and over time is motivated by the change toward more flexible exchange rate regimes that occurred in Latin America and the Caribbean in the late 1990s. The period preceding the Mexican turmoil and the Asian and Russian crises was characterized by inflexible exchange rate regimes.<sup>5</sup> Yet, the financial crises caused capital reversals, leading most countries to move toward exchange rate flexibility (see Section 5 for evidence on this matter). Table 1 summarizes the policies taken by 17 countries in Latin America and the Caribbean over

---

<sup>3</sup> In particular, the period of interest goes from the second quarter of 1992 to the second quarter of 2012.

<sup>4</sup> Reserve requirements in other countries involve FX accounts, i.e., the Bank of Jamaica has established reserve requirements on foreign currency deposits. However, these requirements do not consider all foreign currency components of the balance sheet and are, therefore, not considered in the analysis.

<sup>5</sup> For instance, Argentina, Mexico and Brazil adopted fixed or near-fixed exchange rates; and Chile, Colombia and Peru used crawling bands (Frenkel and Rapetti, 2010).

Table 1

## IMPLEMENTATION OF AND CHANGES IN LIMITS ON FOREIGN CURRENCY POSITIONS

Country- year	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Total	
ARG											1					1						3	
ARU			1																				1
BOL				1													1	1					3
BRA	1	1	2	1			2				1								1				9
CHI						1																	1
COL							3	1				1											5
CRC									1						1	2	1						5
DOM																							0
ECCU																							0
GUA									1								1						2
HON												1	1	2									4
JAM																							0
MEX				1	1	2																	4
NIC																							0
PAR						1											1						2
PER							1					1	1						2				5
URU																							0
Total	1	1	2	3	0	3	3	6	1	2	0	1	3	4	3	3	4	1	2	1	0	0	44

Note: ARG (Argentina); ARU (Aruba); BOL (Bolivia); BRA (Brazil); CHI (Chile); COL (Colombia); CRC (Costa Rica); DOM (Dominican Republic); ECCU (Eastern Caribbean countries); GUA (Guatemala); HON (Honduras); JAM (Jamaica); MEX (Mexico); NIC (Nicaragua); PAR (Paraguay); PER (Peru) and URU (Uruguay).

1992-2012. Interesting conclusions can be drawn from this table. Brazil, Colombia, Costa Rica and Peru are the countries that took the higher number of policies.

Brazil, the economy with the highest number of policies, took the bulk of its policies in two different periods of time: between 1992 and 1995, and in 1999. A peculiarity of the Brazilian economy until 2005 was the presence of FX controls that guaranteed the existence of two parallel FX markets: The free rate foreign exchange market (MCTL) and the floating rate foreign exchange market (MCTF). Within this context, the policies taken between 1992 and 1995 seemed to have reinforced the FX controls. The measures taken in 1999, on the other hand, seem to have been related to the financial crisis that occurred in Brazil during that year. In line with other Latin American and Caribbean countries, a financial crisis in the late 1990s led Brazil to adopt a more flexible exchange rate regime. According to Reinhart and Rogoff's coarse classification of exchange rate regimes, Brazil went from having a category 2 ("crawling peg/band, band narrower or equal to  $\pm 2\%$ ") to a category 3 ("crawling band, managed floating").

The case of Colombia, another country that appears in the list of economies with the highest number of policies, is similar to that of Brazil. The bulk of policies in Colombia were implemented in 1999, when a capital reversal episode generated a financial crisis in the former country. This crisis also implied a transition toward ex-

change rate flexibility: According to the answers of Banco de la República to the survey, Colombia went from having a category 2 (*pegged float*) to a category 3 (*floating*).

Interestingly, most policies involving foreign currency positions in Costa Rica were also related to a transition toward a more flexible exchange rate regime. In contrast with Brazil and Colombia, this transition did not occur immediately after the financial crises. The Central Bank of Costa Rica declared in the survey to have switched from a crawling peg to crawling bands during the fourth quarter of 2006 (right before the bulk of its policies were taken). In summary, limits on foreign currency positions were used to transition toward more flexible exchange rate regimes, regardless of whether this transition occurred in the late 1990s or not.

Peru is also among the economies with highest number of policies. Two differences are observed with respect to Brazil, Colombia and Costa Rica. First, the policies were spread out over time. Second, as a result, the policies were not related to a switch toward exchange rate flexibility. Peru has greater incentives to preserve exchange rate stability at any time because its degree of financial dollarization is among the highest in the region and, therefore, the balance sheet effects of exchange rate adjustments are potentially more dangerous. Thus, Peru seems to have used FX regulation to achieve exchange rate stability (See Section 5 for evidence consistent with on with this statement).

### 3. IMPLEMENTATION

In spite of the fact that foreign currency risk is a common threat in Latin American and the Caribbean, financial systems are substantially heterogeneous in the region. This section studies cross-country differences in the implementation of these policies and shows that country experiences mentioned in the previous section hide substantial differences with regards to the implementation of limits and the reserve requirements involving foreign currency positions.

I classify policies according to two criteria: *i*) the type and amount of relations they constrain in the balance sheet, and *ii*) their theoretical impact on long FX positions and on their volatility. Whereas the first criterion refers to technical characteristics of the implementation, the second criterion is related to the economic impact of the policies.

Using as a criterion the type and amount of relations the policies constrain, I classify them into the four groups depicted in Table 2.<sup>6</sup> The label *long positions* in this table refers to policies

---

<sup>6</sup> Take the case of a country that establishes a limit on short and long positions and years later changes only the former limit. In this case, I compute a policy

Table 2

## TYPES OF POLICIES AND FREQUENCY OF USE

<i>Policy-type</i>	<i>The policy constrains:</i>	<i>Number of policies</i>	<i>Percentage over total</i>
Long positions	FX assets – FX liabilities	17	39
Short positions	–( FX assets – FX liabilities)	12	27
Open positions	FX assets – FX liabilities	8	18
Short and long positions	FX assets – FX liabilities ; –( FX assets – FX liabilities)	7	16

Sources: National authorities and author's calculations.

Notes: Policies are classified based on the relation they constrain in the balance sheet. Policies were taken by Latin American and Caribbean countries over 1992Q2-2012Q2. Policies taken within the same quarter are considered as the same policy. The establishment of reserve requirements on 01/02/1999 after the reunification of positions in the FX markets in Brazil is not considered.

that constrain only the positive difference between FX and FX liabilities and, therefore, concern limits on long positions. The most frequent implementation refers to policies of this type (a 39% of the policies concern only the limit on long positions). The second type of policies most frequently used is *short positions*, which concern only the limit in short positions and represents 27% of total amount of measures taken over 1992Q2-2012Q2. The remaining policies considered in Table 2 constrain the positive and the negative difference between FX assets and FX liabilities. Whereas the policies labeled *open positions* impose the same limit on both differences, the policies labeled *short and long positions* constrain the positive and the negative differences by a distinct amount.<sup>7</sup> Policies of the type *open positions*

of type *short and long positions* and a policy of type *short positions*.

<sup>7</sup> As an example of a policy *short and long positions*,

are more frequent than policies of the type *short and long positions* (with 18% and 16% of the total amount, respectively).

The first classification provides a technical categorization of the policies but is ambiguous about their impact on FX positions, e.g., a policy that involves the limit on short positions may increase long positions or decrease them, depending on whether the limit increases or falls. Therefore, I use a second criterion to classify policies into four different groups according to their theoretical impact on long FX positions and on their volatility. The four types of measures are shown in the second column of Table 4 and the policies considered within each group are depicted in Table 3.

consider the measure implemented by the National Banking and Insurance Commission of Honduras in December of 2006. Within the same month, this commission changed the limit on long positions from 75 to 50 percent of banks' capital and the limit on short positions from 10 to 5 percent.

Table 3

POLICIES INCLUDED IN EACH POLICY-TYPE

<i>Policy-type</i>	<i>Decrease Long Positions</i>	<i>Increase Long Positions</i>
Policies involved	Establishment of limits on long positions; elimination of limits on short positions; reductions in limits on long positions; increases in limits on short positions; policies that imply the latter two options.	Establishment of limits on short positions; elimination of limits on long positions; reductions in limits on short positions; increases in limits on long positions; policies that imply the latter two options.
<i>Policy-type</i>	<i>Decrease Volatility</i>	<i>Increase Volatility</i>
Policies involved	Establishment of limits on open positions; joint establishment of limits on short and long positions; joint increases in limits on short and long positions.	Elimination of limits on open positions; joint elimination of limits on short and long positions. Joint increases in limits on short and long positions.

Sources: National authorities and author’s calculations.

In Table 4, I have labeled *decrease average long position* (DEC) policies that, in theory, lead banks to reduce their long FX positions (or alternatively to increase the extent of their short positions). Note in this table that these policies are mostly associated with measures that I have labeled *long positions* in Table 2. (11 out of the 17 policies have been implemented in this way). The DEC measures have been taken by seven countries (Bolivia, Brazil, Honduras, Colombia, Mexico, Paraguay and Peru) over 1992Q2-2012Q2. The fact that Peru is the country which has taken these policies the highest number of times (five policies) is consistent with two facts: *i*) Peru is one of the economies with the highest level of partial dollarization in Latin America and the Caribbean; and *ii*) in highly dollarized economies, long FX positions tend to be more frequent.

Along these lines, Tobal (2014) shows that the policies of type DEC implemented in three highly dollarized economies (Bolivia, Paraguay and Peru) have been successful in reducing long FX positions in the banking sector.

The label INC in Table 3 stands for *increase long positions* and refers to policies that should in theory increase the long FX position of banks. These measures have been mostly associated with policies labeled as *short positions* in Table 2. Brazil is the country that has used these measures the highest number of times (six policies), which is consistent with the fact that banks in this country held relatively short FX positions before 2005 (see Tobal, 2013 for a reference).

The remaining two types of policies deal with the absolute difference between FX assets and liabilities and, therefore, do

Table 4

## TWO-WAY CLASSIFICATION AND FREQUENCY OF USE

		<i>Impact on long positions</i>			
		<i>DEC</i>	<i>INC</i>	<i>VOL DEC</i>	<i>VOL INC</i>
Relation constrained in balance sheet	Long positions	11	6	0	0
	Short positions	4	8	0	0
	Open positions	0	0	3	5
	Short and long positions	1	2	4	0
	<b>Total</b>	<b>16</b>	<b>16</b>	<b>7</b>	<b>5</b>
	<b>Percentage</b>	<b>36</b>	<b>36</b>	<b>16</b>	<b>11</b>
Country with larger use		Peru	Brazil	Mexico	Costa Rica

Sources: National authorities and author's calculations.

Notes: DEC stands for decrease average long position; INC stands for increase average long position; VOL DEC stands for reduce volatility of long positions; VOL INC stands for increases volatility of long positions. Policies taken within the same quarter are considered as the same policy. The establishment of reserve requirements on 01/02/1999 after the reunification of positions in the FX markets in Brazil is not considered.

not have an unambiguous effect on long positions. The policies of type *decrease volatility of long position* (VOL DEC) should reduce the volatility of FX positions and have been implemented by reducing or establishing a limit on open positions and by jointly tightening the limits on short and long positions (three and four times, respectively). They have been taken by six countries over 1992Q2-2012Q2 (Bolivia, Brazil, Guatemala, Costa Rica, Honduras and Mexico) and Mexico is the country that has implemented this type of policies the highest number of times. In response to the Tequila crisis (and in the transition toward exchange rate flexibility), Mexico established a limit on open positions equal to 40% of banks' capital in Septem-

ber of 1995 and reduced this limit to 15 percent in July of 1998.

Finally, the policies of type *increases volatility of long positions* (VOL INC) was in practice only implemented by increasing the limit on open positions (the five measures implied policies of the type *open positions*). All the policies, with the exception of the measure taken by Argentina in 2003, were implemented by Costa Rica. Beginning in 2006 (also in transition toward a more flexible exchange rate regime), the Central Bank of Costa Rica started to gradually increase the limit on the variation of daily FX positions.

#### **4. POTENTIAL AND ACTUAL USES IN LATIN AMERICA AND THE CARIBBEAN**

The first subsection reviews the literature on the potential objectives of the policies under study. The second subsection links these objectives to a Latin American and Caribbean experience by using the information on the goals of the policies contained in the survey.

##### **4.1 Potential Uses of Limits on FX Positions**

The literature acknowledges that policymakers may have at least the following five potential goals when implementing or changing a limit on FX positions.

- 1. Reducing solvency problems.** When banks held short foreign currency positions, large devaluations and/or large depreciations of the local currency increase the value of their net foreign currency liabilities. This balance sheet effect may undermine their capacity to meet its foreign currency obligations and hence its ability to borrow. To avoid these solvency problems, policymakers may want to limit short foreign positions in the banking sector (Lee, 2012; Zettelmeyer et al., 2011; Goldstein and Turner, 2004; Hartmann, 1994).

2. **Reducing liquidity risk.** Even if banks' foreign currency assets and liabilities are matched, they may be exposed to foreign currency liquidity risk. In particular, banks may fund long-term assets with short-term foreign currency liabilities. Limits on foreign currency positions can be designed to account for the maturity of assets and liabilities and, therefore, reduce liquidity risks (Lee, 2012; Goldstein and Turner, 2004).
3. **Avoiding large and frequent fluctuations in the exchange rate.** Central banks and financial supervisors can alter the supply of and demand for foreign currency by modifying the limits on short and long positions. Thus, the policies could enhance exchange rate stability (Rodríguez and Wu, 2013; Lee, 2012; Canales-Kriljenko and Habermeier, 2004).
4. **Encouraging de-dollarization to improve the effectiveness of conventional monetary policy.** The greater the degree of financial dollarization, the more difficult it is to control domestic liquidity using conventional monetary policy. Furthermore, financial dollarization dampens the capacity of central bank to counteract banking difficulties through lender-of-last-resort financing (Rennhack and Nozaki, 2006; Ize and Levy-Yeyati, 2003).

5. **Encouraging de-dollarization to reduce financial stability.** In highly dollarized economies, where the confidence in the local currency is low, agents (and banks) tend to hold long foreign currency positions. In this context, adjustments of the exchange rate can generate balance sheet problems and propagate throughout the economy (Terrier et al., 2011).

#### 4.2 Actual Uses of Limits on FX Positions

Central banks were requested to provide information on the goals they pursued when implementing the policies. They were asked to relate the measures to one or more of the following six policies goals: 1) controlling credit growth; 2) achieving exchange rate stability; 3) reducing currency mismatches; 4) reducing maturity mismatches in foreign currency positions; 5) correcting current account imbalances and 6) others (I requested central banks to specify which goals they pursued when choosing the option *Other*). Nine out of the 12 countries that established and/or changed their limits on foreign currency positions over 1992Q2-2012Q2 answered to the questions on policy goals. For each policy, I assigned a value equal to 1 to the goal or the goals that were mentioned by the policymakers mentioned and a value equal to 0 to those that were not. I took the average across all policies of the same country and displayed these averages in Table 5.

Table 5

**POLICY GOALS**  
(Percentages)

<i>Country</i>	<i>POLICY GOALS</i>		
	<i>Reducing currency mismatches</i>	<i>Achieving exchange rate stability</i>	<i>Others</i>
ARG	100	0	0
ARU	0	100	0
BOL	60	0	40
BRA	NA	NA	NA
CHI	NA	NA	NA
COL	56	0	44
CRC	17	67	17
DOM	–	–	–
ECCU	–	–	–
GUA	NA	NA	NA
HON	100	0	0
JAM	–	–	–
MEX	67	0	33
NIC	–	–	–
PAR	20	80	0
PER	50	50	0
URU	–	–	–
<i>Average</i>	52	33	15

Sources: National authorities and author's calculations.

Notes: The Table displays the averages of the policies taken by the same country. ARG (Argentina); ARU (Aruba); BOL (Bolivia); BRA (Brazil); CHI (Chile); COL (Colombia); CRC (Costa Rica); DOM (Dominican Republic); ECCU (Eastern Caribbean countries); GUA (Guatemala); HON (Honduras); JAM (Jamaica); MEX (Mexico); NIC (Nicaragua); PAR (Paraguay); PER (Peru) and URU (Uruguay).

Note in this table that *Reducing currency mismatches* is the main purpose when establishing and changing limits on FX positions: On average, policymakers mentioned this goal in 52% of the times (that is, the country-average). Argentina, Honduras and Mexico are the economies that have more intensively pursued this objective; the former two countries have implemented their policies only to reduce

currency mismatches and the latter country has pursued this goal, on average, in 67% of the times. In terms of the list of goals that appear in the literature review presented in the previous section, *Reducing currency mismatches* relates closely to first goal (*Reducing solvency problems*). Thus, for instance, the policies implemented by Argentina to reduce short FX positions in 2005 and 2007 provide an example of *Re-*

*ducing solvency problems.* The Central Bank of Argentina eliminated the limit on long positions in December of 2005 and tightened the limit on short positions in January of 2007.

The second column in Table 5 refers to the goal *Achieving exchange rate stability*. Policymakers have pursued this goal in 33% of the times, with Aruba, Costa Rica, Paraguay and Peru being the countries that have pursued it more intensively; as mentioned in Section 2, Peru, a highly dollarized economy whose policies are spread out over time, appears in this list. In terms of the five goals presented in the previous section, the goal *Achieving exchange rate stability* most closely resembles goal number 3: *Avoiding large and frequent fluctuations in the exchange rate*. Therefore, the experience of Paraguay in 1997 clearly illustrates the point. In response to the 5.4% depreciation of the Paraguayan Guaraní that occurred in December of 1997, the Central Bank of Paraguay reduced the limit on long positions from 100 to 50 percent of banks' effective patrimony.

The column labeled *Others* in Table 5 gathers information on the remaining goals mentioned in the beginning of 4.2: 1) controlling credit growth; 4) reducing maturity mismatches in foreign currency positions; 5) correcting current account imbalances and 6) others. No policymaker answered that *Controlling credit growth* and *Correcting current account imbalances* were her goal when establishing or changing limits on foreign currency positions. On the other hand, *Reducing maturity mismatches in*

*foreign currency positions* was chosen by Mexico and Colombia. This goal most likely resembles *Reducing foreign currency liquidity risk* in the list provided in the previous subsection; therefore, the establishment of liquidity requirements for FX operation by the Bank of Mexico in 1995 provides an example of how limits on FX positions can be used to reduce FX liquidity risk. Along the same lines, the policy implemented by the Central Bank of Chile also seems to alter the maturity of FX components of the balance sheet. In April of 1999, this central bank established limits differentiated by the maturity of the positions: Whereas the limit on 30-days positions was set at 100 percent of banks' capital, the limit on 90-days positions was set at 200 percent.

Finally, officials from the Central Bank of Bolivia referred to the sixth goal in the list, e.g., the goal that I have labeled *Others* in the beginning of 4.2. In particular, these officials claimed to have intervened with the goal of *Reducing domestic banks' foreign currency*; the official from the Central Bank of Bolivia referred to this goal as *remonetizing* the banking system. According to the monetary authority the goals of remonetization were primarily two: a) improving the efficiency of the central banks as a lender of last resort and b) reducing currency mismatches and hence promote financial stability. In terms of the previous subsection, these goals closely resemble "Encouraging de-dollarization to improve the effectiveness of conventional monetary policy" and "Encouraging de-dollarization to reduce financial stability."

## 5. ADVANTAGE AND DISADVANTAGES: INTERACTIONS WITH MONETARY POLICY AND FX INTERVENTIONS

This section studies advantages and disadvantages of using limits on FX positions, with a focus on their interaction with FX market interventions and exchange rate flexibility. The first subsection reviews the literature on potential advantages and disadvantages. The second subsection uses the information contained in the survey to investigate the relation between limits on FX positions and exchange rate flexibility in Latin American and Caribbean.

### 5.1 Potential Advantages, Disadvantages and Interactions

The literature acknowledges at least the three following potential advantages.

1. **Substitute for conventional monetary policy in achieving financial stability.** Limits on FX positions can be tailored to risks of specific sectors or loan portfolios without causing a generalized reduction of economic activity (Lim et al., 2011).
2. **Substitute for conventional monetary policy in curbing credit.** In countries that have adopted inflation targeting, the policy rate is largely tied up with anchoring expecta-

tions on the future rate of inflation (Park, 2011). In highly dollarized economies, limits on FX could substitute for conventional monetary policy in curb the pro-cyclical behavior of credit.

- 3. Substitute for FX market interventions in achieving exchange rate flexibility.** Limits on FX positions could replace the interest FX market interventions in fixing or managing the exchange rate. When facing depreciation pressures, the use of limits could avoid a reduction in FX reserves and the implementation of sterilization policies. This advantage is relevant since sterilization measures become more difficult over time Magud et al. (2011).

Regarding the disadvantages, the literature acknowledges at least the following three items.

- 4. Conflict of goals with exchange rate target.** There could exist a fundamental goal conflict between prudential FX regulations and certain exchange policies. If, for example, domestic currency depreciation is more likely than appreciation, then prudential considerations require limiting short FX positions. However, this strategy gives banks more scope to sell the domestic currency, possibly

implying devaluation pressure on the former (Hartmann, 1994).

- 5. Limiting the development of FX markets and dampening economic growth.** By preventing the development of the FX markets, limits on FX positions dampen economic growth (Ranciere et al., 2010).
- 6. Distorting resource allocation.** Regulation could exclude customers with local currency denominated income from FX lending. The fact that only borrowers from the tradable sector can borrow may retard the development of the non-tradable sector (Park, 2011).

## 5.2 Interaction with FX Market Interventions

As mentioned in Section 2, several Latin American and Caribbean countries transitioned toward flexible exchange rate regimes in the late 1990s. This fact makes our period under study (1992-2012) interesting for investigating the relation between FX regulation and FX market interventions.

In order to support the intuitive idea that Latin America and the Caribbean transitioned toward exchange rate flexibility, I use the survey and Reinhart and Rogoff's coarse classification of exchange rate regimes.<sup>8</sup> In the survey, central

---

<sup>8</sup> See Note 3 for an explanation on how the monthly classification is transformed into a quarterly classification.

bank members were asked which exchange rate system they had in every quarter from 1992 to 2012. Their answers can be easily grouped into three categories: *Fixed exchange rate*, *Pegged float* and *Floating*. Considering 17 Latin and Caribbean economies, Table 6 divides the sample into two periods of time (1992-2002 and 2002-2012) and calculates the percentage of quarters with *Floating* regimes in each period. Table 7 repeats the same exercise excluding from the sample quarters with FX controls.<sup>9</sup> Tables 8 and 9 complement Tables 6 and 7 by using Reinhart and Rogoff's classification as an alternative to the information that I have collected in

the survey.<sup>10,11</sup> Table 8 shows the percentage of quarters with *Crawling band and managed floating regimes* excluding quarters classified as *Freely falling* and Table 9 also excludes quarters classified as *Dual parallel markets*. In all tables the percentage of quarters with flexible exchange rate regimes is greater in 2002-2012 than in 1992-2002: Exchange rate regimes in Latin America and the Caribbean were more flexible in the 2000s than in the 1990s.

Having established differences in exchange rate flexibility between 1992-2002 and 2002-2012, I proceed by investigating the relation between the flexibility of exchange rate regimes and FX regulation.

**Table 6**

**EXCHANGE RATE FLEXIBILITY OVER TIME (I)**

<i>Period</i>	<i>Quarters with floating</i>	<i>Quarters with available data</i>	<i>Percentage of quarters with floating</i>
1991-2001	159	608	26
2002-2012	472	743	64

Sources: National authorities and author's calculations.

Note: The exchange rate systems result from central banks' answers to CEMLA's survey.

<sup>9</sup> The following events are considered as FX controls: the elimination of free access to FX by non-residents in Argentina in the 4<sup>th</sup> quarter of 2011, the prohibition of purchasing foreign currency without prior approval in the Eastern Caribbean countries prior to the 1<sup>st</sup> quarter of 1996, and the existence of two regulated FX markets in Brazil prior to the 3<sup>rd</sup> quarter of 2005.

<sup>10</sup> See E. Ilzetzki, C. Reinhart, and K. Rogoff (2008) for further use of the coarse classification of exchange rate regimes.

<sup>11</sup> Their classification has six groups of regimes, which are labeled as follows: 1 refers to Peg; 2 refers to Crawling peg/band, band narrower or equal to +/- 2%; 3 denotes Crawling band, managed floating; 4 is Freely floating; and 5 and 6 are Freely falling, and Dual parallel markets, respectively.

**Table 7**

**EXCHANGE RATE FLEXIBILITY OVER TIME (II)**

<i>Period</i>	<i>Quarters with floating</i>	<i>Quarters with available data</i>	<i>Percentage of quarters with floating</i>
1991-2001	127	624	20
2002-2012	454	743	61

Sources: National authorities and author’s calculations.

Notes: The exchange rate systems result from central banks’ answers to CEMLA’s survey. Quarters with FX controls are not considered in the calculation of percentages.

**Table 8**

**EXCHANGE RATE FLEXIBILITY OVER TIME (III)**

<i>Period</i>	<i>Quarters with “crawling band and managed floating”</i>	<i>Quarters with available data</i>	<i>Percentage of quarters with “crawling band and managed floating”</i>
1991-2001	150	680	22
2002-2012	239	612	39

Sources: National authorities and author’s calculations.

Notes: The exchange rate systems result Reinhart and Rogoff’s coarse classification. Quarters labeled as *Freely falling* are not considered.

**Table 9**

**EXCHANGE RATE FLEXIBILITY OVER TIME (IV)**

<i>Period</i>	<i>Quarters with crawling band and managed floating</i>	<i>Quarters with available data</i>	<i>Percentage of quarters with crawling band and managed floating</i>
1991-2001	150	636	24
2002-2012	239	601	40

Sources: National authorities and author’s calculations.

Notes: The exchange rate systems result from Reinhart and Rogoff’s coarse classification. Quarters labeled as *Freely falling* are not considered. Quarters labeled as *Dual parallel markets* are not considered.

There are reasons to believe that the more flexible the regime, the more intensively policymakers use limits on FX positions: As mentioned in the previous subsection, these limits can impact the exchange rate and, therefore, substitute for FX market interventions. Furthermore, limits on FX positions can also conflict with explicit exchange rate targets (see 4.1 on this regard). On the hand, a large strand of papers argues that exchange rate flexibility is associated with greater currency mismatches (Mishkin, 1996; Obstfeld, 1998; Goldstein and Turner, 2004, and Tobal, 2013, for evidence on currency mismatches and exchange rate flexibility).<sup>12</sup> Following this logic, the more flexible the exchange rate regime, the less intensively limits on FX positions should in principle be used.

Tables 10 and 11 study the use of limits and reserve requirements involving FX positions across exchange rate systems with a varying degree of flexibility (as a reminder, only the Central Bank of Brazil has employed reserve requirements over the period under study). Table 10 shows the amounts of policies; the number of quarters with available information and the frequency with which the policies are used for the exchange rate systems derived from the survey I have run, i.e., by frequency of use, I mean the amount of

policies implemented per quarter. The table shows that the policies have been more frequently used in the *Intermediate* and *Floating* regimes. The positive relation between frequency of use and exchange rate flexibility becomes clearer as I assign a specific category for FX controls in Table 11. In this table, the frequency of use is monotonically increasing across *Fixed*, *Intermediate* and *Floating*. Hence, the higher the flexibility of the exchange rate regime, the more intensively policymakers have established or altered limits and reserve requirements involving FX positions.

The fact that the type of FX regulation under study is more frequently used in flexible exchange rate systems suggests that one or both of the following facts holds: *i*) FX regulation substitute for FX market interventions, and/or *ii*) currency mismatches are greater, the more flexible the exchange rate regime. Along these lines, Tobal (2013) shows that currency mismatches in the banking sector are greater in the *Fixed* and in the *Floating* regimes. This fact leaves open the question on whether limits on FX positions have actually been used to achieve exchange rate stability over 2002-2012. Table 12 partially addresses this question. On average, policymakers have been more strongly motivated by achieving exchange stability when implementing limits on FX over 2002-2012.

---

<sup>12</sup> This literature argues the commitment of the central bank to defending the peg makes agents believe themselves to be immune to variations in the exchange rate, thereby reducing their incentives to hedge their foreign currency liabilities.

**Table 10****FX FLEXIBILITY AND LIMITS ON FX POSITIONS (I)**

<i>Exchange rate regime</i>	<i>Total policies</i>	<i>Total quarters</i>	<i>Frequency of use</i>
Fixed	1	257	0.004
Intermediate	19	463	0.041
Floating	24	631	0.038

Sources: National authorities and author's calculations.

Note: The exchange rate systems result from central banks' answers to CEMLA's survey.

**Table 11****FX FLEXIBILITY AND LIMITS ON FX POSITIONS (II)**

<i>Exchange rate regime</i>	<i>Total policies</i>	<i>Total quarters</i>	<i>Frequency of use</i>
Fixed	1	190	0.005
Intermediate	15	435	0.034
Floating	22	581	0.038
FX controls	6	161	0.037

Sources: National authorities and author's calculations.

Note: The exchange rate systems result from central banks' answers to CEMLA's survey.

**Table 12****POLICY GOALS OVER TIME**

(Percentages)

<i>Period</i>	<i>Policy goals</i>		
	<i>Reducing currency mismatches</i>	<i>Achieving exchange rate stability</i>	<i>Others</i>
1991-2001	50	23	27
2002-2012	56	33	11

Sources: National authorities and author's calculations.

## CONCLUSION

Much has been said lately about the use of prudential regulation. It has been argued that such instruments as reserve requirements can be used to curb credit growth and preserve financial stability (Terrier et al., 2011). Yet, the literature has paid little attention on the relation between FX regulation and exchange rate regimes. In this paper, I have conducted a survey to collect data on policymakers' concerns and goals when implementing limit and reserve requirements involving FX positions. The survey provides information on a sufficiently long span of time that I can investigate the impact of transitioning toward flexible exchange rate regimes.

I have shown that limits and reserve requirements involving FX positions are primarily used to transition toward exchange rate flexibility. However, policymakers' concerns and hence implementation characteristics differ significantly across countries. Whereas Mexico has limited both short and long FX positions,

Brazil has been more interested in controlling the former type of positions. Even though policymakers' concerns are similar, they implement different policies to achieve the same result: Costa Rica has established limits on open positions, but Honduras has opted for limiting short and long positions separately.

Along these lines, policy goals differ across countries and over time. Most countries seem to be primarily interested in reducing mismatches and achieving exchange rate stability. However, other countries establish and change limits and reserve requirement to reduce financial dollarization and, therefore, improve the efficiency of conventional monetary policy and enhance financial stability. Interesting, there seems to have been a change in policymakers' goals after the late 1990s. Since countries transitioned toward exchange rate flexibility, policymakers are more strongly motivated by exchange rate stability.

## REFERENCES

- Canales-Kriljenko, J. I., and K. Habermeier (2004), *Structural Factors Affecting Exchange Rate Volatility: A Cross-section Study*, IMF Working Paper, No. WP/04/147.
- Frankel, R., and M. Repetti (2010), *A Concise History of Exchange Rate Regimes in Latin America*, Center for Economic Policy and Research, Washington D.C.
- Goldstein, M., and P. Turner (2004), *Controlling Currency Mismatches in Emerging Markets*, Peterson Institute Press: All Books.
- Hartmann, P. (1994), *Foreign Exchange Risk Regulation: Issues for Industrial and Developing Countries*, IMF Working Paper, No. WP/94/141.
- Ize, A., and E. L. Yeyati (2003), "Financial Dollarization," *Journal of International Economics*, Vol. 59, No. 2, pp. 323-347.
- Kraay, A. (1998), *In Search of the Macroeconomic Effects of Capital Account Liberalization*, The World Bank, October.
- Lee, J. K. (2012), "The Operation of Macro Prudential Policy Measures," mimeo., Bank of Korea, Seoul.
- Lim, C., F. Columba, A. Costa, P. Kongsamut, A. Otani, M. Saiyid, T. Wezel, and X. Wu (2011), *Macroprudential Policy: What Instruments and How to Use Them? Lessons from Country Experiences*, IMF Working Paper, No. WP/11/238.
- Magud, N. E., C. M. Reinhart and K.S. Rogoff (2011), *Capital Controls: Myth and Reality—A Portfolio Balance Approach*, NBER Working Paper, No. 16805.
- Mishkin, Frederic (1996), "Understanding Financial Crises: A Developing Country Perspective," in Michael Bruno and Boris Pleskovic (eds.), *Annual World Bank Conference on Development Economics 1996*, Washington, pp. 29-62.
- Obstfeld, Maurice (1998), "The Global Capital Market: Benefactor or Menace?," *Journal of Economic Perspectives*, Vol. 12, pp. 9-30.
- Park, Y. C. (2011), *The Role of Macroprudential Policy for Financial Stability in East Asia's Emerging Economies*, ADBI Working Paper Series, May.
- Ranciere, R., A. Tornell and A. Vamvakidis (2010), *A New Index of Currency Mismatch and Systemic Risk*, IMF Working Paper, No. WP/10/263.
- Rennhack, R., and M. Nozacki (2006), *Financial Dollarization in Latin America*, IMF Working Paper, No. WP/06/7.
- Rodríguez, M., and T. Wu (2013), *The Effect of Capital Controls and Prudential FX Measures on Options-implied Exchange Rate Stability*, Federal Reserve Bank of San Francisco Working Paper, No. 2013-20.
- Tamirisa, N. (1999), "Exchange and Capital Controls as Barriers to Trade," *IMF Staff Papers*, Vol. 46, No. 1, March, pp. 69-88.
- Terrier G., R. Valdés, C. E. Tovar, J. Chan-Lau, C. Fernández-Valdovinos, M. García-Escribano, C. Medeiros, Man-Keung Tang, M. Vera Martin, and C. Walker (2011), *Policy Instruments to Lean against the Wind in Latin America*, IMF Working Paper, No. WP/11/159.
- Tobal, Martín (2013), *Currency Mismatch: New Database and Indicators for Latin America and the Caribbean*, Working Papers series, CEMLA.
- Tobal, Martín (2014), "Currency Mismatch in the Banking Sector in Latin America and the Caribbean," Unpublished Manuscript.
- Zettelmeyer, J., P.M. Nagy and S. Jeffrey (2011). "Addressing Private Sector Currency Mismatches in Emerging Europe," in *Financial Market Regulation and Reforms in Emerging Markets*, Brookings Institution Press, Washington.

**CENTER FOR LATIN AMERICAN MONETARY STUDIES**  
Regional Association of Central Banks

[www.cemla.org](http://www.cemla.org)

