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Exchange Rate Regime: Which Institutions to Strengthen the Viability of Corner Solutions?

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Abstract: The purpose of this paper is to investigate the sustainability of bipolar exchange rate regimes, taking into account the role played by the quality of institutions. The study is based on data from 134 IMF member countries over the period 1984-2013. The empirical results show that, using the classification of Reinhart and Rogoff (2016), we have three types of conclusions depending on the type of financial crisis studied. Thus, for banking crises, the sustainability of floating exchange rate regimes is higher than that of fixed regimes. This sustainability increases for countries with fixed exchange rate regimes with government stability and for countries with floating regimes with an improved business climate, the fight against corruption and a relatively low presence of the military in politics. For exchange rate crises, we find a superiority of fixed regimes in terms of sustainability compared to flexible regimes. This is increasing in both exchange rate regimes, with less involvement of the military and religion in politics and the strengthening of the rule of law. Finally, with regard to debt crises, we have a superior sustainability of fixed regimes thanks to institutions such as: the quality of bureaucracy, the business climate, socio-economic conditions and government stability.

Keywords: exchange rate regime, crisis sustainability, institutional quality

JEL Classification: O24

1. Introduction

Debates on optimal exchange rate regime choices are old, but a series of new developments have brought them back on the agenda. The overall conclusion is that there is no consensus on the question of the superiority of one type of exchange rate regime over others that is sustainable over time and generalizable to all countries (Anas et al., 2018). From the earliest work, this question has been addressed in such a way that the optimal choice is conditioned sometimes by the internal structural characteristics of economies (Agnor, 2004; Sfia, 2007), and sometimes by major changes affecting the international economy (for intance: global financial integration and the crises of the 1990s).

This question of the choice of exchange rate regime remains relevant, particularly for countries seeking to consolidate and strengthen their economic impulses (Yacgi, 2008; Tsangarides et al. 2012). Several internal and external factors justify the attention paid to this issue: the potential economic performance achieved in developing countries during the 2000s, unexplored potential growth, the

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opening up of some countries to international financial flows, growing global imbalances and their implications and the need to strengthen regional trade (Gnimassoun, 2014).

However, the choice of exchange rate regime has so far been the main battleground between advocates of exchange rate stability and those who support the ability of monetary policy to manage real shocks (Combes et al., 2013). For example, until the early 1970s, a traditional view widely held by the Bretton-Woods system advocated fixed exchange rate regimes as the most viable exchange rate arrangement to promote macroeconomic performance, including low exchange rate volatility.

The collapse of the Bretton-Woods system and the emergence of several intermediate regimes have revived the problem of choosing the appropriate exchange rate regime, especially since the resurgence of crisis episodes, including the 1992 European Exchange Rate Mechanism crisis, the 1994-1995 Mexican Peso crisis, and the 1997 Asian crisis (Aliou, et al. 2005; Bailliu, et al. 2003; Esaka, 2010) and preventing financial crises in general has become one of the priorities of policy-makers in many countries (Nakatani, 2017).

While the crises of the 1990s and early 2000s brought to light a large body of literature on the vulnerability and sustainability of exchange rate regimes, the changing trends in regimes since then (towards both floating and fixed regimes) make the question of which exchange rate regimes are most sustainable and why relevant?

For instance, some scholars have suggested that, in a world increasingly integrated with capital markets, only two extreme exchange rate regimes (fixed and floating) should be adopted in order to avoid currency crises (Summer 2000). The conventional wisdom, as expressed by Fischer (2001), is the bipolar prescription: countries should adopt floating or fixed exchange rate regimes (currency union, dollarization, currency board) and avoid intermediate regimes, since they tend to be more vulnerable to crises.

Some empirical studies have highligted the relationship between exchange rate regimes and financial crises, using a variety of dataset and econometrics approaches. However, despite the relevance of these works, the results of these investigations are still mixed and unsatisfactory. First, there is a sustainability of fixed and intermediate exchange rate regimes (Ghosh et al. 2003), then a sustainability to crises of bipolar regimes (Bubula & Otker-Robe, 2003; Rogoff, 2004; Hussain, et al. 2005), and finally, a sustainability of intermediate regimes (Williamson, 2000). Combes et al. (2013), explain these mixed results by differences in the classification of exchange rate regimes. According to their studies, they find that using the IMF classification, the probability of financial crisis is high for fixed exchange rate regimes (50.2% for exchange rate crises, 57.5% for debt crises and 45.6% for banking crises). On the other hand, using Reinhard and Rogoff's classification, there is a higher vulnerability of intermediate regimes (54.7% for banking crises, 58.5% for currency crises and 50% for debt crises).

However, in a case study of Argentina, Cerro and Meloni (2003) argues that Argentina is a case study where economic performance was disappointing in the 20th century, not only because of its low growth but also because of the large number of crises recorded. Compared to the United States, both countries experienced 5 crises between 1862 and 1929. Futhermore, during the period 1930-2004, Argentina experienced 16 crises, compared to only 4 in the United States (Cerro et al. 2010). Thus,

crises in Argentina come and go with enormous costs not only in terms of GDP, but also in terms of loss of human capital stock, leading to a dramatic decline in welfare.

However, it is relevant to ask what makes exchange rate regimes so vulnerable to crises. Several studies have made extensive use of data from the economic sphere to try to justify the number of crises across countries. Moreover, there are many factors that could cause the fragility of an economy, including changes in economic, political, technological and ecological conditions, and lead to economic crises (Vergil et al. 2017). Yet the role of institutions has not been taken into account in his studies. As far as we know, very few studies have attempted to introduce the quality of institutions as factors that could explain the sustainability of different exchange rate regimes.

Thus, to show the importance of institutions, Araoz (2009) finds, in an index study of institutions in the Argentine case, during the period 1862-1929, (the number of crises was 5 during the period) the index of the quality of institutions has a mean value of 88.35, with a standard deviation of 6.45. The index of the quality of the institutions has a mean value of 88.35, with a standard deviation of 6.45. While in the period 1930-2004, (the number of crises was 16 during the period) it reaches a mean value of 66.00, i.e. a deterioration in institutional quality with a standard deviation of 15.16.

Yet the role of institutions in the sustainability of exchange rate regimes is supported by neo-institutionalist theory, and more specifically by the new institutional economics developed by Williamson (1975) and Coase (1937). This theory, in fact, is a heterogeneous body of work that brings together works that have in common the question of the role played by institutions (which can be defined as the set of rules and norms that frame and regulate behaviour) in coordination. Neo-institutionalist theory attempts to explain the phenomenon of homogeneity in organization and also the influence of the institutional environment on organization. For Rodrick (2008), the quality of institutions impacts the exchange rate regime through its misalignment. He finds that good-quality institutions reduce the tolerance of misalignment.

This thinking has led economists to turn to institutional variables to try to find a justification for differences between countries that are unexplained by economic data alone. Especially since economists are increasingly recognizing that differences in institutions have a major effect on long-term economic development (Knack & Keefer, 1995; Hall & Jones, 1999; Acemoglu, et al. 2002). For example, Fazio et al. (2017), demonstrate that countries with good institutions should be able to formulate policies to deal more effectively with adverse shocks compared to countries with low institutional quality. Hence, the research question is structured as follows: Is the sustainability of bipolar regimes influenced by the quality of institutions?

The main objective of this paper is therefore to investigate the role of institutional quality in the viability of bipolar regimes. To achieve this, the study postulates that the quality of institutions positively influences the performance of bipolar regimes in the face of different crises.

The rest of the paper is organized as follows. The next section briefly reviews the existing literature. Section 3 outlines the methodology. Section 4 provides the empirical results and discussions. And last section concludes the paper.

2. Related Literature

In a world increasingly integrated with capital markets, what kind of exchange rate regime is sustainable? And why?

To answer these questions, some researchers have suggested that in a world moving towards capital mobility, only two extreme exchange rate regimes (rigid fixed and pure floating) should be adopted to avoid exchange rate crises and are likely to be sustainable (Eichengreen, 1994; Obstfeld & Rogoff, 1995; Fisher, 2001). Conversely, intermediate regimes are likely to be vulnerable to speculative attacks. But this view has been challenged by Williamson (2000).

1. Exchange Rate Regimes and Crises Nexus

Previous contributions to the theoretical literature on currency crises were almost exclusively related to deteriorating economic fundamentals. As triggers of currency crises. However, few studies have attempted to investigate empirically whether a particular exchange rate regime is more prone to a currency crisis. Thus, some empirical studies have examined the link between exchange rate regimes and exchange rate crises using a variety of data and methods.

Ghosh et al. (2003), estimate the occurrence of exchange rate crises on alternative exchange rate regimes (intermediate fixed and floating), of IMF member countries between 1972-1999, using IMF data and de jure classification, they find that the probability of crises is very high for floating exchange rate regimes.

Similarly, Bubula and Otker-Robe (2003) examine the link between exchange rate regimes and exchange rate crises in IMF member countries over the period 1990-2001 period, estimating a logit model based on their de facto classification, and find that, as a whole, pegged (rigid and flexible) regimes are more prone to exchange rate crises than floating regimes, particularly for emerging and developed economies integrated into international capital markets.

Reinhart and Rogoff (2004) and Hussain et al. (2005) estimate only the probability of currency crises under different types of exchange rate regimes over the period 1970-2000. They use Reinhart and Rogoff's (RR) classification of managed float as having a high probability of currency crises for all countries. But for Angkinang et al (2009), using a logit model and a panel of 90 countries over the period 1990-2001, show that intermediaries such as adjustable and crawling pegs are relatively prone to crises, while managed floats have a low probability of crisis among all intermediate regimes. However, these authors turn to the LYS classification and find no significant results explaining the correlation between exchange rate regimes and exchange rate crises.

Haile and Pozo (2006) examine whether exchange rate regimes affect the incidence of exchange rate crises in 18 developed countries over the period 1974-1998, estimating a probit model based on the IMF de jure and LYS de facto classification. They find that, while the probability of exchange rate crises is significantly high for fixed regimes, when they use the IMF classification, there is no significant relationship, when they use the LYS (2005) classification.

Similarly, Esaka (2010), examines the relationship between de facto exchange rate regimes and the incidence of exchange rate crises in 84 countries between 1980 and 2001 using a probit model. The

author uses the official classification of RR (2004), and finds no evidence that intermediate regimes have a significantly higher probability of crises than "wedge" solutions (rigid and flexible regimes). In addition, he examines whether de facto exchange rate regimes affect the occurrence of exchange rate crises. He finds that rigid exchange rate regimes significantly reduce the probability of crises relative to flexible regimes.

Asici (2011) applied a multinomial logit framework to 163 developed and developing countries over the period 1990 to 2007. His regression results suggest that countries in crisis chose regimes that were incompatible with their individual characteristics.

Karimi and Voia (2014) higlight the effects of exchange rate regimes and capital account liberalization on the occurrence of foreign exchange crises in 21 countries over the period 1970-1998. The authors examine the probability of foreign exchange crises under the IMF classification and two de facto classifications (RR and LYS). While models based on the RR classification show that fixed exchange rate regimes are less susceptible to speculative attacks, models based on the LYS classification indicate that intermediate exchange rate regimes are less prone to crises.

Ghosh et al (2015) using the IMF de facto classification and a sample of 50 emerging economies over the period 1980-2011, show that macroeconomic and financial vulnerabilities are significantly higher in less flexible intermediate regimes, including fixed exchange rate regimes. Conversely, Combe et al. (2016) revisit the link between crises and exchange rate regimes in a panel of 90 developed and developing countries over the period 1980-2009. They use the IMF de facto classification and the de facto classification of Ilzetzki et al. (2010). Their results reject the fact that intermediate regimes are more vulnerable to crises than bipolar solutions.

2. Exchange Rate Regime, Exchange Rate Crises and Institutional Quality Nexus

There is growing evidence on the relationship between weak institutions, slower growth, increased macroeconomic volatility and the increased likelihood of crises. Weak institutions have been found to lead to less foreign direct investment (FDI), distort the composition of capital inflows, produce more volatility, are more vulnerable to shock management, further reduce output during crises, and have important implications for the design of monetary policy (Cerro and Lajya 2003).

According to North (1991), institutions are "designed to create order and reduce uncertainty. Institutions should define the rules by which a society is organized. Increased volatility is a sign of changing rules, which increases uncertainty, with the deleterious effect on the economy that makes it more vulnerable to crises.

However, the channels through which weak institutions increase the likelihood of crises are not yet clearly defined. In the theoretical and empirical literature, there are different microeconomic and macroeconomic channels.

Thus, Li and Inclan (2001) found that institutions affect exchange rate crises through two different mechanisms. The first argues that institutions tend to have an impact and correlation with the health of the national economy: bad institutions lead to bad macroeconomic fundamentals. Second, institutions are informative; in this way, institutions signal to economic agents the state of future fundamentals. In both cases, weak institutions contribute to increasing the likelihood of crises.

Acemoglu et al (2002) is one of the first empirical and theoretical papers linking institutions to volatility and crises. They established that in institutionally weak societies, power groups (elites and politicians) will find different ways to expropriate different segments of society. The intention of these power groups to appropriate rents generates macroeconomic volatility and, at the same time, makes these societies more vulnerable to crises. Weak institutions do not restrict income redistribution between different segments of society. They point out that weak institutions are responsible for higher volatility, which does not mean that macroeconomic policies do not matter for macroeconomic performance. Unsustainable policies will lead to different types of crises.

Based on stylized facts, countries that have implemented distorting macroeconomic policies (including high inflation, large fiscal deficits and misaligned exchange rates) have more or less increased macroeconomic volatility. They find that volatility is a symptom of poor institutional quality. Once they control institutions, macroeconomic policies seem to play only a minor role in volatility and crises. Acemoglu (2006) models the effect of inefficient institutions on economic performance, finding that poor institutions lead to poor aggregate economic performance.

Acemoglu and Robinson (2001) show how weak institutions can lead to political and economic instability. At the same time, poor institutions may make reform difficult. On the other hand, Johnson, Boone, Breach and Friedman (2000) suggest an important interaction between global shocks and institutions. They show that among emerging markets open to capital flows during the 1990s, those with weaker political and financial institutions experienced more severe crises.

Wei (2000) associates corruption with FDI. He argues that corruption affects the volume and composition of capital inflows into the host country. It reduces FDI and distorts the composition of its capital inflows from FDI and loans from foreign banks. On the other hand, relatively low FDI is associated with a greater propensity for future currency crises. It therefore provides a means by which corruption can increase the risk of crisis. In his paper, he finds evidence to support his hypothesis.

Shimpalee and Breuer (2005) assess the causes of currency crises by focusing on the role played by institutional factors controlling economic factors. They find that institutional and economic factors affect the probability of currency crises and that worse institutions are associated with larger output contractions during the crisis. The same authors in 2007 analysed the behaviour of several institutions before and after currency crises, finding significant differences in mean values between crisis events and stability.

Huang and Wei (2006) found that weak public institutions, including high levels of corruption, have important implications for the design of monetary policy. Weighted exchange rate or dollarization, often prescribed for countries facing credibility problems, is generally not appropriate for countries with poor institutions.

Another group of papers attempts to identify the effect of policy variables (as a subset of institutional variables) on currency crises. One of the first studies is by Rodrik (1997). He shows, on an empirical basis, that democracies perform better in several respects: they produce less uncertainty and volatility, are better able to manage shocks, and produce more desirable outcomes.

Mishra (1998), Mei (1999), and Bussière and Mulder (1999) are other empirical studies that focus primarily on policy variables. Mishra (1998) finds a close relationship between election dates and currency crises. Mei (1999) finds a statistical association between political election cycles and

financial crises. Bussière and Mulder (1999) focus on the effects of political instability on economic vulnerability and currency crises.

Steven (2002) demonstrates that, controlling for a commonly used set of macroeconomic variables; policy variables are statistically significant in explaining crises in emerging markets. These results show that political conditions contribute to macroeconomic fundamentals and influence the expectations of economic agents in equilibrium models of currency crises.

Yi Wu (2008), conducts a theoretical study of the impact of weak institutions on currency crises. To do so, he models institutional weakness as an inefficiency of the tax collection system. The result obtained shows that institutional weakness increases the probability of the existence of a self-fulfilling crisis equilibrium and leads to greater currency devaluation when crises occur.

Honig (2009) conducts a study on the susceptibility of emerging markets to financial crises and their devastating consequences. The results show that the exchange rate regime is not an important determinant of unofficial dollarization. And that dollarization is a lack of confidence in the government's ability (quality of government) to adopt policies that promote long-term monetary stability. It demonstrates that improvements in government institutions can lead to a reduction in the degree of dollarization.

3. Research Methodology

Here, we need to specify our basic model, and then define the model variables and the estimation procedure.

1. Model specification and dataset

1.1. The basic models

Our study model is based on recent work by Combes et al (2015) and Ghosh et al (2014).

A. The model of Combes et al (2015)

This model is based on the extensive and controversial literature on the relationship between exchange rate regimes and crises. Their study sheds light on the crisis predispositions of intermediate regimes. Using a panel of developed and developing countries over the period 1980-2009. They carry out a systematic analysis of the vulnerability of exchange rate regimes to different types of crises (banking, foreign exchange and debt) taking into account the variables for each type of crisis.

To estimate the extent to which intermediate regimes may be vulnerable to the onset of crises, they adopt the following binary logit model:

$$\boldsymbol{CRISISit} = \boldsymbol{\alpha i} + \mu\boldsymbol{t} + \boldsymbol{\beta ERRit-1} + \boldsymbol{\gamma Xit-1} + \varepsilon\boldsymbol{it}$$

Where $\boldsymbol{CRISISit}$ is a dummy variable, coded **1** if country **i** is experiencing a crisis at time **t** and **0** otherwise. The variable of interest is the exchange rate regime, since they seek to oppose intermediate regimes at the two extremes, $\boldsymbol{ERRit}$ is defined as a dummy variable taking the value **1** if country **i** is under fixed or floating regime and **0** otherwise. And, $\boldsymbol{\alpha i}$ and $\mu\boldsymbol{t}$ represent country and time fixed

effects respectively. Xit Is a vector of control variables and εit is an error term. To alleviate the endogeneity problem they use lagged variables, including exchange rate regimes.

B. The model of Ghosh et al (2014)

In their study, Ghosh et al. (2014) first estimated a model, which examines the relationship between the exchange rate regime and various financial and macroeconomic vulnerabilities. Their first model is as follows:

$$Vit = Xit.\beta 1 + Zit.\gamma 1 + \in it \ (1)$$

Where Vit corresponds to financial vulnerability (rapid credit expansion, excessive external borrowing, foreign currency lending) or macroeconomic vulnerability (fiscal and current account deficits, overvaluation of the real exchange rate) in country **i in** period **t** ; Xit is a vector of binary variables indicating the exchange rate regime in place ; Zit represents the control variables identified in the literature; and $\in it$ the error term.

Subsequently, after finding that the less flexible regimes are the vulnerable, the authors investigate whether this vulnerability still translates into a real crisis. To conduct this study, they estimate a probit model. To see if all less flexible regimes are also subject to different types of crises. Their second model is as follows:

$$\Pr(Crisis\ it = 1) = F(Xit.\beta 2 + Zit.\gamma 2) \ (2)$$

Where $Crisis\ it$ is an indicator variable of the crisis situation (banking, foreign exchange and debt) in country i at period t ; Xit indicates the exchange rate regime in place before the start of the crisis; Zit represents the relevant control variables.

C. Adaptation of the study model

To estimate the role of institutional quality in the resilience of exchange rate regimes to crises, this study uses a logit model over the period 1984-2014 period. The paper uses an initial model as follows:

$$CRISISit = \alpha i + \beta ERRit - 1 + \Upsilon Xit - 1 + \varepsilon it \ (i)$$

Where $CRISISit$ is a dummy variable, coded **1** if country **i** is experiencing a crisis at time **t** and **0** otherwise. The variable of interest is the exchange rate regime, since they seek to oppose intermediate regimes at the two extremes, $ERRit$ is defined as a dummy variable taking the value **1** if country **i** is under fixed or floating regime and **0** otherwise. And, αi represent the fixed country. Xit Is a vector of control variables and εit is an error term.

Subsequently, since the objective is to assess the role of institutions, the study will introduce the interactive term exchange rate regime and institutional quality into the previous model. Thus, the final model is as follows:

$$CRISISit = \alpha i + \mu t + \beta ERRit - 1 + \Upsilon Xit - 1 + \eta.(ERR * IQ)it - 1 + \varepsilon it \ (ii)$$

Where $ERR * IQ$ represents the interactive term between exchange rate regime and institutional quality; with IQ as the quality of institutions. It should be noted that since there are three types of crises (banking crises, foreign exchange crises, debt crises), the final model will be divided into three equations each representing one crisis. Thus, we have the following models:

$$BANKCit = \alpha i + \mu t + \beta ERRit - 1 + \Upsilon Xit - 1 + \eta.(ERR * IQ)it - 1 + \varepsilon it \quad (M1)$$

$$CURRCit = \alpha i + \mu t + \beta ERRit - 1 + \Upsilon Xit - 1 + \eta.(ERR * IQ)it - 1 + \varepsilon it \quad (M2)$$

$$DEBTCit = \alpha i + \mu t + \beta ERRit - 1 + \Upsilon Xit - 1 + \eta.(ERR * IQ)it - 1 + \varepsilon it \quad (M3)$$

1.2. Nature and data sources

Our study is carried out on a set of panel data over the period 1984-2014. To capture crisis episodes, this study uses the crisis database developed by Reinhart and Rogoff (2011), combined with that of Leaven and Valencia (2012). For the exchange rate regime, the study will use the IMF de jure classification from the annual reports "exchange rate arrangements and exchange rate restrictions", and the de facto classification from Reinhart and Rogoff (2016). For institution quality variables, the study will use the same basis as the first part, which is derived from the International Country Risk Group (ICRG) database. For the control variables, most of the macroeconomic and financial variables used in this analysis are taken from the World Bank (WDI) database and the IMF's World Economic Outlook databases, with a few series taken from the IMF's International Financial Statistics (IFS).

A. Presentation of variables

- ***The dependent and interest variable***

The dependent variable is the **crisis**. To capture crisis episodes, the study uses the databases of Reinhart and Rogoff (2011) and Leaven and Valencia (2012). According to these data sets, crisis episodes are defined as follows.

First, the **banking crisis** occurs in two cases, when banking operations lead to the closure, merger, or takeover by the public sector of one or more financial institutions, and when government assistance provided by a major financial institution marks the beginning of a series of similar outcomes for other financial institutions.

Second, a **foreign exchange crisis** refers to a situation where the depreciation (devaluation) of the local currency of a given country against the anchor currency (e.g. Dollar, Euro) is equal to or greater than 15%.

Finally, we distinguish between the **external and internal debt crisis**. With regard to the former, a sovereign default is defined as the failure to make principal or interest payments on the due date (or during the grace period) and episodes where the debt rescheduling is ultimately less favorable than the original obligation. With respect to the definition of a domestic debt crisis, Reinhart and Rogoff (2011) use much the same criteria, except that the creditors are domestic; in addition, domestic debt crises have resulted in the freezing of bank deposits and/or the forced conversion of those deposits from the US dollar to the local currency. Thus, this study identifies three types of crises: **banking, foreign exchange, and debt crises.**

The variable of interest, which is the exchange rate regime, is defined as: since this study is part of the bipolar theory (which advocates the disappearance of intermediate regimes in favor of "wedge" solutions: rigid regime and pure flexibility regime), the exchange rate regime in this case is a dummy variable that takes two values: The variable of interest in this study (***ERRit*),** corresponds to two exchange rate regimes, which are defined as follows:

{Fix equal to 1 if the country adopts an exchange rate regime and 0 if not

{Floating 1 if the country adopts a flexible exchange rate regime and 0 if not.

The interaction between exchange rate regimes is institutional quality $(ERR * IQ)it$ can also be considered as a variable of interest. Thus, the variables of institutional quality are the political institutions quality variables in the political risk components (PRC) database. In summary, the table 0 below provides the set of variables in the model.

Table 1. Name and Description of Variables

Variables		Description of variables	Data source
Dependent variable	CRISIS (bank, currency and debt)	equal to 1 if he has a crisis and 0 if he doesn't.	Reinart and Rogoff (2016)
Variables of interest	Exchange rate regime	equal to 1 if the regime is fixed and 0 otherwise	Exchange rate regime and exchange rate arrangement
		equal to 1 if the engine is floating and 0 otherwise.	
	RC*QI	interaction between exchange rate regime and the quality of institutions	Author calculation
Control variables	lrgdppc	logarithm of real GDP per capita in us dollars	WDI
	vlrgdp	standard deviation of GDP growth	Author calculation
	CPI	the consumer price index	WDI
	CPTEC	current account	IFS
	Dctdt	current debt to total debt	WDI
	Dtgni	total debt as a percentage of domestic income	WDI
	reserdebt	reserve in dollar on debt	WDI
	reser	dollar foreign exchange reserve	IFS
	Credps	private sector lending	WDI
	m2reser	money supply-to-reserve ratio	Author calculation
	dtsex	ratio of total debt to exports of goods and services	Author calculation
	reserimpo	ratio of reserves to imports of goods and services	Author calculation
	Open	trade openness: sum of imports and exports over GDP	WDI
	m2pib	money supply as a percentage of GDP	WDI
	IDE	foreign direct investment	WDI

Source: autor

4. Empirical Results and Discussions

In this sction, we present empirical results of the three models, each of which represents a type of crisis. We will therefore firstly present the results on banking crises (table 1), secondly foreign exchange crises (table 2), and thirdly debt crises (table 3).

Table 2. Model 1 Regression: by Reinhart and Rogoff's Exchange Rate Regime Classification

LOGISTIC REGRESSION									
VARIABLE DEPENDANTE: BANKC									
Variables	**Coef.**	**Std. Err**	**z**	**P>|z|**	**Variables**	**Coef.**	**Std. Err**	**z**	**P>|z|**
fixrr	**1.828413**	.5500313	3.32	**0.001***	flotrr	1.448408	.5647656	2.56	**0.010***
lrgdppc	.0039909	.0044172	0.90	0.366	lrgdppc	.004625	.0082885	0.56	0.577
vlrgdp	**-.0059272**	.0021192	-2.80	**0.005***	vlrgdp	-.0071605	.0052074	-1.38	0.169
cptec	**-.0007922**	.0003529	-2.24	**0.025****	cptec	-.0008554	.0004225	-2.02	**0.043****
m2pib	**-.0000578**	.0000286	-2.02	**0.043****	m2pib	-.000061	.0000288	-2.12	**0.034****
ouvc	.0000489	.0000664	0.74	0.462	ouvc	.0000436	.0000851	0.51	0.608
dctdt	**-.0052817**	.0016576	-3.19	**0.001***	dctdt	-.0046549	.0017524	-2.66	**0.008***
dtgni	-2.33e-06	3.65e-06	-0.64	0.524	dtgni	-3.18e-06	3.40e-06	-0.94	0.349
cpi	-.0000192	.0000208	-0.92	0.357	cpi	-.0000127	.0000121	-1.05	0.292
reserdebt	**-.000093**	.0000331	-2.81	**0.005***	reserdebt	-.0001019	.0000313	-3.26	**0.001***
ide	.0000271	.0000655	0.41	0.679	ide	-.0000919	.0001369	-0.67	0.502
lreser	-.0005055	.0004806	-1.05	0.293	lreser	-.0004725	.0005045	-0.94	0.349
m2res	**.0007502**	.0003866	1.94	**0.052*****	m2res	.0003622	.0003299	1.10	0.272
credps	.001327	.0017445	0.76	0.447	credps	.0020049	.0016716	1.20	0.230
reserimp	**.0047686**	.0010967	4.35	**0.000***	dtsex	**.0023148**	.000786	2.95	**0.003***
dtsex	**.002696**	.0011447	2.36	**0.019****	reserimp	**.0044234**	.0009247	4.78	**0.000***
fixrrbq	-.0646183	.1607072	-0.40	0.688	flotrrgs	.0488994	.0613623	0.80	0.426
fixrrda	**.2547928**	.0927245	2.75	**0.006***	flotrrsc	-.0233475	.1005107	-0.23	0.816
fixrret	-.1079758	.0967046	-1.12	0.264	flotrrip	**-.2593063**	.0869361	-2.98	**0.003***
fixrrlo	.213492	.141385	1.51	0.131	flotrric	**-.226045**	.0821752	-2.75	**0.006***
fixrrrp	-.1065406	.0983335	-1.08	0.279	flotrrec	**.1135942**	.0604902	1.88	**0.060*****
fixrrmp	-.0094586	.0890989	-0.11	0.915	flotrrcorp	**-.4368002**	.1300541	-3.36	**0.001***
fixrrcorp	**.2828304**	.1028451	2.75	**0.006***	flotrrmp	**-.342931**	.1061889	-3.23	**0.001***
fixrrec	-.0569323	.0617077	-0.92	0.356	flotrrrp	.0874031	.1014351	0.86	0.389
fixrric	-.1066686	.0741569	-1.44	0.150	flotrrlo	.1164851	.1581567	0.74	0.461
fixrrip	-.1002996	.0630334	-1.59	0.112	flotrret	**.4353726**	.1099313	3.96	**0.000***
fixrrsc	.062608	.0670182	0.93	0.350	flotrrda	.0095325	.1152968	0.08	0.934
fixrrgs	**-.2549922**	.0652766	-3.91	**0.000***	flotrrbq	**.9189215**	.1703683	5.39	**0.000***
_cons	**-1.790206**	.0747019	-23.96	**0.000***	_cons	**-2.115474**	.0850808	-24.86	**0.000***
Number of obs = **3874**					**Number of obs** = **3789**				
Wald chi2(28) = **177.38**					**LR chi2(28)** = **283.40**				
Prob > chi2 = **0.0000***					**Prob > chi2** = **0.0000***				
Pseudo R2 = **0.0613**					**Pseudo R2** = **0.0967**				
Log pseudolikelihood = **-1393.1879**					**Log likelihood** = **-1323.1374**				

significant 1%; ** significant 5%; * significant 10%*
Source: autor

Table 2. Marginal effects model 1 classification by Reinhart and Rogoff

EFFETS MARGINAUX APRES LA REGRESSION LOGISTIC

Variable dépendante: BANKC

variables	dy/dx	Std. Err	P>|z|	X	variables	dy/dx	Std. Err	P>|z|	X
fixrr*	.1971763	.07827	0.012	.330666	flotrr*	.18175	.09282	0.050	.135656
lrgdppc	.0003207	.00036	0.370	2.68887	lrgdppc	.0003786	.00038	0.317	2.70429
vlrgdp	-.0004763	.00017	0.006	1.55881	vlrgdp	-.0005861	.0002	0.003	1.58182
cptec	-.0000637	.00003	0.026	17.145	cptec	-.00007	.00003	0.017	17.2686
m2pib	-4.64e-06	.00000	0.047	-32.8592	m2pib	-4.99e-06	.00000	0.030	-33.6195
ouvc	3.93e-06	.00001	0.462	44.3061	ouvc	3.57e-06	.00001	0.553	45.1917
dctdt	-.0004244	.00013	0.001	42.8781	dctdt	-.000381	.00012	0.002	43.637
dtgni	-1.87e-07	.00000	0.525	1036.76	dtgni	-2.60e-07	.00000	0.390	1059.66
cpi	-1.54e-06	.00000	0.339	2800.31	cpi	-1.04e-06	.00000	0.405	2860.86
reserd~t	-7.48e-06	.00000	0.001	2409.61	reserd~t	-8.34e-06	.00000	0.001	2454.04
ide	2.18e-06	.00001	0.679	61.3826	ide	-7.52e-06	.00001	0.184	61.6563
lreser	-.0000406	.00004	0.295	18.7952	lreser	-.0000387	.00003	0.129	18.9055
m2res	.0000603	.00003	0.052	30.1334	m2res	.0000296	.00003	0.247	30.6872
credps	.0001066	.00014	0.448	13.6216	credps	.0001641	.00015	0.265	13.8681
reserimp	.0003832	.00008	0.000	25.6441	dtsex	.0001895	.00007	0.008	10.1266
dtsex	.0002166	.00009	0.014	9.9078	reserimp	.0003621	.00008	0.000	26.204
fixrrbq	-.0051926	.0129	0.687	.751689	flotrrgs	.0040027	.00482	0.406	.850155
fixrrda	.0204747	.00751	0.006	1.28038	flotrrsc	-.0019111	.00802	0.812	.679812
fixrret	-.0086767	.00778	0.265	1.36675	flotrrip	-.0212256	.00769	0.006	.774304
fixrrlo	.0171558	.01138	0.132	1.29852	flotrric	-.018503	.0063	0.003	1.05399
fixrrrp	-.0085614	.00789	0.278	1.53716	flotrrec	.0092983	.00474	0.050	1.19594
fixrrmp	-.0007601	.00716	0.915	1.31506	flotrcorp	-.0357544	.00983	0.000	.411036
fixrrcorp	.0227277	.00832	0.006	.994977	flotrrmp	-.0280707	.00832	0.001	.454891
fixrrec	-.004575	.00497	0.357	3.29932	flotrrrp	.0071544	.00739	0.333	.632599
fixrric	-.0085717	.006	0.153	3.0689	flotrrlo	.0095349	.01168	0.414	.439881
fixrrip	-.0080599	.0051	0.114	2.6822	flotrret	.0356376	.00891	0.000	.484187
fixrrsc	.0050311	.00539	0.350	2.02015	flotrrda	.0007803	.00886	0.930	.462619
fixrrgs	-.0204907	.00537	0.000	2.63914	flotrrbq	.0752187	.01594	0.000	.255388
y = Pr(bankc) (predict)					**y = Pr(bankc) (predict)**				
= .08812397					**= .08994559**				

Source: autor

The tables above present the results of the estimation of model 1 (with banking crises as dependent variables), this time using the classification of Reinhart and Rogoff. The equations (**fixrr and florr**) of our model 1 are all significant (**Prob > chi2 = 0.000**). Thus, the exogenous variables selected explain the probability of a banking crisis in both types of exchange rate regimes. Several variables in our equations are significant. The pseudo R2 (**R2 fixrr = 0.0613 and R2 florr = 0.0967**) indicate the percentage explanation of the model.

All things being equal, the estimation results indicate that the exchange rate regime variables (Fixrr and Flotrr) are positive and statistically significant. Suggesting that, contrary to the IMF classification, the exchange rate regimes (fixrr and florr) using the de facto classification, have a direct impact on the probability of a banking crisis. Thus, the coefficients of the variables are **1.82** and **1.44** respectively for the fixed and floating exchange rate regimes. This means that bipolar or extreme regimes are also vulnerable to banking crises. But, since the coefficient for the floating exchange rate regime (florr) is smaller, this means that, among the two extremes, resilience to banking crises is stronger in floating

exchange rate regimes. Indeed, choosing a floating exchange rate regime increases the probability of a banking crisis by 1.44 points, compared with 1.82 for fixed regimes.

Examination of the variables (from the fixrr equation) of controls indicate, on the one hand, a negative and significant link between the variables: growth volatility, the current account, the money supply, short-term debt, the ratio of foreign exchange reserves to total debt and the dependent variable banking crisis. All these variables respectively reduce the probability of banking crisis by **(-0.0059), (-0.00079), (-0.000057), (-0.0052), (-0.000093)** points. On the other hand, a positive and significant link between the variables: the money supply to reserve ratio, the reserve to import ratio, the debt to export ratio and banking crises. This means that these variables increase the probability of a banking crisis by **(0.00075), (0.0047), (0.0026)** point respectively.

Examination of the interactions between fixed exchange rate regimes and the quality of institutions indicate that only three interactions are significant. Thus, we have an interaction between a fixed exchange rate regime and government stability that is negative and statistically significant. This suggests that, although fixed exchange rate regimes are vulnerable to banking crises, **government stability** leads to an increase in resilience to banking crises of **0.25** percentage points. We also have two positive and statistically significant interactions between fixed exchange rate regimes and democratic engagement and between fixed exchange rate regimes and corruption. This suggests that, for countries with fixed exchange rate regimes, countries with high levels of corruption and lack of democratic engagement will be more exposed to banking crises because these two institutions increase the likelihood of banking crises.

On the other hand, an examination of the control variables of the floating exchange rate regime indicates: a negative and statistically significant relationship between the variables: the current account, the money supply, short-term debt, the ratio of foreign exchange reserves to total debt and the dependent variable banking crisis. A positive and statistically significant relationship between the variables: the debt-to-export ratio and the reserve-to-import ratio.

Examination of the interactions between a floating exchange rate regime and variables such as: business climate, **internal conflicts, corruption and military involvement in politics** are all negative and statistically significant. This suggests that, for countries with a floating exchange rate regime, resilience to banking crises increases with the institutions cited by (**0.25; 0.22; 0.43; 0.34**) percentage points respectively. However, the interactions between floating exchange rate regimes and institutions: **external conflicts, ethnic tensions and bureaucracy** are positive and statistically significant. This means that, for countries with a floating exchange rate regime, resilience to banking crises decreases respectively with external conflicts (**by 0.11 point)**, ethnic tensions (by 0.**43 point)** and the quality of bureaucracy (by 0.**91 point**). The marginal effects in table 2 reflect a percentage prediction of success of **8.81%** for fixed exchange rate regimes and **8.99%** for floating exchange rate regimes.

Thus, using Reinhart and Rogoff's de facto classification, our sub-assumption that bipolar regimes are viable is rejected because both regimes are vulnerable to banking crises. But, in between the two extremes, floating exchange rate regimes are more viable to banking crises than fixed regimes. This result is confirmed by Haile and Pozo (2006) who find that rigid regimes are more vulnerable.

However, our hypothesis 2.1 (resilience **to banking crises in different exchange rate regimes is positively influenced by institutional quality)** is verified by the fact that, resilience to banking crises

is positively influenced in fixed regimes by the quality of the institution: **government stability**. And for flexible exchange rate regimes, the quality of the institutions: **business climate, internal conflicts, corruption and military involvement in politics**. However, the deterioration in the quality of certain institutions increases the likelihood of a banking crisis. These are institutions: **respect for democratic commitments and corruption for** fixed exchange rate regimes; **external conflicts, ethnic tensions, and bureaucracy for floating exchange rate regimes**.

Table 3. Model 2 Estimation and Marginal Effects by RR Classification

VARIABLE DEPENDANTE : CURRC									
Variables	**LOGISTIC REGRESSION**		**EFFET MARGINAL**		**Variables**	**LOGISTIC REGRESSION**		**EFFET MARGINAL**	
	Coef.	**P>|z|**	**dy/dx**	**P>|z|**		**Coef.**	**P>|z|**	**dy/dx**	**P>|z|**
fixrr	**-3.293962**	**0.001***	-.0392475	0.353	flotrr	**1.130205**	**0.022****	.0499908	0.213
lrgdppc	.0105732	0.266	.0001472	0.466	lrgdppc	**.0115247**	**0.092*****	.0003348	0.215
vlrgdp	**-.0082495**	**0.000***	-.0001148	0.302	vlrgdp	**-.0081848**	**0.000***	-.0002378	0.083
cptec	**-.0007502**	**0.007***	-.0000104	0.349	cptec	**-.0005958**	**0.006***	-.0000173	0.120
m2pib	**-.0000462**	**0.005***	-6.42e-07	0.347	m2pib	**-.0000299**	**0.041****	-8.69e-07	0.163
ouvc	-.000139	0.284	-1.93e-06	0.463	ouvc	-.0000831	0.384	-2.41e-06	0.427
dctdt	.0001025	0.156	1.43e-06	0.414	dctdt	**.0001774**	**0.008***	5.15e-06	0.121
dtgni	-.0002455	0.151	-3.42e-06	0.371	dtgni	**-.0002014**	**0.083*****	-5.85e-06	0.153
cpi	-.0004846	0.199	-6.75e-06	0.001	cpi	-.0002459	0.213	-7.14e-06	0.004
reserdebt	-.000072	0.210	-1.00e-06	0.413	reserdebt	-.000051	0.282	-1.48e-06	0.318
ide	**-.0035901**	**0.023****	-.00005	0.331	ide	**-.0032389**	**0.059*****	-.0000941	0.141
lreser	-.0012678	0.142	-.0000176	0.389	lreser	-.0009702	0.157	-.0000282	0.239
m2res	-.000215	0.565	-2.99e-06	0.623	m2res	-.000539	0.151	-.0000157	0.261
credps	.0008334	0.734	.0000116	0.742	credps	**.0052838**	**0.020****	.0001535	0.122
reserimp	**.0036937**	**0.005***	.0000514	0.330	dtsex	**.0068075**	**0.044****	.0001978	0.000
dtsex	**.009916**	**0.069*****	.000138	0.064	reserimp	**.0024939**	**0.071*****	.0000725	0.161
fixrrbq	.3947705	0.186	.0054952	0.431	flotrrgs	.0223395	0.703	.000649	0.707
fixrrda	.2462127	0.178	.0034273	0.374	flotrrsc	-.107107	0.235	-.0031118	0.315
fixrret	**.2856334**	**0.075*****	.003976	0.391	flotrrip	-.0450098	0.569	-.0013077	0.589
fixrrlo	**-.4102474**	**0.042****	-.0057106	0.343	flotrric	-.0923439	0.174	-.0026829	0.265
fixrrrp	.143916	0.436	.0020033	0.558	flotrrec	**.2136271**	**0.000***	.0062066	0.089
fixrrmp	**-.3868986**	**0.005***	-.0053856	0.361	flotrrcorp	.0325987	0.773	.0009471	0.776
fixrrcorp	**.356115**	**0.026****	.0049571	0.366	flotrrmp	**-.1430728**	**0.092*****	-.0041567	0.210
fixrrec	**.2024502**	**0.051*****	.0028181	0.387	flotrrrp	**-.1918058**	**0.033****	-.0055726	0.152
fixrric	-.1599097	0.127	-.0022259	0.391	flotrrlo	**-.4313346**	**0.002***	-.0125317	0.110
fixrrip	.0516942	0.648	.0007196	0.678	flotrret	**.5195005**	**0.000***	.0150932	0.079
fixrrsc	.0147627	0.901	.0002055	0.901	flotrrda	**.2853513**	**0.010***	.0082904	0.126
fixrrgs	-.1509382	0.202	-.002101	0.438	flotrrbq	.0796704	0.572	.0023147	0.590
_cons	**-1.811721**	**0.000***			_cons	**-2.685563**	**0.000***		
Number of obs = 3874			y = Pr(currc) (predict)		Number of obs = 3789			y = Pr(currc) (predict)	
Wald chi2(28) = 157.65			= .01411924		Wald chi2(28) = 442.51			= .02995037	
Prob > chi2 = 0.0000					Prob > chi2 = 0.0000				
Pseudo R2 = 0.0963					Pseudo R2 = 0.1717				
Log pseudolikelihood = -1156.9912					Log pseudolikelihood = -1042.0873				

significant 1%; ** significant 5%; * significant 10%*
Source: ourselves from Stata 12

The tables above present the results of **model 2** estimation (with currency crises as a dependent variable), this time using Reinhart and Rogoff's classification. The equations (**fixrr and florr**) of our model 2 are all significant (**Prob > chi2 = 0.000**). Thus, the exogenous variables selected explain the probability of a currency crisis in both types of exchange rate regimes. Several variables in our

equations are significant. The pseudo R2 (**R2 fixrr = 0.0963 and R2 florr = 0.1717**) indicate the percentage explanation of the model.

All things being equal, the estimation results indicate that the exchange rate regime variables are significant. However, the coefficients of the exchange rate regimes (**fixrr = -3.29** and **florr = 1.13**) are of different sign. This means that there is a direct link between exchange rate regimes and exchange rate crises. The sign of the coefficients indicates a decrease in the probability of an exchange rate crisis for countries with fixed regimes and an increase for countries with flexible regimes. This suggests that fixed exchange rate regimes are more resilient to exchange rate crises than flexible regimes.

Examination of the control variables in the fixrr equation indicates that, the variables: growth volatility, money supply, current account, foreign investment. are negative and statistically significant. They lead to a decrease in the probability of a fixed exchange rate crisis of **(-0.0082), (-0.0000046), (-0.00075), (-0.0035)** points respectively. On the other hand, the reserve-to-import ratio and the debt-to-export ratio are positive and significant, which means that these variables increase the probability of a foreign exchange crisis in a fixed regime.

Examining the interactions between fixed exchange rate regimes and the quality of institutions such as: **the quality of law and order, and the involvement of the military in politics** are negative and statistically significant. This suggests that for countries with fixed exchange rate regimes, the institutions cited decrease the probability of a currency crisis. Thus, the resilience of fixed exchange rate regimes to exchange rate crises increases by **0.41 and 0.38** points respectively depending on the two institutions. On the other hand, the probability of exchange rate crisis increases with the institutions: **ethnic tensions, corruption and external conflicts**. This means that the resilience of fixed exchange rate regimes to exchange rate crises decreases with the institutions mentioned. The control variables of the florr equation indicate: a negative and statistically significant relationship of the variables: growth volatility, current account, money supply, total debt, foreign investment. This means a decrease in the probability of an exchange rate crisis. But, the variables: credits to the private sector, the debt-to-export ratio and the reserve-to-import ratio are all positive and statistically significant.

The interactions between a floating exchange rate regime and the quality of institutions: **the involvement of the military and religion in politics and the quality of law and order** are all negative and significant. This means that, for the countries with flexible exchange rate regimes in our sample, the institutions cited increase resilience to exchange rate crises. On the other hand, resilience decreases with institutions: **external conflicts, ethnic tensions, and respect for democratic commitments,** because the coefficients of these interactions are positive and statistically significant.

Thus, using Reinhart and Rogoff's classification of exchange rate regimes, we find that the bipolar hypothesis does not hold true, since fixed exchange rate regimes decrease the probability of a crisis while floating exchange rate regimes increase it. Thus, the resilience of fixed regimes to exchange rate crises is greater than that of floating regimes. However, hypothesis 2.2 (**the sustainability to exchange rate crises of different exchange rate regimes is positively influenced by institutional quality)** is also verified. For, we found that resilience to exchange rate crises is positively influenced: in fixed regimes by institutions: the **involvement of the military in politics and the quality of law**

and order; in flexible regimes by institutions: **the involvement of the military and religion in politics and the quality of law and order.**

Table 4. Estimation and Marginal Effect Model 3 According to RR Classification

VARIABLE DEPENDANTE: DEBTC									
Variables	**LOGISTIC REGRESSION**		**EFFET MARGINAL**		**Variables**	**LOGISTIC REGRESSION**		**EFFET MARGINAL**	
	Coef.	**P>|z|**	**dy/dx**	**P>|z|**		**Coef.**	**P>|z|**	**dy/dx**	**P>|z|**
fixrr	.5826536	0.543	.0000622	0.628	flotrr	**1.546645**	**0.005***	.0008339	0.450
lrgdppc	.0090487	0.244	8.62e-07	0.425	lrgdppc	.0085276	0.166	2.37e-06	0.468
vlrgdp	-.0060691	0.231	-5.78e-07	0.409	vlrgdp	**-.0047877**	**0.005***	-1.33e-06	0.395
cptec	-.0008428	0.112	-8.03e-08	0.362	cptec	**-.0005115**	**0.017****	-1.42e-07	0.410
m2pib	**-.0000555**	**0.047****	-5.29e-09	0.334	m2pib	**-.0000257**	**0.094*****	-7.14e-09	0.442
ouvc	**-.0002702**	**0.017****	-2.58e-08	0.319	ouvc	**-.0002694**	**0.027****	-7.50e-08	0.415
dctdt	.0000689	0.555	6.56e-09	0.603	dctdt	.0001152	0.327	3.21e-08	0.523
dtgni	-.0000978	0.151	-9.32e-09	0.356	dtgni	-.0001344	0.121	-3.74e-08	0.419
cpi	**-.001476**	**0.000***	-1.41e-07	0.171	cpi	**-.0009832**	**0.014****	-2.74e-07	0.205
reserdebt	**-.0004883**	**0.000***	-4.65e-08	0.258	reserdebt	**-.0005015**	**0.000***	-1.40e-07	0.377
ide	**-.0287183**	**0.000***	-2.74e-06	0.251	ide	**-.0359052**	**0.000***	-1.00e-05	0.374
lreser	**-.0084973**	**0.007***	-8.10e-07	0.302	lreser	**-.0105021**	**0.003***	-2.92e-06	0.407
m2res	-.0000462	0.974	-4.41e-09	0.974	m2res	-.0000755	0.946	-2.10e-08	0.947
credps	**.0061742**	**0.011****	5.88e-07	0.293	credps	**.0098273**	**0.000***	2.74e-06	0.381
reserimp	**.0058386**	**0.000***	5.56e-07	0.271	dtsex	**.0151599**	**0.002***	4.22e-06	0.255
dtsex	**.0213285**	**0.000***	2.03e-06	0.192	reserimp	**.0040543**	**0.001***	1.13e-06	0.394
fixrrbq	**-.6978194**	**0.000***	-.0000665	0.288	flotrrgs	.1043656	0.139	.0000291	0.446
fixrrda	.0879614	0.517	8.38e-06	0.573	flotrrsc	-.1523294	0.130	-.0000424	0.457
fixrret	.2051931	0.131	.0000196	0.378	flotrrip	**-.2796169**	**0.006***	-.0000779	0.408
fixrrlo	-.2583795	0.103	-.0000246	0.362	flotrric	-.1223854	0.149	-.0000341	0.457
fixrrrp	**.4164894**	**0.003***	.0000397	0.300	flotrrec	**.1612317**	**0.017****	.0000449	0.419
fixrrmp	-.0803465	0.500	-7.66e-06	0.563	flotrrcorp	.2194911	0.117	.0000611	0.456
fixrrcorp	**.3097633**	**0.038****	.0000295	0.337	flotrrmp	-.1162687	0.238	-.0000324	0.489
fixrrec	.1552649	0.107	.0000148	0.361	flotrrrp	**-.2434951**	**0.023****	-.0000678	0.421
fixrric	.1031079	0.262	9.83e-06	0.424	flotrrlo	**-.8034178**	**0.000***	-.0002238	0.403
fixrrip	**-.2087357**	**0.022****	-.0000199	0.321	flotrret	**.6743244**	**0.000***	.0001878	0.398
fixrrsc	**-.2809228**	**0.004***	-.0000268	0.299	flotrrda	.1122223	0.388	.0000313	0.542
fixrrgs	**-.3362482**	**0.000***	-.000032	0.290	flotrrbq	**.732365**	**0.000***	.000204	0.405
cons	**-1.743711**	**0.000***			cons	**-2.119088**	**0.000***		
Number of obs = 3874			**y = Pr(debtc) (predict)**		**Number of obs = 3789**			**y = Pr(debtc) (predict)**	
LR chi2(28) = 439.64			**= .00009532**		**Wald chi2(28) = 368.66**			**= .00027858**	
Prob > chi2 = 0.0000					**Prob > chi2 = 0.0000**				
Pseudo R2 = 0.1791					**Pseudo R2 = 0.1893**				
Log likelihood = -1007.609					**Log pseudolikelihood = -980.84357**				

significant 1%; ** significant 5%; * significant 10%*
Source: ourselves from Stata 12

The table above presents the results of estimating Model 3 according to the de facto classification of Reinhart and Rogoff. The equations (**fixrr and flotrr**) of our model 3 are all significant (**Prob > chi2 = 0.000**). Thus, the exogenous variables selected explain the probability of a currency crisis in both types of exchange rate regimes. Several variables in our equations are significant. The pseudo R2 (**fixed R2 = 0.1791 and float R2 = 0.1893**) indicate the percentage explanation of the model.

All other things being equal, the coefficients on the fixed exchange rate regime interest variable (fixrr) are insignificant while the floating exchange rate regime variable (florr) is positive and significant.

This suggests that having a flexible exchange rate regime increases a country's resilience to debt crises by **1.54** points.

Examination of the control variables for the flexible exchange rate regime indicates that almost all of the variables are statistically significant. And the interactions between fixed exchange rate regimes and the quality of **institutions-bureaucracy, business climate, socioeconomic conditions, and government stability.** This suggests that, the resilience of fixed regimes increases with the institutions cited and decreases with the institutions: corruption and religion in politics. On the other hand, the interactions between flexible exchange rate regimes and the quality of institutions**: business climate, involvement of religion in politics and law and order are negative and statistically significant**. This suggests that the resilience to debt crises of flexible regimes increases with the institutions cited. And decreases with institutions: external conflicts and ethnic tensions.

Thus, using Reinhart and Rogoff's classification, we find that only flexible exchange rate regimes are significant. The bipolar hypothesis is therefore rejected. Thus, we find that there is a direct (positive and significant) link between flexible exchange rate regimes and the debt crisis. However, hypothesis 2.3 (the **sustainability to debt crises of different exchange rate regimes is positively influenced by institutional quality)** is also verified. Indeed, we found that resilience to exchange rate crises is positively influenced: in fixed regimes by institutions: **the quality of bureaucracy, business climate, socio-economic conditions and government stability**; in flexible regimes by institutions: **business climate, involvement of religion in politics, law and order.**

5. Conclusion

The objective of this study is to examine the role of institutional quality on the sustainability of extreme exchange rate regimes during crises. To do so, in order to achieve our objective, we used logit regression. Since we have three types of financial crises in this study, the results show that:

- **For banking crises:** using the de facto classification, we find that the viability of floating regimes is superior to fixed regimes and that this viability in banking crises is positively influenced in fixed regimes by the quality of the institution: **government stability**. And for flexible exchange rate regimes, the quality of the institutions: **business climate, internal conflicts, corruption and military involvement in politics**. However, the deterioration in the quality of certain institutions increases the probability of a banking crisis. These are institutions: **respect for democratic commitments and corruption for** fixed exchange rate regimes; **external conflicts, ethnic tensions, and bureaucracy for floating exchange rate regimes**;
- **For currency crises**: using Reihnart and Rogoff's de facto classification, we find that the bipolar hypothesis does not hold because fixed exchange rate regimes decrease the probability of crisis while floating exchange rate regimes increase it. Thus, the viability of fixed regimes to currency crises is greater than that of floating regimes. However, the hypothesis (that **the crisis sustainability of different exchange rate regimes is positively influenced by institutional quality)** is also verified. For, we found that the sustainability of exchange rate crises is positively influenced: in fixed regimes by institutions such as: the **involvement of the military in politics and the quality of law and order**; in flexible regimes by institutions: **the involvement of the military and religion in politics and the quality of law and order;**

- **For debt crises:** using Reinhart and Rogoff's classification, we find that only flexible exchange rate regimes are significant. The bipolar hypothesis is therefore rejected. Thus, we find that there is a direct (positive and significant) link between flexible exchange rate regimes and debt crises. However, hypothesis 2 (the **sustainability to crises of the different exchange rate regimes is positively influenced by institutional quality)** is also verified. Indeed, we found that this sustainability to debt crises is positively influenced: in fixed regimes by institutions: the **quality of bureaucracy, business climate, socio-economic conditions and government stability; in flexible regimes by institutions: business climate, involvement of religion in politics, law and order.**

Bibliography

Acemoglu, D.; Simon J. & ET Robinson, J. (2002). Reversal of Fortune: Geography and Institutions in the Making of the Modern World Income Distribution. *The Quarterly Journal of Economics*, No. 117, pp. 1231–1294.

Acemoglu, D.; Simon J. & Robinson, J. (2001). The Colonial Origins of Comparative Development: An Empirical Investigation. *The American Economic Review*, No 91 (5), pp. 1369-1401.

Acemoglu, D. (2006). A Simple Model of Inefficient Institutions. *Scand. Journal of Economics*, No 108(4), pp. 515-546.

Acemoglu, D.; Johnson, S.; Robinson, J. & ET Thaicharoen, Y. (2003). Institutional Causes, Macroeconomic Symptoms: Volatility, Crises and Growth. *Journal of Monetary Economics*, No 50, pp. 49–123.

Aloui, C. & Sassi, H. (2005). Régime de change et croissance économique: une investigation empirique. *Revue-Economie-Internationale*, No. 104, pp. 97- 134.

Angkinand, A.; Chiu, E. M. P. & Willett, T. D. (2009). Testing the unstable middle and two corners hypotheses about exchange rate regimes. *Open Economies Review*, NO 20(1), pp. 61-83.

Araoz, M. F. (2009). Construyendo un Indicador Institucional para Argentina (1862-2001). *Paper presented at the XLIV Annual Meeting of the AAEP. Buenos Aires.* November.

Asici, A. A. (2011). Exchange rate regime choice and currency crises. *Economic Systems*, NO 35(3), pp. 419-436.

Bailliu, J.; Lafrance, R. & Perrault, J-F. (2003). Does exchange rate policy matter for growth? *Bank of Canada, Working Paper*, NO 17.

Bubula, A. & Ötker-Robe, I. (2002). The evolution of exchange rate regimes since 1990: Evidence from de facto policies. *IMF Working Paper*, NO 02/155.

Bussiere, M. & Mulder, C. (1999). External Vulnerability in Emerging Market Economies – How High Liquidity Can Offset Weak Fundamentals and the Effects of Contagion. *IMF Working Paper*, WP/99/88.

Cerro, A. & Iajya, V. (2010). Currency Crises and Institutions. The Case of Argentina 1862-2004. *Paper presented at the XXXVIII Annual Meeting of the AAEP*.

Cerro, A. & Meloni, O. (2003). Crises in Argentina: 1823-2002. The Same Old Story? *Paper presented at the XXXVIII Annual Meeting of the AAEP*.

Combes, J.; Minea, A. & Sow, M. (2013). Crises and Exchange Rate Regimes: Time to break down the bipolar view? *CERDI, Archives Ouvertes*.

Combes, J-L.; Minea, A. & Sow, M. (2016). Crises and exchange rate regimes: Time to break down the bipolar view. *Applied Economics*, pp. 1-17.

Eichengreen, B.; Rose, A. & Wyplosz, C. (1996). Contagious currency crises. *NBER Working Papers*, No 5681, National Bureau of Economic Research, juillet.

Esaka, T. (2010). De facto exchange rate regimes and currency crises: Are pegged regimes with capital account liberalization really more prone to speculative attacks? *Journal of Banking & Finance*, No 34, pp. 1109–1128.

Fisher, S. (2001). Exchange Rate Regimes: Is the Bipolar View Correct? *Journal of Economic Perspective*, No 2(15).

Ghosh, A. R.; Ostry, J. D. & Qureshi, M. S. (2015). Exchange rate management and crisis susceptibility: A reassessment. *IMF Economic Review*, No 63, pp. 238–276.

Ghosh, A.; Gulde, A-M. & Wolf, H. (2003). Exchange Rate Regimes: Choices and Consequences. *MIT Press.*

Ghosh, A.R. & Ostry, J.D. (2009). Choosing an Exchange Rate Regime. *Finance and development*, December, pp.38-40.

Haile, F.D. & Pozo, S. (2006). Exchange Rate Regimes and Currency Crises: An Evaluation Using Extreme Value Theory. *Review of international economic*, No 14, pp. 554-570.

Hall, R. E. & Jones, C. I. (1999). Why Do Some Countries Produce So Much More Output per Worker Than Others? *The Quarterly Journal of Economics*, No 114(1), pp. 83-116.

Honig, A. (2009). Dollarization, Exchange Rate Regimes and Government Quality. *Journal of International Money and Finance*, No 28, pp. 198–214.

Husain, A. M.; Mody A. & Rogoff, K. S. (2005). Exchange rate regime durability and performance in developing versus advanced economies. *Journal of Monetary Economics*, NO 1(52), pp. 35-64.

Ilzetski, E.; Reinhart, C. & Rogoff, K. (2011). The Country Chronologies and Background Material to Exchange Rate Arrangements into the 21st Century: Will the Anchor Currency Hold? *Unpublished manuscript*.

Karimi, M. & Voia, M. C. (2014). Currency Crises, Exchange Rate Regimes and Capital Account Liberalization: A Duration Analysis Approach. *Serie Dynamic Modeling and Econometrics in Economics and Finance*, Vol. 17.

Levy-Yeyati, E. & Sturzenegger F. (2005). Classifying exchange rate regimes: Deeds versus words. *European Economic Review*, No 49(6).

Li, Q. & Inclan, M. (2001). Fundamentals, Expectations and Currency Crisis. *Presented at Annual Meeting of the American Political Science Association*.

Mei, J. (2000). Political Risk, Financial Crisis, and Market Volatility. *WP, New York University – Department of Finance.*

Mishra, D. (1998). Political Determinants of Currency Crises. *unpublished manuscript*.

Nakatani, R. (2017). Real and financial shocks, exchange rate regimes and the probability of a currency crisis. *Journal of Policy Modeling*, N.W., Washington, D.C. 20431.

Nakatani, R. (2017). Structural Vulnerability and Resilience to Currency Crisis: Foreign Currency Debt versus Export. *The North American Journal of Economics and Finance*, No 42, pp. 132-143.

North, D. (1991). Institutions, Institutional Change and Economic Performance. *Cambridge University Press*, Cambridge, UK, (1994).

Obstfeld, M. (1994). The logic of currency crises. *Cahiers économiques et monétaires de la Banque de France*, NO 43, pp. 189-213.

Reinhart, C. & Rogoff, K. (2004). The modern history of exchange rate arrangements: A reinterpretation. *The Quarterly Journal of Economics*, vol. 119, NO 1, février, pp. 1-48.

Rodrik, D. (2008). The real exchange rate and economic growth. *Brookings Papers on Economic Activity*, pp. 365–412.

Rogoff, K., Hussain, A., Mody, A., Brooks, R., et Oomes, N. (2004). evolution and performance of exchange rates regimes. *IMF occasional paper*, pp. 229.

Shimpalee et Breuer. (2006). Currency Crises and Institutions. *Journal of International Money and Finance*, NO 25, pp. 125-145.

Summers, L. (2000). *Reflections on Managing Global Integration*. www.ustreas.gov/press/releases/rr2877.htm.Swoboda, 2005

Vergil, H. & Erdogan, T. (2017). crisis, institutional quality and economic growth. *Journal Review of Social, Economic and Administrative Studies*, Vol. 31, NO. 2 (2017), pp. 1-19.

Wei, S-J. (2000). How Taxing is Corruption on International Investors? *The Review of Economic and Statistics*, Vol. 82(1), pp. 1-11

Williamson, J. (1996). The case for a common basket peg for East-Asian currencies. *Association for the Monetary Union of Europe and the Korea Institute of Finance*, Séoul, 15-16 novembre.

Williamson, J. (2000). Exchange Rate Regimes for Emerging Markets: Reviving the Intermediate Option. Washington (D.C), *Institute for International Economics*.

Yi Wu. (2008). The Role of Institutional Quality in a Currency Crisis Model. *IMF Working Paper*, WP/08/5.