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Banking Crises and Exchange Rate Politics

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Abstract

The purpose of this paper is to examine whether the choice of exchange rate regime can affect the likelihood of banking crises in emerging countries. We estimate the impact of exchange rate arrangements on crises in a panel-data set of 56 emerging countries using a *logit* method. We find that adopting a fixed exchange rate diminishes the probability of occurrence of banking crises.

JEL classification numbers: E52, F31, G21
Keywords: Exchange rate regimes, Financial crises, Banking crises, Logit model

1 Introduction

The financial crises of the 1990s are occurred, in most of the cases, in countries adopting a pegged exchange rate policy. These pegged exchange rates encourage speculative attacks in the foreign exchange markets that propagate to banking sector, and led to banking crises. Recently, the IMF and the analysts of financial crises support the bipolar view. According to this view, and in order to avoid future crises, countries should allow for either flexible or irrevocably fixed exchange rate regimes. The intermediate solutions, such as pegged exchange rate regimes, should be avoided.
Recently, a number of studies analyse -at the theoretical level- the possible links between the exchange rate regime and financial stability. However, the impact of exchange rate regime choice on occurrence of financial crises is largely ignored by the literature. Similarly, most studies on the determinants of financial crises focus primarily on macroeconomics variables, external variables and regulatory environments.

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In this paper we analyse this link between the exchange rate policies and the probability of financial crises. We apply a model of vulnerability to banking crises using a set of 56 countries for the period 1980-2002.

Economists face difficulties to make a solid relation between exchange rate regime and financial fragility. These difficulties can remain to errors measure of exchange rate regime classification. For long period, economists use IMF's classification or *de jure* classification based on countries declarations. This classification can be quite different from the one pursued in practice. Alternatives classifications or *de facto* classifications are proposed. Principles contributions are them of Levy-Yeyati and Sturzenegger (2005) and Reinhart and Rogoff (2004). The first one uses cluster analysis techniques, based on the behaviour of the nominal exchange rate, its growth rate, and the behaviour of international reserves. The second introduce quotations on parallel markets.

Regarding the impact of exchange rate policies on the likelihood of crises, we tent to extend the literature in many of directions. We examine the validity of some of the indirect channels linking exchange rate regime to the probability of banking crises. We test (i) the moral hazard hypothesis and in particular the distorting consequences of implicit guarantees, (ii) the original sin hypothesis, financial fragility is unavoidable when the domestic currency cannot be used to borrow abroad or to borrow long term, even domestically, (iii) the capacity of banking system to reduce the negative impact of the lack of a lender of last resort. For this purpose, we use alternatives classifications of exchange rate regime. Finally, we verify the robustness of ours results by controlling the endogeneity of exchange rate regime.

We first review in the next section the relation between exchange rate regime and financial crises. Section 3 briefly analyse the evolution of exchange rate regime. Section 4 presents the empirical methodology, data used and results. Section 5 concludes.

2 The Exchange Rate Regime and Financial Crises: the Theory

Several arguments in support of fixed exchange rate regimes discussed in several recent papers are that fixed exchange rates may help credibility, transparency, low inflation and financial and monetary stability (Calvo (1999)), Hanke and Chuller (1998) and Haussman (1999). In order to reduce speculation and risk of devaluation, these regimes can insure low and stable interest rates. Calvo (1999) underscore that the nature of external chocks depends on exchange rate regime choice. Thus the transparency and credibility associated with fixed exchange rates may insulate a country from contagion and insure interest rate stability.

Nevertheless, credibility is not evident even under fixed exchange rate regime; this is the case of Argentina after adopting a currency board regime (Edwards (2001)). Real exchange rate overvaluation and fiscal imbalances have a negative impact on anticipations and credibility.

Eichengreen and Hausmann (1999) argue that pegged exchange rate may provide implicit guarantees against exchange risk and encourage reckless borrowing and lending, giving rise to a moral hazard problem. Incompleteness in financial markets can help financial fragility. The lack of a lender of last resort under fixed exchange rate encourages bank runs and financial panics.

The moral hazard problem

Pegged exchange rate are a form of implicit guarantees and hence a source of a moral hazard. To sustain the peg, authorities insist on their commitment that no prospect of being changed. In this way, they promote unhedged foreign-currency borrowing. More specifically, shirt-term foreign-currency denominated liabilities that are encouraged, since authorities are least credible at long horizons. This situation leaves the economy very vulnerable to external chocks. This is the case of Mexico before the occurrence of 1994'financial crisis (Calvo 1998). Burnside, Eichanbaum and Rebelo (2001) develop a theoretical model to demonstrate that in the absence of government guarantees, it is optimal for banks to hedge their funds against exchange risk, in order to reduce their loss in the case of devaluation.

The original sin problem

This is the case in which the domestic currency cannot be used to borrow abroad or to borrow long term, even domestically (Eichengreen and Hausmann 1999). This situation can lead to a maturity mismatch or to a currency mismatch and therefore financial vulnerability is unavoidable. Maturity mismatch appear if long term investments are financed by short-term loans. Currency mismatch appear after devaluation, which can increase the burden faced by debtors and can generate corporate bankruptcies. Eichengreen, Haussman and Panizza (2003) claim that countries which suffer from original sin are more likely to adopt pegged exchange rate regime.
It follows that maturity mismatch and currency mismatch create a dilemma for exchange rate policy. If the government tries to defend the peg by rising interest rates and selling reserves, short-term domestic debts defaults can be precipitated, leading to banking system fragility. If the government allows the currency to float, investors face exchange rate risk and promote hedging. By doing this, speculative attacks will be precipitated.

The lack of lender of last resort

Eichengreen and Rose (1998) argue that fixed exchange rate regime constrain lender of last resort operations, since domestic credit growth may weaken the confidence in the currency peg. This problem may be more severe in the case of currency board because monetary creation is impossible (this is the case of Argentina in 1995). The lack of lender of last resort under fixed exchange rate can, in turn, encourage bank runs and financial panics.

3 Typology and Evolution of Exchange Rate Regime

De jure versus de facto classification

The official classification or *de jure* classification of exchange rate regimes is provided by IMF. It is given in the IMF's Annual Report on Exchange Rate Arrangements and Exchange Restrictions. Until 1999, this classification is based only on countries declarations as belonging to one of four categories of arrangements. However, deviations of actual behaviour from announcements are common.

Many studies have used statistical methods to regroup country practices and provide *de facto* classifications of exchange rate arrangements for longs time periods. From 1999 on, the IMF correct countries declarations based on information about actual exchange rate policies as well as subjective staff judgements.

Using historical data and information on countries exchange rate arrangements, Bubula and Ötker-Robe (2002) (BOR) proposed a *de facto* database going back to 1990 on 190 countries. Their study is based on both monthly and annual qualitative and quantitative information to set up the *de facto* regime classification. The "natural" classification of Reinhart and Rogoff (2004) (RR) covers 153 countries from 1940. It is based on detailed countries chronologies of exchange rate arrangements to group regimes. It is a monthly classification witch take into account dual and parallel market information. Levy-Yeyati and Sturzenegger (2002) (LYS) classification contain annual information about 156 countries from 1974. This classification is based on three variables: the average of absolute monthly changes in nominal exchange rate; the standard deviation of monthly percentage change in nominal exchange rate; and, the average of absolute monthly changes in international reserves. All classifications have their own merits. The key difference between RR and LYS is that RR look at actual exchange rates, while LYS base their algorithm on the official exchange rate.

Evolution of exchange rate regime and banking crises

Before any estimation on the impact of exchange rate regime choice on the probability of banking crises, we investigate the link between the evolution of pegged exchange rate regime and banking crises.

According to the exchange rate regime, we consider YLS (2005) and RR (2004) classifications, which is a dummy variable that equals one if country adopt a peg exchange rate regime and zero if not. According to banking crises, we adopt the classification of Demirgüç-Kunt and Detragiache (2005). It is a dummy variable that equals zero in years and countries where there are no crises and equals one during systemic crisis periods.

Figure 1 shows that, for the hole simple there is a negative relation between the evolution of banking crises and the adoption of pegged exchange rate regime. By the beginning of 1980's the number of banking crises falls when a considerable number of countries abandon the pegged regime.

When we consider only development countries (figure 2), we cannot detect any relation between the evolutions of exchange rate regime and banking crises. However, when emerging countries begin abandon fixed exchange rate regime, banking crises fall (figure 3). So there is no clear relation between the adoption of fixed exchange rate and occurrence of banking crises. Below we proceed an empirical study to test this argument is correct.

4 Empirical Study

A number of studies attribute an importance to the role of exchange rate regime in the occurrence of banking crises (Williamson 1999). However, other studies (Williamson (1998, 2000), Willett (2000), Gldestein (2002)) argue that emerging countries crises are not a direct consequence of exchange rate regime but they are the issue of incompatibility between macroeconomic politic and exchange rate politic.

In order to study the relation between exchange rate regime and financial stability, we apply a *logit* model to estimate the probability of banking crises. In this model, the dependant variable is a dummy that equals one in periods of systemic crises and zero other ways. Episodes of banking crises are identified based on the chronology and description provided by the study of Demirgüç-Kunt and Detragiache (2005). The authors define systemic crises as periods that satisfy one of following conditions : the ratio of nonperforming assets to global assets in the banking system exceeds 10%; the cost of rescue operation was at least 2% of GDP; banking sector problems had led to a large scale nationalization of banks; extensive banks runs took place or emergency measures such as deposit freezes, prolonged banks holidays, or generalized deposed guarantees are adopted by the government in response to the crisis.

Logit model can be expressed as:

$$\text{Prob}(\text{Crisis}_t = 1/X_{t-1}) = \frac{e^{(\beta' x_{t-1})}}{1+e^{(\beta' x_{t-1})}} \qquad (1)$$

Where: crisis= dependant binary variable,
X_{t-1}= determinants of banking crises.

Crisis_t=1 during systemic crises periods,
Crisis_t=0 if not.

In our estimations, determinants of banking crisis (X_{t-1}) are fixed on the base of theoretical models of financial crises indicators. We include tree type of variable: macroeconomics indicators, financial liberalisation indicators and financial fragility indicators.

To capture macroeconomic determinants, we include two variables: external imbalances or real overvaluation and external debt. External imbalance or real overvaluation is measured by volatility of real exchange rate. High volatility implies more vulnerability to crises. External imbalance is also measured by current account to GBP ratio. Deficit of current account can increase the likelihood of banking crises.

The M2/foreign exchange reserves ratio is a measure of monetary imbalances. A high level of this ratio implies a high vulnerability to crises. It measures the capacity of central bank to face a financial chock (in the case of fixed exchange rate). This indicator is chosen by reference to first generation model of crises. A high interest rate can increase the likelihood of crises by exasperating the selection adverse problem. Associated with real interest rate, high inflation can be used as a banking crises indicator, as in periods of high inflation it become difficult for banks to assess credit quality and so real profits.

External debt is measured by the ratio external debts/exports. The increase of this ratio is associated with a high risk of insolvability.

A number of financial liberalisation indicators are also included in our model. Many countries have been attacked by financial crises after liberalising their capital account even they have good macroeconomic variables. Financial liberalisation is characterised by capital mobility, so capital flow composition is capture by the ratio foreign liabilities to foreign assets held by banks. This ratio is a proxy for the currency mismatch of banks which affect likelihood of banking crises. The extent of financial liberalisation can also be

measured by the ratio domestic credit to the private sector to GDP. High fluctuations of capital flow can increase the probability of occurrence of crises.
We also introduce financial fragility indicators in our model. In order to capture bank ability to deal with potential runs on their deposits, we consider the ratio reserves of banks to total assets and the ratio banks deposits to M2. This ratio captures confidence of investors in the banking system, so his decrease implies a high likelihood of crises.
In order to study the possible links between exchange rate regime and banking crises, we consider a binary variable which is equals 1 if the country adopt fixed exchange rate regime and 0 if not. For this purpose, we use *de facto* classifications of Levy-Yeyati and Struzenegger (2005) and of Reinhart and Rogoff (2004).
Levy-Yeyati and Struzenegger (2005) classification is based on observation of exchange rate variability ratio and not uses *de jure* classification. Where Reinhart and Rogoff (2004) classification is based on *de jure* classification, exchange rate variability and inflation rate variability. The authors introduce also the quotation on parallel markets.
We also introduce interaction variables between exchange rate regime and explanatory variables, since exchange rate can have an indirect effect on the likelihood of banking crises. More specifically, we take interaction with these variables: real exchange rate deviation, M2/foreign exchange reserves ratio, ratio of domestic credit to the private sector to GDP, ratio of foreign liabilities to foreign assets and ratio of reserves of banks to total assets.

Empirical results

Table 2 presents *logit* estimations or banking crises over the period 1980-2002 for the overall sample of countries and separately, for developing countries and for emerging countries. In this estimation we not consider interaction variables. The results show that financial liberalisation indicator and financial fragility indicator-that capture confidence in the local banking system-raise the likelihood of banking crises. These results confirm those of Demirgüç-Kunt and Detragiache (1998) and more recently those of Mehrez and Kauffman (1999), Glik and Hutchison (2001), Arteta and Eichengreen (2002) and Noy (2004), witch argue that financial liberalisation increase financial fragility especially when it is not accompanied with a good supervisory banking system. These variables are also significant if we consider only developing countries or only emerging countries. Nevertheless, fixed exchange rate regime variable is not significant for all estimations.
When we add interaction variables (table 3), we found that financial liberalisation indicators and financial fragility indicators are also significant and have an expected sign. Interaction variables with pegged exchange rate regime with M2/ foreign exchange reserves ratio and with capital flow (foreign liabilities/foreign assets ratio) are significant for the hall sample and for developing countries. This finding suggests that in countries adopting fixed exchange rate regime, capital outflows can lead to speculative attack (in order to maintain fixed parity, real exchange rate fall and faring exchange reserves decrease). Speculative attack can lead to exchange crisis which can transform in a banking crisis (twin crises). Thus, under pegged regime investors have a great incentive to take excessive risks, because fixed exchange rates are implicit guarantees against losses caused by exchange rate volatility. These results confirm those of Bubula and Otker-Robe (2003). They suggest that financial crises are more probable under fixed exchange rate regime. However, Eichengreen and Rose (1998) argue that fixed regimes reduce likelihood of banking crises because they keep discipline on the market. Calvo (1999) shows that transparency and credibility associated with pegged exchange rate regimes

protect countries from propagation of crises. In their empirical study, Domaç and Martinez-Peria (2003) found that fixed exchange rates decrease likelihood of banking crises in developing countries.

For emerging countries, all interaction variables with fixed exchange rate regime are not significant. This result is opposed with those of Rogoff and *al* (2004). They argue that banking crises and twin crises are more probable under pegged regimes and especially for emerging countries in 1990's.

Results discussed above have a main limitation. They do not consider the possibility that the exchange rate can be endogenous. In order to counter this limitation and following Domaç and Martinez-Peria (2003), we estimate a bivariate two-stage *logit* model. This procedure is comparable to an instrumental variables regression, where in the first stage exchange rate regime is purge from endogenous components. So, the first stage consists in *logit* model estimation of the determinant of exchange rate regime choice. Estimation of the probability of banking crises using the predicted value from the first stage instead of the exchange rate regime dummy is done in the second stage.

Large theoretical and empirical literature has focused on determinants of exchange rate choice. Mundell's (1961) theory of Optimum Currency Area (OCA) suggests that fixed exchange rates are more appropriate for countries that are integrated through international trade and factors movements. Fixed exchange rate choice is also based on geography trade concentration, high degree of internal factor mobility and low inflation differential with the principal trading partners. Collins (1996), Edwards (1996), Juhn and Mauro (2002), Poirson (2002) and Rizzo (1998) find a little empirical supports for theoretical models of determinants of exchange rate regime choice. Following this authors, we use country size and the degree of trade openness as instruments exchange rate regime choice. Country size is proxied by the log of real GDP and degree of trade openness is proxied by (imports + exports)/GDP ratio.

Table 4 presents results of two stage *logit* model estimation of likelihood of banking crises for the hall sample and separately for developing countries and for emerging countries. Fixed exchange rate regime variable have a significant and negative impact on the likelihood of banking crises for the tree groups of countries and for the two exchange rate regime classifications used. Exchange rate stability reduces the probability of occurrence of banking crises. M2/foreign reserves, inflation, external debts and real interest rate are also significant and have expected sign in developing countries.

5 Conclusions

A large theoretical and empirical literature have interested to study determinants of banking crises, but a small number of them have considered exchange rate policies as indicator of crises. This paper studies the impact of fixed exchange rate regime on banking crises, using a large data set including developed and developing countries for the period 1980-2002.

Several arguments are presented in a number of studies in support of fixed exchange rate regime. Thus, fixed exchange rates may help credibility, transparency, low inflation and financial and monetary stability. Nevertheless, pegged exchange rate may provide implicit guarantees and encourage excessive risk, giving rise to a moral hazard problem. The lack

of a lender of last resort under fixed exchange rate encourages bank runs and financial panics. Financial vulnerability is unavoidable especially for developing countries which cannot borrow abroad on their domestic money. Under fixed exchange rate regime, this situation leads to a maturity mismatch or to a currency mismatch.

In our model of financial vulnerability to banking crises, we considered a number of macroeconomic and financial indicators of crises. The main conclusion that appears from our study is that fixed exchange rate can reduce the likelihood of banking crises. So credibility associated with pegged exchange rate can help financial stability. By contrast, flexible exchange rate cannot be useful as shock absorber but they promote financial shock transmission.

In order to maintain with their commitments with exchange rate stability, monetary authorities must undertake macroeconomic and institutional changes, witches allow financial stability. It is also crucial to improve a high quality of bank supervision. In this case, credit expansion that can cause speculative attack, cannot lead to banking crisis.

We conclude that consensus view that developing countries should allow for more flexibility of their exchange rate in order to reduce banking crises probability is not founded in our study.

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Appendices

Appendix 1: List of variables and sources

The data is annual and it covers the period 1980-2002.

- Banking crises: a binary variable that equals 1 during episodes of crises Source: demirgüç-Kunt and Detragiache (2005).
- Real exchange rate appreciation: variation bilateral exchange rate vis-à-vis the dollar relative to trend (average over 5 years). Source : International Monetary Funds IFS (line ae zf).
- Balance of courante account. Source: International Monetary Fund IFS (line 78 ald zf).
- GDP. Source: International Monetary Fund IFS (line 99 b zf).
- M2: money plus quasi-money. Source: International Monetary Fund IFS (lines 34 and 35).
- Foreign exchange reserves. Source: International Monetary Fund IFS (line 1 ld zf).
- Inflation: percentage change in the GDP deflator. Source: International Monetary Fund IFS (line 99 bip zf).
- Total external debts. Source: International Monetary Fund IFS (line 32 zf).
- Exports. Source: International Monetary Fund IFS (line 90c zf).
- Real interest rate: nominal interest rate minus inflation rate. Source: International Monetary Fund IFS (nominal interest rate: line 60c or 60 or 60l).
- Foreign liabilities/foreign assets. Source: International Monetary Fund IFS (Foreign liabilities: lines 16c+26c and foreign assets: lines 11+21).
- Domestic credit to the private sector. Source: International Monetary Fund IFS (line 32d).
- Reserves of banks. Source: International Monetary Fund IFS (line 20).
- Total assets. Source: International Monetary Fund IFS (lines 20+21+22).
- Banks deposits. Source: International Monetary Fund IFS (line 24).
- Exchange rate regime: Binary variable which is equals 1 if the country adopts fixed exchange rate regime and 0 if not. Source: *de facto* classification of Levy-Yeyati and Sturzenegger (2005) and of Reinhart and Rogoff (2004).

Appendix 2

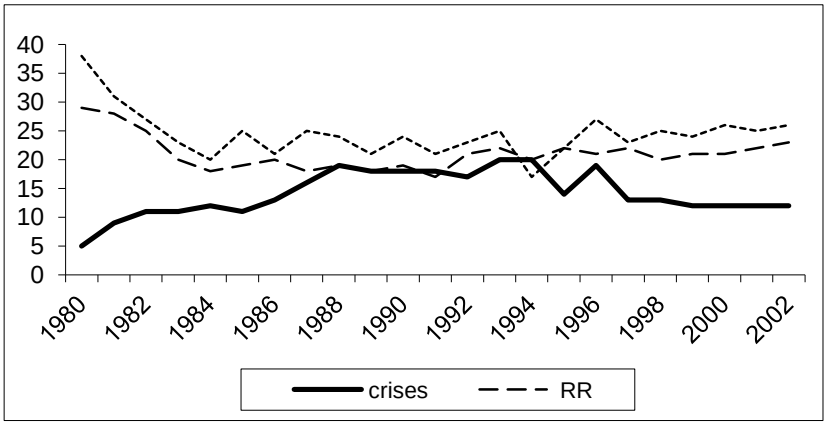

Figure A.2.1: Banking crises and exchange rate regimes (all countries)

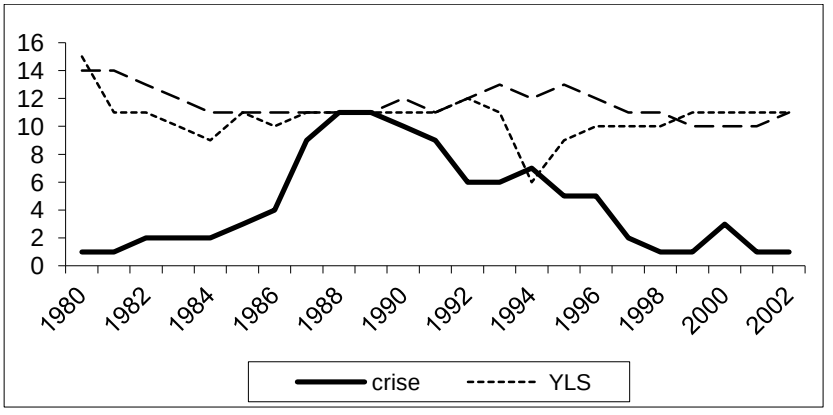

Figure A.2.2: Banking crises and exchange rate regimes (developing countries)

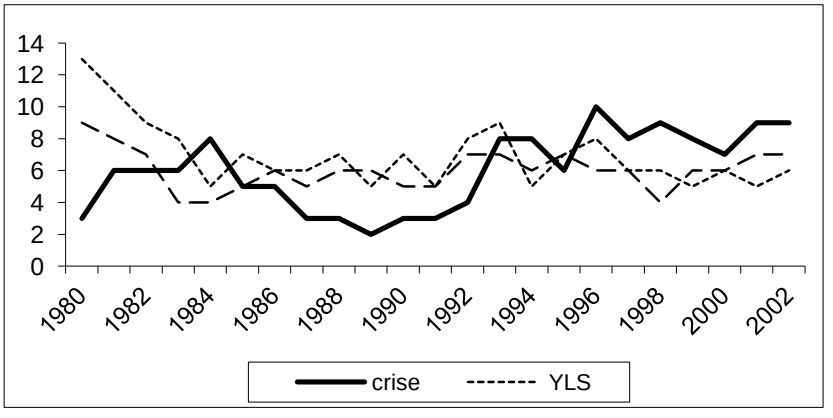

Figure A.2.3: Banking crises and exchange rate regimes (emerging countries)

Table A.2.1: Banking crises determinants

Category	**Concepts**	**Mesures**
Macroeconomic indicators	External imbalances/ real overvaluation	- Real exchange rate deviation - CC/PIB
	Macroeconomic imbalance	- M2/ foreign reserves - Real interest rate - Inflation
	External debts	Total external debts/exports
Financial liberalisation indicators	Capital flow composition	Foreign liabilities/foreign assets
	Financial liberalisation	Domestic credit to the private sector to GDP
Financial fragility indicators	Capital banks' ability to deal with banking runs	Reserves of banks / total assets
	Confidence in banking system	Banks deposits /M2
Exchange regime	D*e facto* classification	Binary variable which is equals 1 if the country adopts fixed exchange rate regime and 0 if not

Table A.2.2: Estimation of the likelihood of banking crises

Regression	**All countries**		**Development countries**		**Emergent countries**	
Exchange rate regime classification	**LYS**	**RR**	**LYS**	**RR**	**LYS**	**RR**
Real overvaluation	0.00005 (1.39)	0.00005 (1.40)	0.00004 (1.32)	0.0000 (1.32)	0.00007 (1.29)	0.00004 (1.34)
External imbalances	0.00002 (1.58)	0.00002 (1.60)	0.00002 (1.57)	0.00002 (1.59)	0.00006 (0.55)	0.00002 (1.65)*
M2/ foreign reserves	0.00006 (0.07)	0.0001 (0.10)	0.00007 (0.07)	0.00008 (0.08)	0.0688 (2.18)**	0.0776 (2.40)**
Inflation	-0.00066 (-1.77)*	-0.00069 (-1.81)*	-0.00058 (-1.40)	-0.00058 (-1.40)	-0.0006 (-1.30)	-0.0005 (-1.17)
External debts	-0.0138 (-1.97)**	-0.01390 (-1.99)**	-0.02819 (-0.51)	-0.02708 (-0.49)	-0.0376 (-0.50)	-0.0325 (-0.48)
Real interest rate	-0.00056 (-2.08)**	-0.00058 (-2.11)**	-0.0004 (-1.52)	-0.00045 (-1.50)	-0.0004 (-1.36)	-0.0004 (-1.26)
Capital flow	0.1462 (3.60)***	0.1440 (3.55)***	0.1656 (3.91)***	0.16413 (3.87)***	0.6309 (1.92)*	0.1999 (1.42)
Financial liberalisation	2.114 (3.37)***	2.1667 (3.38)***	1.954 (2.82)***	1.9386 (2.79)***	1.9415 (2.53)**	1.860 (2.55)**
Capital bank ability	1.365 (1.19)	1.2048 (1.04)	0.8141 (0.69)	0.7505 (0.63)	-2.9493 (-1.24)	-1.4456 (-0.70)
Confidence on banking system	-5.638 (-4.59)***	-5.4980 (-4.49)***	-6.7964 (-4.43)***	-6.7824 (-4.43)***	-8.0305 (-3.36)***	-7.4940 (-3.38)***
Fixed exchange rate regime	-0.1608 (-0.72)	-0.4572 (-1.51)	-0.1527 (-0.66)	-0.2465 (-0.79)	0.07483 (0.22)	0.1629 (0.42)

Notes : (1) YLS corresponds to the classification of Levy-Yeyati and Struzenegger (2005) et RR corresponds to the classification of Reinhart and Rogoff (2004).
(2) *t*-statistics are in parentheses. (***), (**) and (*) significant at 1%, 5% and 10%, respectively.

Table A.2.3: Estimation of the likelihood of banking crises

Regression	**All countries**		**Developping countries**		**Emerging countries**	
Exchange rate regime classification	**LYS**	**RR**	**LYS**	**RR**	**LYS**	**RR**
Real overvaluation	0.00004 (1.38)	0.00004 (1.40)	0.00004 (1.31)	0.00004 (1.31)	0.00004 (1.34))	0.00004 (1.32)
External imbalances	0.00002 (1.64)	0.00002 (1.69)*	0.00002 (1.62)	0.00002 (1.71)*	0.00007 (0.59)	0.00002 (1.60)
M2/foreign reserves	0.0016 (0.48)	-0.0053 (-2.06)**	0.0034 (0.89)	-0.0049 (-1.95)*	0.0750 (2.17)**	0.0850 (2.43)**
Inflation	-0.0006 (-1.71)*	-0.0009 (-2.96)***	-0.0005 (-1.30)	-0.0008 (-2.42)**	-0.0005 (-1.24)	-0.0008 (-2.09)**
External debts	-0.0135 (-1.91)*	-0.0179 (-2.65)***	-0.0344 (-0.59)	-0.0165 (-0.31)	-0.0444 (-0.55)	-0.0356 (-0.47)
Real interest rate	-0.0005 (-1.98)**	-0.0009 (-3.42)***	-0.0004 (-1.35)	-0.0009 (-2.68)***	-0.0004 (-1.25)	-0.0009 (-2.37)**
Capital flow	0.1225 (2.47)**	0.1168 (2.50)**	0.1483 (2.87)***	0.1396 (2.92)***	0.6843 (1.93)*	0.3862 (1.13)
Financial liberalisation	2.0378 (3.20)***	3.0277 (4.33)***	1.8645 (2.69)***	2.7904 (3.59)***	1.9095 (2.47)**	2.8813 (3.37)*
Capital bank ability	1.9517 (1.65)*	1.7341 (1.43)	1.4091 (1.16)	1.3094 (1.06)	-2.6907 (-1.11)	1.4475 (-0.67)
Confidence on banking system	-6.0531 (-3.95)***	-5.0571 (-3.86)***	-7.2268 (-4.17)***	-6.6022 (-3.84)***	-7.4118 (-2.93)***	-7.995 (-3.34)*
Fixed exchange rate regime	-0.5787 (-1.36)	-0.3888 (-0.71)	-0.4450 (-0.96)	-0.5069 (-0.91)	1.0716 (1.12)	-0.4276 (-0.58)
Fixed exchange rate regime X real overvaluation	0.0008 (1.42)	0.0003 (1.83)*	0.0008 (1.46)	0.0003 (1.66)*	0.0004 (1.02)	0.0005 (0.71)
Fixed exchange rate regime X M2/ foreign reserves	-0.0018 (-0.53)	0.00004 (2.18)***	-0.0037 (-0.94)	0.00004 (2.11)**	-0.0671 (-0.68)	-0.0004 (-1.06)
Fixed exchange rate regime X real interest rate	0.0054 (0.95)	0.0050 (1.39)	0.0036 (0.62)	0.0049 (1.37)	-0.0029 (-0.36)	0.0049 (0.261)
Fixed exchange rate X capital flow	0.0618 (1.04)	0.1465 (2.11)**	0.0527 (0.87)	0.1258 (1.84)*	0.0389 (0.05)	-0.2454 (-0.66)
Fixed exchange rate regime X confidence on banking system	0.5506 (0.36)	-3.2833 (-1.46)	0.1122 (0.06)	-1.4893 (-0.63)	-4.909 (-1.25)	1.7908 (0.50)

(1) Notes : (1) YLS corresponds to the classification of Levy-Yeyati and Struzenegger (2005) et RR corresponds to the classification of Reinhart and Rogoff (2004). *t*-statistics are in parentheses. (***), (**) and (*) significant at 1%, 5% and 10%, respectively.

Table A.2.4: Instrumental variable estimation

Regression	**All countries**		**Development countries**		**Emergents countries**	
Exchange rate regimes classification	**LYS**	**RR**	**LYS**	**RR**	**LYS**	**RR**
Real overvaluation	0.00004 (1.30)	0.00005 (1.44)	0.00005 (0.15)	-0.0001 (-0.37)	0.00004 (1.30)	0.00004 (1.29)
External imbalances	0.00002 (1.67)*	0.00002 (1.69)*	4.3292 (2.21)**	0.00003 (2.04)**	0.00002 (1.67)*	0.00007 (0.67)
M2/ foreign reserves	0.0006 (0.60)	0.0004 (0.41)	0.00002 (0.02)*	0.0002 (0.21)	0.0359 (1.99)**	0.0006 (0.07)
Inflation	-0.0005 (-1.53)	-0.0006 (-1.76)*	0.0242 (2.14)**	0.0268 (2.44)**	-0.0003 (-0.94)	-0.0006 (-1.60)
External debts	-0.0124 (-1.88)*	-0.0138 (-2.13)**	0.2782 (1.64)*	0.2794 (1.73)*	-0.0153 (-0.67)	-0.0170 (-0.95)
Real interest rate	-0.0004 (-1.68)*	-0.0005 (-2.13)**	0.0244 (2.07)**	0.0238 (2.07)**	-0.0002 (-1.01)	-0.0005 (-1.87)*
Capital flow	1.853 (2.93)***	2.203 (3.53)***	1.6610 (0.73)	0.2282 (0.10)	1.2955 (2.01)**	2.1702 (2.85)***
Financial liberalisation	1.072 (0.95)	1.4278 (1.26)	0.5500 (0.33)	2.0594 (1.29)	-0.0389 (-0.02)	-2.5797 (-1.16)
Capital bank ability	-5.2751 (-4.40)***	-5.5731 (-4.61)***	-6.8104 (-2.87)***	-4.7575 (-2.08)**	-7.8073 (-3.79)***	-6.3847 (-2.96)***
Confidence on banking system	-0.3900 (-1.90)*	-0.6298 (-2.73)***	-1.0265 (-3.29)***	-1.2413 (-4.09)***	-0.3402 (-1.06)	-0.3608 (-2.87)***

Notes :

(1) YLS corresponds to the classification of Levy-Yeyati and Struzenegger (2005) et RR corresponds to the classification of Reinhart and Rogoff (2004).

(2) *t*-statistics are in parentheses. (***), (**) and (*) significant at 1%, 5% and 10%, respectively.

Table A.2.5 : Countries list

Algeria	. Guinea-Bissau	. Panama
Argentina	. Guyana	. Paraguay
Benin	. India	. Peru
Bolivia	. Indonesia	. Philippines
Brazil	. Israel	. Portugal
Burkina-Faso	. Italy	. Senegal
Burundi	. Jamaica	. Sierra Leone
Cameroon	. Japan	. Sri Lanka
Chile	. Jordan	. Sweden
. Colombia	. Kenya	. Swaziland
. Congo- Republic of	. Madagascar	. Tanzania
. Korea	. Malaysia	. Chad
. Costa Rica	. Mali	. Thailand
. Côte d'Ivoire	. Mexico	. Tunisia
. Ecuador	. Nepal	. Turkey
. United States of America	. Niger	. Uganda
. Salvador	. Nigeria	. Uruguay
. Finland	. Norway	. Venezuela
. Ghana	. Papua New Guinea	

Table A.2.6.- Countries by group

Development countries		**Emergents countries**		
Algeria	Nepal	Argentina	Malaysia	Uganda
Benin	Niger	Bolivia	Mexico	Uruguay
Burkina-Faso	Nigeria	Brazil	Panama	Venezuela
Burundi	Papua New Guinea	Chili	Paraguay	
Cameroon	Senegal	Colombia	Peru	
Congo- Republic of	Sierra Leone	Korea	Philippines	
Costa Rica	Swaziland	Ecuador	Sri Lanka	
Côte d'Ivoire	Tanzania	Salvador	Thailand	
Madagascar	Chad	India	Tunisia	
Mali		Indonesia	Turkey	