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THE IMPACT OF BANKING REGULATION ON THE EMERGENCE OF CRISES IN EMERGING COUNTRIES

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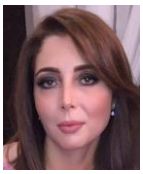

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ABSTRACT

In this study, we analyzed the regulatory, macroeconomic and institutional environmental effects on the probability of the emergence of banking crises in 78 emerging countries that had a fragile banking system in 1997 in a cross-sectional study using a logit model. The empirical examination validates a link between the weakness of certain regulatory and macroeconomic factors and of newly liberalized emerging market banking crises, this study want to examine weakness of regulatory and macroeconomic factors of newly liberalized, etc. banking concentration, restrictions on insurance, the financial market and the real estate sector were not related to the outbreak of banking crises in our estimates. On the basis of results, this study concludes that good regulation leads to bank stability. However, certain restrictions on inappropriate banking activity were the causes of the emergence of banking crises. As a result, the fragility of macroeconomic and institutional factors and the lack of diversification has clearly led to bank fragility and consequently to banking crises.

Contribution/ Originality: This study contributes to the existing literature by considering that the vulnerability of banks in emerging countries reflects a fragile and inefficient banking system. Thus a strong restriction of certain banking activities accompanied by a deterioration of the macroeconomic factors and a weakness of some institutional factors can lead to banking crises.

1. INTRODUCTION

The literature on financial liberalization and its effects on the economies of countries gives mixed opinions. Few studies conclude that liberalization strengthens financial development and contributes to long-term growth (Tanna *et al.*, 2017; Rachdi *et al.*, 2018). Other studies focused on the negative effects on financial stability and the succession of banking crises over the decades (Rancière and Tornell, 2016; Gnangnon, 2018; Ambrogio *et al.*, 2019). Several reasons account for this discrepancy.

Keeley (1990); Hellmann *et al.* (2000) and Repullo (2004) explained the negative influence of financial liberalization through banking competition[1]. Others insisted that financial liberalization could affect the stability through different channels outside of changes and competition from banks (for example, by encouraging bank risk-taking, by broadening the possibilities of taking risks in the foreign market or in non-traditional activities) (Cubillas

[1]Banking competition erodes the value of bankers' insurance and reduces their incentives to act cautiously.

and González 2014).Thus, even if the competitive incentives for banks to take risks do not change, banks could take more risks by participating in new activities (Barth *et al.*, 2004).

Overall, the literature on the effect of financial liberalization on the emergence of banking crises fails to reach a concrete conclusion. For example, Joyce (2011) stated that countries with more open capital regimes are less likely to have bank crises and that these crises were more likely to occur when a country has a current account deficit. Schaeck *et al.* (2009); Angkinand *et al.* (2010); Allen *et al.* (2011); Demirguc-Kunt and Huizinga (1999) found that macroeconomic factors such as GDP growth, interest rates, inflation, and capital flows have an impact on the emergence of banking crises. However, the banking crises were also explained by poor or weak banking regulation according to Cubillas and Suárez (2018). The work of Barth *et al.* (2004;2008) found that the more countries intensified banking regulation and supervision, the more crises were expected to increase.

This literature review reveals the absence of any studies that have looked at all of the following aspects: macroeconomic, institutional, regulatory and more specifically, restrictions on certain sectors to explain crises. Different studies have always focused on one of these aspects to explain banking crises. There is a real need to analyze the effect of all these aspects on the triggering of banking crises in emerging countries. The objective of this article is to fill this gap and to analyze the impact of macroeconomic, institutional and regulatory factors in triggering banking crises

Our results suggested that restrictive monetary policies that keep macroeconomic and institutional variables under control were advantageous when it comes to banking sector stability. However, we found that banks' risk-taking was not well accompanied by good banking regulation. Indeed, imposing a lot of restrictions on certain sectors has limited the diversification of banks' revenues which led eventually to crises. The outline of the elements of banking supervision is in Section 2 of this paper, Section 3 discusses the role of institutional factors in the form of compliance and corruption, a presentation of the data and indicators used to measure banking crisis is presented in Section 4, an interpretation of the results is in Section 5 and the last section is devoted to the conclusion.

2. THE ROLE OF BANKING SECTOR SUPERVISION IN BANKING CRISES

Regulation or banking supervision includes all standards aimed at supporting the soundness of credit institutions. The main objectives of regulation are to reduce risks for banks, investors and investments, as well as to ensure transparency between credit institutions and depositors. In this section we will present a synthesis of the existing literature on the different types of banking regulations.

2.1. Supervision of the Banking Sector

The fundamental role of banking supervision is to ensure banking stability by minimizing risks to banks. For the early 2000s, Barth *et al.* (2004) noted that increased activity restrictions on banks led these institutions to take more risks. Similarly, Zhang *et al.* (2016) examined the behavior of banks in China following the reduction in the high level of non-performing loans by Chinese banking authorities. In order to achieve this result, the authors used a panel regression model and data covering 60 urban commercial banks, sixteen public banks and eleven rural commercial banks over the period from 2006 to 2012. They found that an increase in the non-performing loan ratio increased the number of riskiest loans, which could lead to deterioration in loan quality and instability in the financial system.

2.2. Bank Concentration

Banks that borrow more money from other banks tend to have fewer and more concentrated deposit-taking relationships. Large banks and banks in areas where there are more potential customers tend to establish more numerous and diversified interbank relationships. However, the concentration-fragility relationship presented by

several authors such as Boyd and Nicolo (2005); Schaeck *et al.* (2009) and Allen *et al.* (2011) suggested that large banks in a concentrated market weaken its stability.

Contrary to this research, Khan *et al.* (2016) studied financial stability in several Southeast Asian economies (Malaysia, Indonesia, Singapore, Philippines and Thailand) between 1995 and 2014 and found that the relationship between concentration and competition from banks played an important role not only in the efficiency of banks but also in the stability of the financial system, economic growth, the transmission of monetary policy and access to credit.

2.3. Regulation of the Right of Entry of Foreign Banks into the Local Market

The number of foreign banks has increased significantly in emerging Asian and Latin American countries since the early 1990s. Banking markets in these economies have become increasingly international due to financial liberalization, widespread privatization, financial integration and banking reform efforts. The impact of this increasing entry of foreign banks on the competitive structure of domestic banking markets has been widely debated.

Onder and Ozyilidirim (2019) found that the presence of foreign banks in Latin America over the period between 1999 and 2011 was negatively and significantly correlated with macroeconomic volatility both in normal times and in periods of crisis.

A contradictory study was presented by Wu *et al.* (2017). They used banking panel data on Asia and Latin America during the period from 1997 to 2008 to show that an increase in the penetration of foreign banks improved competition in the banks of these host countries and strengthened their banking systems.

2.4. Deposit Insurance

Deposit insurance is widely available in a number of countries as part of a financial system safety net to promote stability. However, it appears to have an unanticipated effect. Deposit insurance reduces the incentive for depositors to monitor banks and risk-taking tends to increase. In the following section, we examine the effect of deposit insurance on bank fragility.

In addition, Anginer *et al.* (2014) found that good banking supervision can mitigate the unintended consequences of deposit insurance on systemic banking risk. They predicted that if institutions were good, moral hazard possibilities were more limited. Effective prudential regulation and supervision could compensate for the negative incentives created by deposit insurance. In other words, the impact of deposit insurance on bank stability tended to be stronger when the system was managed by the government rather than by the private sector.

Egan *et al.* (2017) developed a quantitative model of the US banking sector through new data and covering the largest US banks over the period from 2002 to 2013. The model included insured depositors and uninsured depositors. The results showed that increasing deposit insurance coverage could increase or decrease the risk to financial stability depending on whether banks or depositors benefited from the increase in insurance. The estimated demand for uninsured deposits decreased with the financial distress of banks. Egan *et al.* (2017) also found that a capital requirement of less than 18% could result in a significant instability in the banking system.

If financial liberalization and the fragility of banking supervision are considered to be factors that triggered bank crises, then are they also relevant for institutional factors?

3. ROLE OF INSTITUTIONS ON THE APPEARANCE OF CRISES

Legal institutions in the form of law and rules of law as well as economic institutions as a system of supervision and regulation of banks form the main determinants of financial development. The law and the rules of law are two theories that explain financial development.

The theory of law and finance is derived from the legal system and has an effect on financial development. Each country has its own right to protect private property as well as protection according to the different institutions. Indeed, weak institutions have been placed in regions hostile to colonizers, so that the exploitation of the resources of these countries is quick and easy, resulting in a lack of protection of private property rights and weak support for financial development

3.1. The Law

The theory of law and finance was derived from the legal system and has an effect on financial development. Each country has its own right to be adapted to protect private property as well as all protection corresponding to the different institutions. La Porta *et al.* (1997;1998) were the founders of this theory.

The basic foundation of this theory is the role of legal institutions in financial development. As a result, countries that have a legal system that facilitates contracts between private agents and protects their rights and those of investors will be encouraged to invest in companies. When investors feel secure, they will be able to contribute to the development of the financial market. In contrast, if a country is managed by a legal system that did not protect property rights and investors, its financial development would slow down.

3.2. Corruption

The absence of corruption or, more specifically, transparency between banks and their depositors can be seen as an institutional factor that can affect the occurrence of banking crises. As a result, opinions are mixed on this factor. As Park (2012) examined the impact of corruption on the banking system and economic growth using a sample of 70 cross-sectioned countries from 2002 to2004. His main conclusion was that corruption increased risky loans. Consequently, it is the main cause of the onset of financial crises and the deterioration of growth.

In studying the impact of the legal and institutional environment on the system of governance, La Porta *et al.* (2000) found a significant impact between investors and managers if there was a good environment for applying governance mechanisms. Similarly, Klapper and Love (2004) tested the impact of the regulatory and institutional environment on governance mechanisms in fourteen emerging countries. They found that weak governance existed in a weak regulatory and institutional environment.

4. EMPIRICAL STUDY

The objective of this work was to analyze the determinants of banking crises. To achieve this, we studied a sample of 78 emerging countries in a cross-sectional study for1997. We chose to model the determinants of bank crises using the logit model that appears to be most used in economic studies. The logistic regression was based on the assumption of a latent, unobserved variable y_i^*_that showed a specific outcome that could be observed empirically as a dichotomous variable y_i. In our case, $y_i$is the CRISES' variable which measured the ons and of crises in a sand of countries. It takes the value 1 if y_i^* exceeds a threshold value τ. In logistic regression $\tau = 0$ by assumption. The latent variable can be expressed in a linear model:

$$y_i^* = x_i'\beta + \varepsilon_i (1)$$

The explanatory variables, x_i, was used to model bank crises related to macroeconomic factors, institutional factors and regulatory factors. Taking into consideration what we mentioned, the objective of this modeling was to provide a response to our problem relating to the impact of regulatory, banking and institutional factors on the occurrence of crises. In order to derive the probability, we started by assuming the threshold mentioned above ($\tau = 0$) and set up the equation:

$$p(y_i = 1|x_i) = p(y_i^* > \tau) = p(y_i^* > 0) (2)$$

Substituting Equation 1 leads to

$$p(y_i = 1|x_i) = p(x_i'\beta + \varepsilon_i > 0) \quad (3)$$

Rearranging the right-hand side of the equation leads to

$$p(y_i = 1|x_i) = p(\varepsilon_i > -x_i'\beta) = p(\varepsilon_i \leq x_i'\beta) \quad (4)$$

The right-hand side of the equation describes the probability of being smaller or equal to a specific value. This kind of probability is given by a cumulative probability density function (CDF), noted by $G(.)$ and we can write

$$p(y_i = 1|x_i) = p(\varepsilon_i \leq x_i'\beta) = G(x_i'\beta) \quad (5)$$

In logistic regression it was assumed that the errors follow a logistic distribution with expectation $E(\varepsilon_i) = 0$ and variance $v(\varepsilon_i) = \pi^2/3$. We can write

$$p(y_i = 1|x_i) = \frac{\exp(x_i'\beta)}{1+\exp(x_i'\beta)} \quad (6)$$

Therefore, the conditional probability $p(y_i = 1|x_i)$ measures the probability of having a crisis given exogenous variables. The coefficient β is the marginal effect measured on the conditional probability when there is unit change in data x_i. The estimator $\hat{\beta}$ could be calculated through maximizing the following log-likelihood function.

$$\ln L = l = \sum_{i=1}^{n}[y_i \ln G(x_i'\beta) + (1 - y_i)\ln(1 - G(x_i'\beta))] \quad (7)$$

Using CRISES, the variable to be explained indicating whether or not there is an outbreak of crises and i represents each country in the sample. A detailed description of the variables selected for our econometric study will be presented below.

4.1. Presentation of Data

To analyze the determinants of banking crises, the variables selected were related to macroeconomic, institutional and supervisory indicators and banking regulations. Our study covered a sample of 78 developing countries (see Table A1 in the Appendix), in 1997, the crisis-triggering period for the majority of emerging countries.

Our choice of explanatory variables reflects both the theory of the determinants of banking crises summarized in the previous sections and the availability of data.

The construction of the fictitious bank crisis variable was a key element of our study. In order to achieve these results, we identified and dated episodes of distress in the banking sector during 1997 using mainly the database of Laeven and Valencia (2013).

4.1.1. Bank Macroeconomic Indicators

We increased the share of non-performing loans that are disadvantageous to banks, to capture adverse macroeconomic shocks. We used real GDP growth rates as the explanatory variable. Ang and McKibbin (2007) argued that the variable that best reflected the progression of financial liberalization was the ratio of credit to the private sector to GDP so we considered this variable as an indicator of banking development and introduced it as regressed in our equations.

Inflation was introduced as an explanatory variable because it was likely to be associated with high nominal interest rates. We introduced the M2 ratio to foreign exchange reserves to check whether the problems of the banking sector were linked to sudden outflows of capital. According to Calvo (1996) this ratio was a good indicator of a country's vulnerability to balance of payments crises. Banks are the main financial institutions of each country

so the more the banking sector is developed, the higher the domestic credit so this variable was used to assess the credit boom.

4.1.2. Institutional Indicators

Regarding institutional variables, we chose two variables: the role of the law and corruption control. The role of law is an indicator that reflects the quality of contract execution. The corruption control variable is a variable that indicates transparency, in which public power is exercised for private purposes, including small and large forms of corruption. These two variables were taken from the World Bank. (The database of World Bank).

We mainly measured bank risk using the Z-score[2] of banks. This variable measures distance from insolvency (Roy, 1952). It is an indicator of bank stability.

4.1.3. Indicators of Supervision and Banking Regulations

The level of competition in banking markets is a factor that affects risk taking. Therefore, we controlled the concentration of the five major banks at the level of industry and the country. In fact, the concentration rate was an indicator of the structure of the banking markets. In terms of banking regulation, we controlled the existence of a deposit insurance system. It was1 if the country used deposit insurance and 0 if not. Deposit insurance was an equally important variable in the institutional environment and can create incentives to take excessive risks (Kane, 1986). Therefore, we used the variables that measured the intensity and scope of regulation in the banking sector and on a national level, as defined in the global database on banking regulation in Barth *et al.* (2004). In addition, we used the level of capital stringency, the level of supervisory power of official banks, and business restrictions (Barth *et al.*, 2004).

Business restrictions are indices measuring the regulatory limits imposed on banks operating in securities markets, insurance activities, real estate and the ownership of non-financial enterprises. In the selection of data on the regulation set out by Barth *et al.* (2004) we analyzed the rules that the theory evidences with regard to the behavior of banks. Hence, we were looking at capital regulation and regulatory restrictions on the emergence of banking crises. Capital was the regulatory oversight factor for Barth *et al.* (2004). It gave us insights of whether the source of funds that constitute regulatory capital might have included assets other than liquidity, government securities or borrowed funds. Capital included information on the extent of regulatory requirements regarding the amount of capital banks must hold.

Restriction represented the regulatory restrictions we have constructed from the survey of the banks activities of the Barth *et al.* (2004). It measured regulatory barriers for banks such as:

- Stock markets activities (subscription, brokerage, trading and all aspects of the mutual fund industry);
- Insurance activities involving the subscription and sale of insurance;
- Real estate activities (real estate investment, development and management); and,
- Ownership of non-financial enterprises.

The values that we provided for securities, insurance and real estate ranged from 1 to 4, where higher values indicated more restrictions on banks operating each activity. In particular, 4 meant prohibited, 3 meant that there were strict restrictions on the provision of the activity, 2 meant that the activity was permitted but with certain limitations, and 1 indicated that the activity was permitted.

Regulatory index for the acquisition of non-bank firms: This index measured a bank's ability to own the shares of a non-financial corporation and thus to diversify its sources of income. This index used a value of 1 to 4, if the rate was high it was a strong restriction, if it was low it was considered a small restriction. Table 1 summarizes the various variables selected, their definitions and their sources.

[2]Return on assets plus the capital to assets ratio, divided by the standard deviation of the return on assets.

Table-1. The explanatory variables.

Variables codes	Variables	Source
Growth	GDP Growth annual %	World Bank
Inflation	Inflation GDP deflator annual %	World Bank
Crédit	Credit provided for the private sector as a percentage of GDP.	World Bank
M2_reserve	M2 ratio to foreign exchange reserves	World Bank
Debdt	Doubtful debts	World Bank
Non-financial firms	restrictiveness of ownership by nonfinancial firms of banks	Barth *et al.* (2004)
Z_score	Banking risk measurement	BankScope
Rule of low	Index that measures compliance with contracts	World Bank
Corruption	Measuring the transparency of banks	World Bank
Concentration	the 5-bank concentration ratio	Barth *et al.* (2004)
Insurance	Deposit insurance	Beck *et al.* (2008)
Losses/loan	Market value of loan losses	Barth *et al.* (2004)
Losses/exchange	Unrealized foreign exchange losses	Barth *et al.* (2004)
Nb of foreign applications	Number of foreign applications for banking licenses	Barth *et al.* (2004)
Nb of domestic applications	Number of domestic applications for banking licenses	Barth *et al.* (2004)

5. PRESENTATION OF THE RESULTS

As stated previously, we analyzed 78 emerging countries in order to determine the most significant variables that best explained the outbreak of banking crises. Table 2 presents the results of the estimates. We estimated three different specifications. In the first specification, we only used the macroeconomic variables specification (1) in Table 2. We added two variables (low and corruption) to the first specification to get the second specification (2) in Table 2. The last specification presented the full model with all variables including macroeconomic, institution and regulatory variables specification (3) in Table 2.

The variable measuring growth was not significant according to the first specification. Given all variables in the first specification were not significant, we focused more on the second and the third specifications in our interpretation of the results. According the third specification in Table 2, the credit variable coefficient was positive, and strongly significant at the 1% significance level, which supported the argument that credit expansion signals bank fragility and an increase in crises.

The inflation variable had a significant coefficient. This confirmed the well-known vulnerability of the banking system to credit and inflation shocks. Thus, it appeared that weak GDP growth, high real interest rates and high inflation ere significantly correlated to the onset of a banking crisis. The M2 ratio to the central bank's foreign exchange reserves, measuring external vulnerability to capital outflows, had a significant impact.

The variable measuring credit to the private sector and measuring banking development had a significant and positive effect. It appears that countries where the banking sector has greater exposure to private sector borrowers are more vulnerable to banking crises. This leads to confirming Abbas *et al.* (2017) results. With respect to institutional variables, our results showed that the law variable had a significantly negative effect for different types of countries. This showed that crises have arisen in countries that did not respect the law. This confirmed the work of Demirguc-Kunt and Huizinga (1999) which found that market discipline was stronger in countries with a higher level of institutional development, such as bureaucratic quality, bureaucratic delays, lack of corruption, quality of contracts and legal effectiveness However, they also found that even in countries where institutional development was strong, market discipline could be restricted by deposit insurance schemes that sand high limits, extend coverage to interbank deposits, and establish a permanent reserve fund.

However, the variable measuring corruption did not have a significant coefficient. This was contradictory to the work of Park (2012)who found that corruption increased bad debts and slowed down economic growth.

Table-2. Results of estimates.

Variables	Specification (1)	Specification (2)	Specification (3)
Growth	0,034	0,111	0,117
	(0,089)	(0,127)	(0,095)
Inflation	0,004	0,003	0,005**
	(0,006)	(0,004)	(0,002)
Credit	0,014	0,0371*	0,053***
	(0,010)	(0,019)	(0,018)
M2_reserve	-0,189	-0,212	-0,288*
	(0,129)	(0,213)	(0,167)
Debts	0,021	0,084**	0,051**
	(0,016)	(0,039)	(0,025)
Law		-2,257***	-0,867*
		(0,846)	(0,472)
Corruption		0,701	0,090
		(0,480)	(0,236)
Bank_zscore			-0,094**
			(0,048)
Insur_deposit			0,923
			(0,706)
Insurance			0,185
			(0,409)
Real estate			-0,278
			(0,540)
Non-financial firms			-1,220*
			(0,626)
Bakobis			-1,053**
			(0,519)
Losses/exchange			2,734*
			(1,560)
Losses /loan			0,838
			(0,974)
Concentration			0,010
			(0,018)
Nb of domestic applications			-0,141
			(0,149)
Nb of foreign applications			0,416*
			(0,221)
Losses /share			3,102*
			(1,645)
Constant	-0,644	-1,626	2,591
	(0,740)	(3,308)	(2,347)
Observations	78	59	78

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1.

5.1. The Regulatory Variables

Bank risk as measured by the Z-score is often used to also measure the stability of the banking system (Lee and Hsieh, 2013). The Z-score is the only risk measure. Our results showed that the coefficient of this variable was significantly negative. Confirming this idea, we could say that the more bank risk increased, the more bank crises were expected. Thus, bank instability had a significant impact on banking crises. Our estimates showed that there was no clear correlation between concentration levels and the crisis. Concentration of the five major banks reduced banking competition, thereby having a positive effect on bank stability.

Our findings were consistent with those of Beck *et al.* (2006) which examined the impact of the national concentration of banks, regulation of banks and national institutions on the probability of a country suffering from systemic banking crises. They used data on the period between 1980 and 1997 for 69 countries and found that crises

were less likely in economies with more concentrated banking systems. The deposit insurance variable had a significantly positive coefficient.

Our results showed that the presence of an explicit deposit insurance system greatly increased the probability of problems in the banking sector alone. The loss of unrealized securities presented a positive sign. Restricting banking activities means restricting banks' activities on the risky securities they may hold. Limitation of risk enterprises may also reduce financial losses in view of the opacity of bank assets. However, the results of Barth *et al.* (2004) indicated the opposite: the restriction of banking activities was negatively linked to the stability of banks and increased the probability of a banking crisis.

The coefficient of the variable measuring the Loss of Exchange was significantly positive. It seemed that an imbalance in the stock of exchange favored the occurrence of a banking crisis. In addition, the variable measuring the number of foreign applications for a bank license refused affected positively and significantly the appearance of banking crises. This showed that their banking system was not open internationally. A country that liberalizes its economy must work with international software and standards and follow international software so that it can work with banks around the world.

Several works found that the increase of restrictions on stock markets, underwriting insurance, the holding of non-financial corporations by banks or participation in real estate transactions, reduced bank risk taking. We did not find any support for this idea. On the contrary, we found that the restriction on banks' ability to hold and control non-financial businesses increased bank fragility. At the same time, banks that diversified, expanded their revenue streams and became more resilient to shocks had a positive impact on the stability of the banking system.

According to our results, many countries have allowed free cross-ownership of shares between banks and non-financial enterprises. As a result, the regulation on the extent to which a bank can hold shares in a non-financial corporation has affected a bank's ability to diversify its sources of income.

6. CONCLUSION

Since the early 1980s, systemic banking problems have emerged on several occasions around the world; hence there is a need to understand the links between the fragile banking sector and the economy. Numerous case studies indicated that while experiences varied considerably from country to country and over time, there may have been factors common to all banking crises. In this work we have identified some of these commonalities by estimating a logit model for a large number of countries.

Our results showed that the macroeconomic environment played a key role in banking crises, in particular, if this environment was characterized by: low GDP growth; an increase in credit to the private sector, significant inflation, increased credit and large doubtful accounts. All these indicators seem to have triggered the emergence of banking crises. In this regard, the variables of regulation in the form of: deposit insurance, regulation of the acquisition of banks to non-financial enterprises, exchange loss, loan loss, and the loss of equities were triggers of bank crises.

Moreover, all these factors along with institutional factors in terms of non-compliance with the law have contributed to the vulnerability of banks in emerging countries. It is not necessarily a sign of an inefficient banking system because the role of banks as financial intermediaries implied a certain risk taking. However, banks could have covered some of the credit risk due to fluctuations in the domestic economy by lending abroad.

The results also showed that the restrictions on insurance, the financial market and the real estate sector were unrelated to the outbreak of banking crises contrary to the results of Barth *et al.* (2004;2008). This suggested that good regulation leads to banking stability. We concluded that diversifying banks could broaden their revenue streams and become more resilient to shocks. This would have a positive impact on the stability of the banking system.

In conclusion, the results of our present work were interesting and could be complemented by the study of American banks following the subprime crisis. We could further discuss the idea of supervision through an evaluation of the effectiveness of control mechanisms of the policy of American banking supervision. From an empirical perspective, we could look at building an effective risk management system that complied with international prudential standards.

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APPENDIX

Table-A1. List of emerging countries.

Emerging countries		
Argentine	Guyana	Peru
Aruba	Honduras	Philippines
Bangladesh	Hongray	Poland
Belarus	India	Puerto Rico
Bhutan	Indonesia	Qatar
Bolivia	Israel	Romania
Botswana	Jamaica	Russia
Brazil	Jordan	Rwanda
British Virgin Islands	Kenya	St Kitts
Burundi	Korea	Samoa
Cambodia	Kuwait	Saudi Arabia
Chile	Latvia	Seychelles
China	Lebanon	Singapore
Croatia	Lesotho	Solomon Islands
Czech Republic	Lithuania	South Africa
Egypt	Macau	Sri Lanka
El Salvador	Macedonia	Tajikistan
Estonia	Malawi	Thailand
Gambia	Malaysia	Tonga
Ghana	Maldives	Trinidad and Tobago
Guatemala	Malta	Turkey
Guernsey	Mauritius	Turks and Caicos
Népal	Mexico	Vanuatu
Nigeria	Moldova	Venezuela
Oman	Maroco	Vietnam
Panama	Namibia	Zambia

Source: Barth *et al.* (2004).