Volume 18 Issue 44
Originally issued as C7

Global Journal of Management and Business Research: C Finance
Volume 18 Issue 7 Version 1.0 Year 2018
Type: Double Blind Peer Reviewed International Research Journal
Publisher: Global Journals
Online ISSN: 2249-4588 & Print ISSN: 0975-5853

Prudential Regulation and Banking Risk in MENA Countries

By Nadia Mansour & Ezzeddine Zouari
University of Sousse-Tunisia

Abstract- This paper analysis the impact of prudential regulation on banking risk using the measurement technique "z-score" by introducing the financial and economic determinants (real GDP growth rate, inflation, real GDP growth rate, inflation, the governance indicator, etc.).

For this reason, we used a sample of 146 conventional banks in the MENA region during the 2003-2014 period, whose purpose was to determine the specificities of these countries about the determinants of banking risk.

Keywords: *banking regulation, banking risk, z-score, mena countries.*

GJMBR-C Classification: *JEL Code: E50*



Strictly as per the compliance and regulations of:

© 2018. Nadia Mansour & Ezzeddine Zouari. This is a research/review paper, distributed under the terms of the Creative Commons Attribution-Noncommercial 3.0 Unported License http://creativecommons.org/licenses/by-nc/3.0/), permitting all non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

Prudential Regulation and Banking Risk in MENA Countries

Nadia Mansour [α] & Ezzeddine Zouari [σ]

Abstract- This paper analysis the impact of prudential regulation on banking risk using the measurement technique "z-score" by introducing the financial and economic determinants (real GDP growth rate, inflation, real GDP growth rate, inflation, the governance indicator, etc.).

For this reason, we used a sample of 146 conventional banks in the MENA region during the 2003-2014 period, whose purpose was to determine the specificities of these countries about the determinants of banking risk.

Keywords: banking regulation, banking risk, z-score, mena countries.

I. Introduction

Recent developments in banking systems are a challenge not only for banks, but also for regulators, and then they are forced to perform riskier activities so that they can compete with other institutions in the capital market.

There is the phenomenon of deregulation that has had the same effect as disintermediation at the level of credit institutions. This deregulation creates new opportunities and, consequently, the possibility of international expansion.

Also, the erosion of margins accompanied by economic deterioration leads to a sharp increase in banking risks. These risks have the effect of reinforcing the difficulty of generating profits.

Due to the presence of several types of banking risks, public authorities are forced to put in place policies to organize the banking sector with the example of banking prudential regulation which was interpreted as a set of constraints that are difficult to bear but necessary for the proper functioning of their activities.

In the context of a modern theory of financial intermediation, it is, therefore, necessary to put in place an appropriate regulatory process while establishing a system for analyzing, measuring and controlling risks. The requirement of adequate prudential supervision has become a concern at the national and international level. To carry out the prudential and monetary tasks assigned to them, the regulatory authorities have at their disposal a multitude of devices. In addition to these, international prudential rules are imposed on all credit institutions by the Basel Committee. Over time, the prudential regulation of banks has taken on an international dimension based, notably those of the Basel Committee, which forms the basis of international prudential regulation seeking to harmonize prudential standards and financial strength in the field of global banking scale.

With the various regulatory provisions, the financial markets have undergone significant developments posing a challenge for credit institutions. Also, the financial market has brought profound fundamental changes in the nature and structure of the financial services sector. Among the main elements that characterize this regulation, there is the banking disintermediation, the development of activities, the internationalization and the reinforcement of the own funds.

Hence, the primary objective of financial regulation is to push banks to improve the level of liquidity and solvency (Lee and Chih, 2013). To this end, banks are required to put in place strategies involving the optimal allocation of resources and effective monitoring of environmental changes.

Therefore, and with financial liberalization, developing countries can not stay safe from these risks. However, few studies have focused on the study of the relationship between banking regulation in the Middle East and North Africa countries, although they have many characteristics with regard to the fragility of the banking system and informational opacity of the financial markets as well as their need to integrate on the international market (Rojas, 2001).

Also, MENA countries have put in place different mechanisms to enforce prudential regulation to deal with the effects of financial crises with a banking system increasingly integrated with global financial markets.

However, the application of prudential regulation standards requires a lot of effort on the part of banks, which must have sophisticated means to measure bank risks, as well as the possession of the necessary capital to apply these standards.

This brings us to the following questions: *What is the impact of prudential regulation on the management of banking risks?*

The problem developed is *that of assessing the impact of banking regulation in the MENA countries on the management of banking risks.*

II. Theoretical Foundations

The banking system faces various difficulties, even though this sector is one of the most regulated sectors of the economy. The most acute crisis in the

Author α: e-mail: mansour.nadia@hotmail.com

© 2018 Global Journals

banking sector is the subprime crisis, which has led to bank failures and significant damage to the economy. This situation led to the implementation of protection strategies, particularly for depositors to protect them from bank failures. Like those created by the subprime crisis, bank failures lead to a systemic crisis that is often accompanied by high social costs. To avoid such a situation, banks are obliged to comply with certain types of rules, the most important of which is prudential regulation through the Basel agreements.

To enable banks to manage the risks, the regulator of financial institutions has put in place several risk management principles through the Basel agreements.

a) Risk management and prudential regulation

Prudential regulation is intended to ensure stability of the banking system by pushing the banks to a reflection in their risk-taking. Thus, this regulation was presented as a cushion of security compared to the risks run by the banks.

Indeed, the main principles of prudential supervision were based on the prevention of banks' behavior, which could lead to risks and to avoid the spread in the financial markets. As a result, banks are forced to operate under liquidity and solvency constraints. When faced with a financial crisis, banks may have losses more than their capital. In this case, the role of regulation is to limit wealth transfers by forcing banks to control their risks. Thus, the most appropriate solution lies in the pressure exerted by the prudential authorities on financial institutions so that they can implement systems adapted to risk control. The supervisory authority also has the role of provoking reorganizations, having the participation of shareholders and financial partners to reduce the social cost of bankruptcies.

Thus, the Regulatory Committee focuses on researching the quality and effectiveness of banking supervision according to four different principles (Basel Committee on Banking Control, 2003).:

- Strengthen the security and reliability of the financial system,
- Establish minimum standards for prudential supervision,
- Disseminate and promote best banking practices and monitoring,
- Promote international cooperation in prudential supervision.

The prudential regulation applies to the control of financial risks and arises as a consequence of different crises and their impact on the solvency of financial institutions. Under the impetus of the work carried out by the supervisory authorities of several industrial countries, prudential regulation has evolved enormously over the last twenty years.

The control of bank risks was generally done in a conventional way in the form of legal conditions and management ratios. A part of the rules is designed to limit risks in a straightforward way. The purpose of this system is to measure and verify compliance with the internal procedures of the various rules in force and to check compliance with the risk limits while ensuring the quality of accounting and financial information. In this case, the regulations provide for the implementation of the system of measures, definition of monitoring and control of risks. As banks operate in a highly competitive environment, they face many factors that lead them to take risks that are often important. This situation puts financial institutions at risk while threatening the stability of the entire financial system, because of contagion effects. The advent of prudential regulation came about the aim of limiting the harmful effects of risk-taking and promoting the stability and security of the financial system.

To summarize the impacts of Basel regulations on risk control and balance sheet, Saidane (2011) has drawn up the following table:

Table 1: The impacts of Basel regulations

	Basel I	Basel II	Basel III
The scope of the measure	Basel I comes after a transition from a debt economy to a market economy and deregulation of credit. It aims primarily to frame a growing market activity.	The regulator has followed a micro-prudential approach (control of risk specific to an institution) to securing deposits	It begins a transition to a new macro-prudential logic aimed at stabilizing the financial system as a whole
Impact in terms of mastery risks	-Risk of market ++ -Risk credit + -Requirements of own funds +	-Risk of market ++ -Risk of credit +++ -Funding requirements own + -Operational risk ++	-Risk of market +++ -Risk of credit ++++ -Requirements of own funds ++++ -Operational risk ++ -Risk in liquidity ++++ -Pillar 2 and 3
Impact on the balance sheet	Low impact: assets, equity, off Balance-sheet	Strong impact on assets	Strong impact on assets and liabilities and very strong on equity and off Balance sheet

+ Low, ++ Medium, +++ High, and ++++ Very high. (Source: Saidane, 2011, P33)

© 2018 Global Journals

However, while regulators believe that higher capital requirements will have a positive impact on the banking sector, the empirical results are contradictory.

Some studies indicate that capital requirements lead to excessive risk-taking by banks, Besanko and Kanatas (1996), Blum (1999), Calem and Rob, (1999), while others argue that capital requirements influence risky behavior only in particular circumstances, Beatty and Gron (2001).

Indeed, Awdeh et al. (2011), using a dataset of 41 Lebanese commercial banks between 1996 and 2008, they analyzed the impact of capital requirements on bank risk-taking. They found that increased capital requirements were associated with increased risk. Nevertheless, Rochet (1999) found that the imposition of a minimum fixed capital ratio does not necessarily translate into a reduction in bankruptcy.

On their part, Fernandez and Gonzalez (2005) indicated that stringent capital requirements reduce bank risk. Similarly, Barth et al. (2004) found that stricter capital requirements are associated with fewer nonperforming loans.

According to Hellmann, et al. (2000) and Repullo (2004), capital requirements alone were not sufficient, and the imposition of additional regulations may be useful for reducing risk in a competitive environment.

For Ghosh (2016), the most capitalized banks have high levels of liquidity and quite diversified income. Also, size promotes better diversification that reduces risk and allows banks to support their operations with less capital and less stable financing.

The second argument relates to the ability of big banks to operate in a different market segment. These may have a comparative advantage in market activities that require significant fixed costs and benefit from economies of scale (Laeven et al., 2014).

Similarly, Cetorelli (1999) has argued that poor asset quality and a low level of liquidity are the two causes of bank failures. Banks may decide to diversify their portfolios during periods of crisis.

For the ratio of costs to revenues, Lee and Chih (2013) have shown an inverse relationship between this ratio and the bank risk, for the big banks in particular. As a result, big banks need to pay more attention to control costs than small banks.

Concerning the variable ready, it is generally used to measure risk: the over-expansion of credit was often interpreted as a warning of a banking crisis (Kaminsky and Reinhart, 1999; Mendoza and Terrones, 2008; Borio and Drehmann, 2010). At this level, according to Mirzaei et al., (2013), big banks benefit from economies of scale, which allows them to diversify the risks associated with loan portfolios.

For Lee and Chih (2013), there is a positive relationship between the age of the bank and the management of bank risks. Indeed, the larger the bank is in age, the more likely it is to take more risks.

Köhler (2015) also showed that a large number of countries of characteristics likely to have an impact on the risk and return of the banks, as the overall macroeconomic environment. For example Real GDP per capita affects the Z-score in the opposite direction.

Hence the question arises as to the relationship between prudential regulations and the management of banking risks in developing countries and in particular the MENA countries, which have many characteristics about the fragility of the banking system and the informational opacity of the financial markets.

b) Risk measurement

Banking activities are considered inherently risky, and these risks are the very essence of the bankers' business.

The risk is a complex notion of defining because it is related to several factors, including the occurrence of an unforeseeable event with many consequences on the balance sheet of financial institutions. In other words, the risk presents itself for a financial institution as an event chronically impacting the operations carried out.

From these definitions, we can say that the risk was then linked to a notion of uncertainty in which we must measure both the volatility criteria and the negative consequences of risks on banking operations. Also, there were classified as specific risk, which affects all banks, and systemic risk.

Systemic risk was defined as a disruption that directly impacts the functioning of the banking system, its operating mechanisms, and its regulatory mechanisms.

To precisely define the notion of risk, it is wise to begin by distinguishing the random and unpredictable nature of the risk issue from the operation and financing of banks.

As part of this study, this is a measure Z-Score, to assess the banking risk and to overcome the shortcomings of the ratio method. Indeed, the assessment of banking risk is traditionally carried out by analyzing various financial ratios (for example the ratio of non-performing loans to total loans, the ratio of non-performing loan provisions to total assets, etc.). These variables have been criticized by the empirical literature since the ratio method has no theoretical basis, and even in its most elaborate form, the ratio method does not take into account the diversification impact on risk, Lee and Chih, (2013), p713.

Hence, we will base ourselves on the measure of Z-score. This overall measure takes into account both the risks associated with banking activities and the degree of coverage of these risks assured by capital, Goyeau and, Tarazi, (1992). According to Beck et al. (2010), "Assuming that profits follow a normal

© 2018 Global Journals

distribution, it could be shown that z-score is the inverse of the probability of insolvency." The Z-score indicator can be estimated using the probability of default extracted from Roy (1952) and developed by Goyeau and Tarazi (1992). This is that the losses exceed the equity (Roy, 1952, Boyd and Graham, 1988) and it can be written as follows:

$$Probability\ of\ de\ fault\ =\ prob\ (\pi\ <\ -E) \quad (2.1)$$

In this study, we will divide the two components of the equation by the total assets:

$$Prob\left(\frac{\overline{\pi}}{A} \leq\ -\frac{E}{A}\right) = Prob(\overline{ROA} <\ -\frac{E}{A}) \quad (2.2)$$

With:

$\overline{ROA}$: Economic profitability

A: Total Assets

E: Equity

From where:

$$Prob\langle(\overline{ROA} - \mu_{ROA}\ )/\sigma_{ROA} \leq (-\lambda - \mu_{ROA\,\mu})/\sigma_{ROA}\rangle = Prob\langle(\overline{ROA} - \mu_{ROA}\ )/\sigma_{ROA} - Z\rangle \quad (2.3)$$

With:

At the level of our study, we will calculate this variable by integrating the natural logarithm (Lee and Chih, 2013).

III. Methodology

To avoid difficulties due to the lack of homogeneity of banking practices, the selection is focused exclusively on conventional banks, Cihak and Hesse, (2010). We have a sample of 146 banks for which we hold all the financial information necessary to conduct the empirical analysis.

Our sample will include 146 conventional banks in 17 MENA countries (Algeria, Bahrain, Djibouti, Egypt, Jordan, Kuwait, Lebanon, Malta, Morocco, Oman, Palestine, Qatar, 8 Saudi Arabia, Syria, and United Arab Emirates). Tunisia, Yemen) over the period 2003-2014, which gives a panel of 1752 observations.

Few empirical studies have focused on this area although it has specific characteristics. First, these countries have bank-based financial systems, with bank assets accounting for 60% to around 100% of GDP in countries. This situation makes the banking system a key player in the financial intermediation process.

Second, the considerable importance of banks in these economies makes bank credit the main channel of monetary transmission, Boughrara and, Ghazouani, (2011) and the lack of well-developed financial markets and the changing nature of money markets make the effectiveness of an interest rate channel much less attractive, Neaime, (2011).

Third, even in financial terms, the banking sector's indicators of cost and performance conditions are similar: funding levels are adequate, revenue cost ratios are modest and, interest margins are high (World Bank, 2014 and IMF, 2015). Hence the motivation to work in the MENA zone.

a) Presentation of the model and definition of the variables

Following the economic changes in the MENA countries and especially in the banking sector, we have chosen the quality of the assets and the capital ratio to study "Z-Score ". We also took into account the liquidity ratio, the size, the banking efficiency and the age of the bank as a control variable.

Thus , the models used for the study of banking risk, inspired by the research of Lee and Chih (2013) and Klomp and Hann (2012), take the following forms:

$$Y = a\ X_t + b\ Y_t + \varepsilon_t\ , \varepsilon_t\ \sim (N, \sigma_t^2)$$

With:

X_t : Financial determinants

Y_t : Macroeconomic determinants

And

$$\begin{aligned} Y\ (\mathrm{Z-score}) = {} & a_0 + b_1 * Res_{NPL} + b_2 * CIR + b_3 * LIQ + b_4 * CAR + b_5 * Size + b_6 * Time \\ & + b_7 * LDR + b_8 * Res_{LOAN} + b_9 * GDPGR + b_{10} * GDPPC + b_{11} \\ & * GDP\ Deflator + b_{12} * Interest\ Rate + b_{13} * Governance + \varepsilon_t \end{aligned}$$

© 2018 Global Journals

Table 2: Description of the variables

		Variables	Variable codes	Description	Sources
financial determinants	**Asset quality**	Provision coverage ratio	Res_NPL	Non-performing loans / Gross loan	Bankscope
		Loan loss provision ratio	Res_LOAN	Loan-loss reserves / Gross loan	Bankscope
	Benefit and efficiency	Cost to income ratio	CIR	Costs to Income Ratio	Bankscope
	Liquidity	Current ratio	LIQ	Liquid asset / Short-term funding	Bankscope
		Loan to deposit ratio	LDR	Loans / Deposits & Short-term funding	Bankscope
	Size	Ln (total assets)	SIZE	Ln (total assets)	Bankscope
	Capital adequacy	Capital ratio	BECAUSE	Total regulatory Capital Ratio%	Bankscope
	Variable control	Time	TIME	It is the cumulative year of the establishment time	Bankscope
economic determinants	Macroeconomic variables	Real GDP Growth	GDPGR	Real GDP Growth	World Bank
	Macroeconomic variables	Real GDP per Capita	GDPCP	Real GDP per Capita	World Bank
	Macroeconomic variables	Real Interest Rate	INTEREST RATE	Real Interest Rate	World Bank
	Macroeconomic variables	Inflation	GDP DEFLATOR	Inflation	World Bank
	Macroeconomic variables	Governance Indicator	GOVERNANCE	Average of 6 Governance Indicator (Voice and Accountability, Political Stability, Government Effectiveness, Regulatory Quality, Rule of Law, Control of Corruption)	World Bank

b) The hypotheses

The succession of financial crises has given a lot of importance to prudential regulation in order to reduce the exposure to risks and limit the negative effects of risk-taking. Then, it is necessary to find indicators capable of alerting a risk in the banking system before the outbreak of a crisis. This situation is at the origin of the creation of a bank failure indicator "Z-Score", Mercieca et al (2007), Goyeau and Tarazi (1992).

The objective of this study is to analyze the impact of banking regulation on risk management in conventional banks in MENA countries between 2003 and 2014, taking into account the effect of the size of banks on the bank failure indicator. Hence the question underlying this study is whether there is a significant link between Z-Score and the level of regulatory oversight.

- The relationship between asset quality and bank risk management:

Ayadi and Pujals (2006): the higher the number of impaired loans, the higher the risks, despite the provisions made by the bank.

H1: Improving asset quality has a positive influence on bank risk management.

- The relationship between liquidity and the level of banking risk

Ayadi & Pujals (2005), Caprio, D'Apice et al. (2010) and Lee and Chih (2013): the more the bank's liquidity increases, the more the bank is likely to cope with liquidity shocks.

H2: Liquidity has a positive influence on bank risk management.

- The relationship between the ratio of costs to revenues and " Z-Score "

Lee and Chih (2003) and Francis (2004): These authors assure the existence of a negative relation between the costs on income and the risk. In fact, the

© 2018 Global Journals

higher the cost-to-revenue ratio, the higher the risk of bank failure.

H3: The variable ratio of costs to revenue "has a negative influence on" Z-score ".

- The relationship between the ratio of capital and " Z-score"

Zhong (2007): The level of capital is a determining factor in the bank's ability to withstand operational losses. Adequate bank capital can be used to reduce bank risk by acting as a buffer against losses, providing easier access to financial markets and limiting risk- Taking. Indeed, most prudential regulation bodies consider that an adequate level of capital strengthens the soundness and security of the banking sector.

H4: The variable «capital ratio» has a positive influence on "Z-score ".

- The relationship between macroeconomic variables and " Z-score "

Inflation is one of the key macroeconomic factors for financial development in the MENA region. Some studies suggest a negative relationship between inflation and the "Z-score" variable, Boyd, Levine and, Smith (2001).

Real GDP growth rate has a positive effect on the Z-score variable, Köhler, (2015).

Real GDP per capita has a positive relation with the Z-score variable, Köhler, (2015) since it is an indicator of the wealth of the countries.

The governance indicator has a positive impact on the likelihood of default risk according to Köhler 2015. Also, Gerschenkron (1962) argued that governance indicators are involved in reducing bankruptcy and promoting market access.

The real interest rate is inversely related to the risk of bank failure. Indeed, banks in countries with a high level of real interest rates have lower Z-score (Köhler, 2015).

H5: The influence of macroeconomic variables affects significantly "Z-Score".

IV. Empirical Results

This study involves presenting the results of the analysis to examine the impact of asset quality, efficiency, liquidity, prudential regulation, size and time factor on bank risk management.

In what follows, we present the significant statistics of the models constructed concerning the regression of the variables defined previously on conventional banks of the MENA zone with the empirical results obtained and their interpretations.

a) Descriptive analysis of variables and econometric tests

i. *Descriptive statistics*

This study will expose the descriptive analysis of the different variables. The table below gives the mean, the standard deviation, the maximum and the minimum of the variables studied during the study of the previously defined models (see appendix 1).

Indeed, we notice the disparity of the average values of the explanatory variables and their standard deviations. These two variables suggest that the sample structure is not homogeneous and that additional tests are required to select the appropriate estimator.

b) Econometric Tests

We would be based on econometric tests following: the multicollinearity test, stationarity and heteroscedasticity tests, the homogeneity test and the Hausman test.

i. *Multicollinearity test*

Examination of the correlation matrix (see Annex 2) highlights the absence of a multicollinearity problem. Therefore, we carried out the VIF test (see appendix 3) which allowed us to confirm the result since the average value of VIF is 1.94.

ii. *Stationarity test*

It is a question of testing whether the variables are stationary in time or not. To do this, we will base ourselves on the Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) tests.

© 2018 Global Journals

Table 3: ADF & PP tests

Variables	ADF		PP	
	In level	Indifference	In level	Indifference
Ln (Z-SCORE)	0.0295 **		0.0295 **	
RES_NPL	0.0064 ***		0.0072 ***	
RES_Loan	0.0002 ***		0.0002 ***	
CIR	0.0271 ** (with variation)			0.02 ** (The trend)
LIQ		0.02011 ** (The trend)	0.02507 **	
LDR	0011 **		0011 **	
CAR	0.0244 **		0.0220 **	
SIZE		0.0763 *		0.08 099 *
GDPGR	0.0127 ** (The trend)		0.0127 ** (The trend)	
GDPPC	0.02163 **		0.02163 **	
INTEREST RATE	0.0009 ***		0.0002 ***	
GDP DEFLATOR	0.0021 ***		0011 **	
GOVERNANCE	0.0000 *** (The trend)		0.0535 * (The trend)	

The results show the stationarity of the variables in level for the ADF & PP test and other variables were difference stationery.

iii. *Heteroscedasticity test*

We adopted the Breusch-Pagan test, the value of chi2 displays a value of 0.766 with a significance level of 0.09 below the critical threshold of 5% (see Appendix 4). This result leads us to accept the hypothesis of homoscedasticity and confirm the absence of a problem of heteroscedasticity.

iv. *Specification test, homogeneity test*

The specification test displays a Fisher value of 3.50 with a significance level of 0.0000 below the critical threshold of 1%; this leads us to reject the null hypothesis of homogeneity and to validate the distinction between fixed and random effects models.

v. *Hausman test*

The results of the Hausman test make it possible to reject the null hypothesis since the level of significance is 0.0007 below the 1% threshold having a chi-square value of about 34. The model chosen is, therefore, the fixed effects model.

c) The results of the estimates

The results of the Ordinary Least Squares fixed effects model estimation were presented in the following table.

© 2018 Global Journals

Table 4: The results of the estimates

Variables	Global Model			Big Banks			Small Banks		
	Coefficient	T-statistic	p-value	Coefficient	T-statistic	p-value	Coefficient	T-statistic	p-value
TIME	0.0788623	2.85	0004	0.151705	7.05	0.000	0.0457922	2.35	0019
CAR	0.0165551	2.73	0007	0.0209519	1.53	0126	0.0176421	2.92	0004
RES-NPL	-0.000159	-0.04	0972	-0.045895	-2.54	0012	0.0006495	0.14	0885
RES-LOAN	-0.015685	-2.00	0046	0.0821868	2.68	0008	-0.014277	-1.84	0067
CIR	-0.006159	-3.75	0.000	0.0180874	2.19	0029	-0.005904	-3.60	0.00 0
LDR	0.666953	2.83	0018	0.2380086	0.40	0686	0.761304	2.78	0006
LIQ	-0.014381	-5.32	0.000	0.0202948	3.16	0002	-0.01422	-5.26	0.000
Size	-0.307179	-1.65	0099						
Interest Rate	-0.017325	-1.72	0085	-0.036874	-3.13	0002	-0.019317	-1.94	0053
Inflation	-0.014115	-1.19	0233	-0.035984	-2.63	0009	-0.015862	-1.35	0179
GDPGR	-.0010608	-0.09	0932	0.0147121	1.12	0265	-0.002548	-0.21	0837
GDPPC	0 .0000111	1.06	0292	0.000014	1.70	0.09	0.000016	1.70	0089
Governance	1.077481	3.01	0003	0.6824748	1.58	0116	0.8681263	2.58	0010
Constant	4.374357	4.27	0.000	-3.451697	-3.56	0.0000	3.11873	4.69	0.000
F (13.572) = 7.47 Prob> F = 0.0000				F (12.383) = 9.23 Prob> F = 0.0000			F (12.574) = 7.84 Prob> F = 0.0000		

For the global model:

The variable «SIZE» is negatively related to "Ln Z-SCORE ". This result confirms the idea "Too Big to Fail". Indeed, this result corroborates with the work of Diamond (1984) and Hakenes and Schnabel (2011) who argue that the big banks are "too big to fail". Indeed, on the one hand, a large size allows the bank to occupy a more prominent place in the banking industry and enjoy an implicit insurance on its commitments. And on the other hand, it can still diversify in terms of asset portfolios, and as a result, achieve greater economies of scale.

The ratio of capital, in turn, is positively related to "Ln Z-SCORE". Indeed, several theoretical and empirical studies have highlighted the impact of prudential regulations on the level of banking risk. In this context, we can cite the studies by Koehn and Santomero (1980), Kim and Santomero (1988) who specify that the holding of a specific level of capital constitutes a margin of safety for the banking system, in particular for banks in the MENA countries which generally suffers from a strong asymmetry of information (Bougatef and Mgadmi, 2016).

Over the past two decades, the introduction of financial liberalization and financial system openness reforms to foreign investors in most MENA countries has led to a growing exposure financial crisis given the increase in the contagion effect. These countries have put in place various mechanisms to ensure the application of prudential regulation and put early warning indicators to avoid any possible banking crisis.

For the LDR variable, it was positively related to the "Z-score". This result confirms the finding of Ayadi and Pujals (2005), the higher this ratio, the higher the level of risk.

Also, the CIR ratio was negatively related to the risk of bank failure. As a result, the higher this ratio, the higher the risk of bank failure, according to the findings of Lee and Chih (2013) and Ghosh (2014).

For the variable LIQ, it was negatively linked with the dependent variable. This result indicates that banks have a significant level of liquidity and, as a result, high levels of risk.

Concerning the variable RES_LOAN (the ratio between Provision on bad debts and gross loans), it was negatively related to the risk of bank failure. Indeed, this ratio measures the funds spent by the bank to cover unexpected losses caused by impaired loans (Aggarwal and Jacques, 2001). This result contradicts the finding of Ayadi and Pujals (2005) which assumes a positive relationship between the ratio RES_LOAN and the risk of bank failure.

© 2018 Global Journals

In reality, this situation reflects a poor choice of projects or a reliance of banks on risky assets. Indeed, an increase in the level of capitalization will push banks to increase their risk to compensate for the losses generated.

For the control variable "Time", it was positively related to the dependent variable "Ln Z-SCORE." Indeed, the higher the age of the bank, the more likely it is to take on more risk.

Regarding the macroeconomic variables, and to control the institutional environment and the level of governance of the country, we will use the indicator of Kaufman et al. (2008). This indicator represents the average of the following six variables (Kaufman et al., 1999): Voice and Accountability, Political Stability, Government Effectiveness, Regulatory Quality, Rule of Law, Control of Corruption. This indicator is positively related to "Ln Z-score" according to the findings of Köhler (2015). This result means that any improvement in the institutional environment results in a decrease in the probability of bank failure risk.

For the real interest rate, it is negatively related to the dependent variable, according to the findings of Köhler (2015). Indeed, every increase in this level will lower the level of Z-score.

Comparison of big and small banks:

At this level, it is interesting to test the evolution of Ln (Z-score) between large and small banks. Therefore, we will follow the division used by Bourgain et al. (2012) that a bank was considered big if its total assets are more than 10 thousand $, otherwise, it is a small bank. As a result, 40 banks in the sample are considered big, and 107 banks are considered small banks.

According to the estimates above, we note that only the LDR variable is not statistically significant and therefore does not affect "Ln Z-SCORE" of the major banks of MENA countries. However, and contrary to the results of Lee and Chih (2013), this variable is positively related to the "Ln Z-score" for small banks. This result confirms the finding of Ayadi and Pujals (2005), the higher this ratio, the higher the level of risk. This result is explained by the nature of the sources of deposits, in small banks, which are generally characterized by a low level of stability.

The LIQ variable is positively related to the "Ln Z-SCORE" in the big banks, but it is negatively related to the "Ln Z-SCORE" in small banks. This result indicates that big banks are more liquid and hold higher levels of risk. Indeed, according to the work of Adusei (2015), big banks can increase their profits by accumulating high "capital buffers," which allows them to be less sensitive to liquidity.

The CIR variable is positively related to the risk of bank failure in big banks. Indeed, the higher the ratio, the less risky big banks are, and as a result, banks pay less attention to control costs than small banks. However, this variable is negatively related to "Ln Z-SCORE" in small banks. This result means that the higher the cost-to-revenue ratio, the more risky banks are. This indicates that smaller banks need to pay more attention to control costs.

For the CAR variable, it was positively related to "Ln Z-SCORE" in small banks. This ratio can reduce the risk of bank failure. According to Dewatripont and Tirole (1993), this ratio presents a measure of security that can absorb the probability of bank failure.

Concerning the variable RES_LOAN, it was negatively related to the risk of bank failure for small banks. This result reflects a poor choice of projects among the latter, who find many problems to access to successful projects. Nevertheless, this variable is positively related to Ln (Z-SCORE) in big banks. This result confirms the finding of Ayadi and Pujals (2005) which assumes a positive relationship between the RES-LOAN and the risk of bank failure. Indeed, the higher the ratio, the higher the number of bad debts expected and the higher the risks despite the provisioning.

The RES-NPL variable was negatively linked with "Ln Z-SCORE" for the big banks, hence the lower the ratio, the higher the banking risk. This result, contrary to the findings of Lee and Chih (2013), means that big banks do not have a capacity to resist.

For the control variable, it was positively related to the "Ln Z-SCORE" for large and small banks. Indeed, the more they are large in age, the more likely they are to take more risks.

Regarding the inflation rate, it was negatively related to the dependent variable in the big banks. This result shows the ability of the latter to cope with the high risk of inflation.

Also, the "GDPPC" rate is positively related to the three dependent variables for large and small banks in MENA. This result confirms the findings of Köhler (2015) and means that banks in the most economically developed countries are more profitable and more capitalized.

For the real interest rate, it was negatively related to the dependent variable in large and small banks according to the findings of Köhler (2015). Indeed, banks in the MENA countries with high real interest rates have lower Z-score levels.

However, the governance indicator is positively related to the dependent variable for small banks. This result confirms the results of Köhler (2015) who argues that any increase in this indicator reflects an improvement at the institutional level.

V. Conclusion

The 1980s saw a significant increase in bank risks, including credit risks and increased competition, which had the effect of threatening the stability of the

© 2018 Global Journals

banking and financial system. To protect banks and economic actors, monetary authorities, including the Basel Committee, have put in place regulatory requirements for banking activities.

Otherwise, the financial crisis, in recent years, has shown significant shortcomings in the prudential regulation of banks as well as some dead ends in self-regulation. To provide immediate responses to the crisis, the regulatory authorities have put in place reforms on the regulatory system for financial institutions. There were related to the implementation of solvency ratio requirements designed to take into account the level of risk faced by banks, their size and the business cycle in which they were located. However, the supervisory role of capital regulators is insufficient and requires additional new approaches focusing on macro-financial supervision.

The latter is particularly necessary because of the increasing development of systemic risk faced by banks and the ever closer interconnection between markets and financial institutions. As a result, banks are required to hold more capital so that they are more secure from different banking risks.

In this context, we have sought to highlight the impact of bank regulation on the probability of failure bench area in the countries of the MENA area over a period from 2003 to 2014. The results showed that raising the level of capital through a strengthening of risk hedging standards should lead to an overall decrease in probabilities of default within banks (Bichsel and Blum, 2004).

The result indicates that big banks are more liquid and hold higher levels of risk and are more stable with a high coverage ratio provisions. Indeed, the latter reduces the risk of bank failure.

However, smaller banks are riskier with higher cost ratios on revenues. These banks need to pay more attention to control costs.

© 2018 Global Journals

Appendix

Appendix 1: Descriptive statistics

	Global sample				Small banks				Big banks			
Variables	Mean	Std-Dev	Min	Max	Mean	Std-Dev	Min	Max	Mean	Std-Dev	Min	Max
Ln (Z-score)	3.297863	1.254814	-1.482556	10.33783	3.808387	1.46584	-2.57441	9.85672	4.05152	1.14593	0.45373	8.35932
RES_NPL	9.345712	13.15162	0	124.04	12.03333	15.42619	0	124.04	4.86837	5.72872	0.05	41.57
RES_ Loan	7.579532	8.872731	-0.843	76.961	9.027488	10.17074	-0.843	76.961	4.52418	3.59050	0.436	27.542
CIR	49.56357	48.47783	0	950	54.66419	56.66731	0	950	37.71177	12.27384	15.751	80.337
LIQ	38.88159	31.64643	0.855	555.703	43.96369	35.6368	0.855	550.703	26.97772	13.09279	3.384	63.479
LDR	0.5910021	0.771078	0	25.25	0.5580059	0.90957	0	25.25	0.66680	0.22856	0.15746	1.68264
CAR	20.75376	14.50058	-13.1	285.4	22.49277	17.34757	-13.1	285.4	17.41534	4.41639	0.65	38.1
SIZE	8.003754	1.764696	1.8453	14.97227								
TIME	34.07437	25.84404	0	195	31.78076	26.97058	0	195	40.13333	21.47599	0	103
GDPPC	16699.14	18100.23	607.9158	96732.41	13052.7	14942.62	607.9158	96732.4	26339.41	21820.74	1071.323	96732.4
GDPGR	4.920161	3.860769	-15.08839	26.17025	4.571108	3.39394	-15.08839	26.17025	5.84296	4.76715	-7.07610	26.17025
INTEREST RATE	2.360264	8.932278	-19.9269	43.50116	2.75136	8.073605	-19.9269	43.50116	1.32630	10.82271	-19.9269	43.50116
INFLATION	6.382923	7.663647	-25.12813	33.75154	6.385414	6.970905	-25.12813	33.75154	6.37633	9.25694	-25.1281	33.75154
GOVERNANCE	-0.1370379	0.630294	-1.76	5.171667	-0.1781183	0.6811279	-1.76	5.171667	-0.02826	0.45278	-0.92166	0.79

© 2018 Global Journals

© 2018 Global Journals

Appendix 2: Correlate matrix

	Time	CAR	ResNPL	Resloan	CIR	LDR	Liq	GDPdef~r	Size	intere~e	GDPper~h	GDPper~a	Govern~e
Time	1.0000												
CAR	-0.1256	1.0000											
ResNPL	-0.0028	0.1549	1.0000										
Resloan	-0.0007	0.1983	0.7570	1.0000									
CIR	0.0514	-0.1066	0.1065	0.0450	1.0000								
LDR	-0.1627	0.0909	-0.2611	-0.3337	-0.1345	1.0000							
Liq	-0.3314	0.3828	0.1515	0.1247	0.0656	0.0354	1.0000						
GDPdeflator	-0.0842	0.0529	-0.0520	0.0044	-0.0511	-0.0119	-0.0337	1.0000					
Size	0.2111	-0.2604	-0.2930	-0.2546	-0.2274	0.1577	-0.3315	-0.0002	1.0000				
interestrate	0.0488	0.0277	0.1421	0.1191	0.0480	-0.1144	0.0525	-0.8297	-0.0527	1.0000			
GDPpergrowth	-0.0973	0.0069	-0.0803	-0.0661	-0.0145	0.0294	0.0429	0.1062	-0.0263	-0.1747	1.0000		
GDPpercapita	-0.1962	-0.0010	-0.2346	-0.2047	-0.1953	0.3819	-0.1288	0.0090	0.2048	-0.1360	0.2336	1.0000	
Governance	0.0128	-0.0802	-0.3425	-0.3576	-0.0918	0.5233	-0.1671	-0.0322	0.1364	-0.1308	0.1253	0.5705	1.0000

Appendix 3: Test VIF

```
. vif

    Variable |       VIF       1/VIF
-------------+----------------------
interestrate |      3.71    0.269202
 GDPdeflator |      3.62    0.275884
     Resloan |      2.34    0.426853
      ResNPL |      2.23    0.447713
  Governance |      2.06    0.484738
GDPpercapita |      1.81    0.553459
         LDR |      1.62    0.619053
         Liq |      1.45    0.689645
        Size |      1.40    0.716704
         CAR |      1.35    0.739616
        Time |      1.33    0.749893
         CIR |      1.12    0.889268
GDPpergrowth |      1.11    0.904866
-------------+----------------------
    Mean VIF |      1.94
```

Appendix 4: Test of heteroskedasticity

```
Breusch-Pagan / Cook-Weisberg test for heteroskedasticity
         Ho: Constant variance
         Variables: fitted values of LnZscore
         chi2(1)      =     0.09
         Prob > chi2  =   0.7664
```

Appendix 5: Test of hausman

```
Test:  Ho:  difference in coefficients not systematic
            chi2(12) = (b-B)'[(V_b-V_B)^(-1)](b-B)
                     =        34.00
           Prob>chi2 =       0.0007
```


© 2018 Global Journals

Appendix 6: Global sample

```
. xtreg LnZscore Time CAR ResNPL Resloan CIR LDR Liq Size interestrate GDPdeflator
GDPpergrowth GDPpercapita Governance, fe

Fixed-effects (within) regression               Number of obs      =       679
Group variable: idofbank                        Number of groups   =        94
R-sq:  within  = 0.1451                         Obs per group: min =         2
       between = 0.1229                                        avg =       7.2
       overall = 0.0813                                        max =        12
                                                F(13,572)          =      7.47
corr(u_i, Xb)  = -0.8695                        Prob > F           =    0.0000

------------------------------------------------------------------------------
    LnZscore |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
        Time |   .0788623   .0276417     2.85   0.004     .0245706    .1331539
         CAR |   .0165551   .0060636     2.73   0.007     .0046454    .0284647
      ResNPL |  -.0001598    .004511    -0.04   0.972      -.00902    .0087004
     Resloan |  -.0156853   .0078338    -2.00   0.046    -.0310718   -.0002987
         CIR |  -.0061597   .0016447    -3.75   0.000      -.00939   -.0029293
         LDR |    .666953   .2800626     2.38   0.018     .1168765    1.217029
         Liq |  -.0143817   .0027022    -5.32   0.000    -.0196892   -.0090742
        Size |  -.3071795   .1856812    -1.65   0.099    -.6718795    .0575206
interestrate |  -.0173253   .0100477    -1.72   0.085    -.0370602    .0024096
 GDPdeflator |  -.0141154   .0118335    -1.19   0.233    -.0373578    .0091271
GDPpergrowth |  -.0010608    .012427    -0.09   0.932    -.0254689    .0233473
GDPpercapita |   .0000111   .0000105     1.06   0.292     9.54e-06    .0000317
  Governance |   1.077481   .3583516     3.01   0.003     .3736354    1.781327
       _cons |   4.374357   1.023521     4.27   0.000     2.364039    6.384675
-------------+----------------------------------------------------------------
     sigma_u |  1.7292034
     sigma_e |  .93466811
         rho |  .77389719   (fraction of variance due to u_i)
------------------------------------------------------------------------------
F test that all u_i=0:     F(93, 572) =     3.50                 Prob > F = 0.0000
```


© 2018 Global Journals

Big banks

```
xtreg LnZscore Time CAR ResNPL Resloan CIR LDR Liq interestrate GDPdeflator GDPpergrowth
GDPpercapita Governance, fe
```

```
Fixed-effects (within) regression               Number of obs      =       435
Group variable: idofbank                        Number of groups   =        40
R-sq:  within  = 0.2244                         Obs per group: min =         4
       between = 0.0068                                        avg =      10.9
       overall = 0.0230                                        max =        12
                                                F(12,383)          =      9.23
corr(u_i, Xb)  = -0.9715                        Prob > F           =    0.0000
------------------------------------------------------------------------------
    LnZscore |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
        Time |    .151705   .0215204     7.05   0.000     .1093921    .1940179
         CAR |   .0209519   .0136527     1.53   0.126    -.0058918    .0477956
      ResNPL |  -.045895    .0180922    -2.54   0.012    -.0814675   -.0103225
     Resloan |   .0821868   .0306134     2.68   0.008     .0219954    .1423782
         CIR |   .0180874   .0082518     2.19   0.029     .0018629    .0343119
         LDR |   .2380086   .5883502     0.40   0.686    -.9187922    1.394809
         Liq |   .0202948   .0064171     3.16   0.002     .0076777    .0329119
interestrate |  -.0368747   .0117913    -3.13   0.002    -.0600585   -.0136909
 GDPdeflator |  -.0359847   .0136721    -2.63   0.009    -.0628664    -.009103
GDPpergrowth |   .0147121   .0131779     1.12   0.265    -.0111979    .0406221
GDPpercapita |   .0000141   8.26e-06     1.70   0.090     2.19e-06    .0000303
  Governance |   .6824748   .4330602     1.58   0.116    -.1689983    1.533948
       _cons |  -3.451697    .969598    -3.56   0.000    -5.358098   -1.545295
-------------+----------------------------------------------------------------
     sigma_u |  3.3591887
     sigma_e |  .90555167
         rho |   .9322528   (fraction of variance due to u_i)
------------------------------------------------------------------------------
F test that all u_i=0:     F(39, 383) =     6.63                 Prob > F = 0.0000
```


© 2018 Global Journals

Small banks

```
xtreg LnZscore Time CAR ResNPL Resloan CIR LDR Liq  interestrate GDPdeflator GDPpergrowth
GDPpercapita Governance, fe
```

```
Fixed-effects (within) regression               Number of obs      =       680
Group variable: idofbank                        Number of groups   =        94
R-sq:  within  = 0.1409                         Obs per group: min =         2
       between = 0.2101                                        avg =       7.2
       overall = 0.1272                                        max =        12
                                                F(12,574)          =      7.84
corr(u_i, Xb)  = -0.7349                        Prob > F           =    0.0000
```

LnZscore	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
Time	.0457922	.0195003	2.35	0.019	.0074915	.0840929
CAR	.0176421	.0060335	2.92	0.004	.0057917	.0294926
ResNPL	.0006495	.0044886	0.14	0.885	-.0081667	.0094656
Resloan	-.0142777	.0077777	-1.84	0.067	-.029554	.0009985
CIR	-.0059045	.0016387	-3.60	0.000	-.0091229	-.002686
LDR	.7613047	.2742679	2.78	0.006	.2226136	1.299996
Liq	-.0142258	.0027023	-5.26	0.000	-.0195334	-.0089182
interestrate	-.0193171	.00998	-1.94	0.053	-.0389189	.0002847
GDPdeflator	-.0158621	.011793	-1.35	0.179	-.0390248	.0073006
GDPpergrowth	-.0025486	.0124006	-0.21	0.837	-.0269047	.0218075
GDPpercapita	.0000165	9.68e-06	1.70	0.089	2.54e-06	.0000355
Governance	.8681263	.3362178	2.58	0.010	.2077592	1.528494
_cons	3.11873	.6648809	4.69	0.000	1.812833	4.424626

sigma_u	1.2228695
sigma_e	.93536776
rho	.63088871 (fraction of variance due to u_i)

```
F test that all u_i=0:     F(93, 574) =     3.54            Prob > F = 0.0000
```


© 2018 Global Journals

References Références Referencias

1. *Adusei, M.* (2015). « *The impact of bank size and funding risk on bank stability* ». Cogent Economics & Finance. December.
2. *Aggarwal, R., and K.T. Jacques.* (2011). « *The impact of FDICIA and prompt corrective action on bank capital and risk: Estimates using a simultaneous equations model* ». Journal of Banking and Finance. Vol 25. PP: 1139-1160.
3. *Awdeh, A., C. EL-Moussawi, and F. Machrouh.* (2011) « *The effect of capital requirements on banking risk* ».International Research Journal of Finance and Economics. PP: 133-145.
4. *Ayadi, R., and Pujals, G.* (2005) « *Banking mergers and acquisitions in the EU: Overview, assessment and prospects».* Chapters in SUERF studies. SUERF- The European Money and Finance Forum.
5. *Barth, J., G. Caprio, and R. Levine.* (2004) « *Bank regulation and supervision: What works best* ». Journal of Financial Intermediation. Vol 13. PP: 205–248.
6. *Beatty, A. L., and A. Gron.* (2001). « *Capital, portfolio, and growth: bank behavior under risk-based capital guidelines* ». Journal of Financial Service Research. Vol 20. PP: 5–31.
7. *Besanko, D., and G. Kanatas.* (1996). « *The regulation of bank capital: do capital standards promote bank safety?* ». Journal of Financial Intermediation. Vol 5. PP: 160-183.
8. *Blum, J.M.* (1999). « *Do capital adequacy requirements reduce risks in banking?* ». Journal of Bank Finance. Vol 2. PP: 755–771.
9. *Bichsel R., and J. Blum.* (2004). « *The relationship between risk and capital in Swiss commercial banks: a panel study* ». Applied Financial Economics. Vol. 14. PP: 591-597.
10. *Borio, C., and M. Drehmann.* (2009). «*Assessing the risk of banking crisis- revisited*». BIS Quarterly Review. March. PP: 29-46.
11. *Bougatef, K., and N. Mgadmi.* (2016). « *The impact of prudential regulation on bank capital and risk taking: The case of Mena countries* ». The Spanish Review of Financial Economics. Vol 14. PP: 51-57.
12. *Boughrara, A., and S. Ghazouani.* (2011). « *Monetary transmission mechanisms: The credit versus the interest rate channel*». M. Boughzala et al. (Eds.) Inflation Targeting in MENA Countries. Palgrave Macmillan, Hampshire, UK. PP: 132-168.
13. *Bourbonnais, R.* (2009). « *Économétrie* ». Dunod. 7ème édition. Paris.
14. *Bourbonnais, R.* (2015). « *Économétrie : cours et exercices corrigés* ». Dunod. 9ème édition. Paris. PP: 319- 345.
15. *Bourgain, A., P. Pieretti., and S. Zanaj.* (2012) « *Financial openness, disclosure and bank risk-taking in MENA countries*». Emerging Markets Review. N°13. PP 283-300.
16. *Boyd, J.H., R. Levine, and B. Smith.* (2001). «*The impact of inflation on financial sector performance*». Journal of Monetary Economics. Vol. 47. PP: 221-248.
17. *Calem, P., and R. Rob*. (1999). «*The impact of capital-based regulation on bank risk-taking: A dynamic model* ». Journal of Financial Intermediation. Vol 8. PP: 317-352.
18. *Caprio, G., V. D'Apice, G. Ferri, and G.W. Puopolo.* (2014). «*Macro financial determinants of the great financial crisis: implications for financial regulation* ». Journal of Banking and Finance. July. Vol 44. PP: 114-129.
19. *Cetorelli, N.* (1999). « *Competitive analysis in banking: apparaisal of the methodologies* ». Economic Perspectives. Vol 23. N°1. PP: 2-15.
20. *Cihak, M., and H. Hesse.* (2010). « *Islamic Banks and Financial Stability: An Empirical Analysis* ». Journal of Financial Services Research. Vol. 38. Issue 2. PP: 95-113.
21. *Comité de Bâle sur le Contrôle Bancaire*. (2003). « *Vue d'ensemble du nouvel accord de Bâle sur les fonds propres* ». Banque des Règlements Internationaux. Avril.
22. *Dewatripont, M., and J. Tirole.* (1993). « *La réglementation prudentielle des banques* ». Éditions Payot- Lausanne. Lausanne. P177.
23. *Diamond, D.W.* (1984). «*Financial intermediation and delegated monitoring*». The Review of Economic Studies. Vol 51. PP: 393-414.
24. *Fernandez, A. I., and F. Gonzalez.* (2005). « *How accounting and auditing systems can counteract risk-shifting of safety-nets in banking: Some international evidence* ». Journal of Financial Stability. Vol. 1. PP: 466–500.
25. *Francis, F.* (2004). « *State- building: Governance and world, order in the 21ts century* ». Vol. XIII. Cornell University Press. New York.
26. *Gerschenkron,* A. (1962). « *Economic Backwardness in Historical Perspective*». Cambridge, Massachusetts: Belknap Press of Harvard University Press.
27. *Ghosh, S.* (2016). «*Does central bank governors term in office matter for macroprudential policies? Evidence from MENA banks*». Research in International Business and Finance. December.
28. *Goyeau, D., and A. Tarazi.* (1992). « *Évaluation du risque de défaillance bancaire en Europe* ». Revue Économique. Vol 102. PP: 250–280.
29. *Hellmann, T., K. Murdock, and J. Stiglitz.* (2000). « *Liberalization, moral hazard in banking, and prudential regulation: Are capital requirements enough?* » American Economic Review. Vol. 90. PP: 147–165.

© 2018 Global Journals

30. *Kaminsky, G., and C. Reinhart.* (1999). «*The twin crises: The causes of banking and balance of-payments problems*». American Economic Review. N°89. PP: 473-500.
31. *Kaufmann, D., A. Kraay, and P. Zoido-Lobaton*. (1999 a). «Aggregating Governance Indicators». World Bank Policy. Research Working Paper. N°2195. The World Bank.
32. *Kaufmann, D., A. Kraay, and P. Zoido-Lobaton.* (1999 b). « Governance matters». World Bank Policy. Research Working Paper. N°2196. The World Bank.
33. *Kaufmann, D. and A. Kraay.* (2008). «Governance indicators: where are we, where should we be going? ». The World Bank Research Observer. N° 23.
34. *Kim, D., and A.M. Santomero.* (1988). « *Risk in banking and capital regulation* ». Journal of Finance. Vol. 43. PP: 1219-1233.
35. *Klomp, J., and J. Haan.* (2012). « *Banking risk and regulation: does one size fit all?* ». Journal of Banking and Finance. Vol 16. PP: 3197-3212.
36. *Koehn, M., and A.M. Santomero.* (1980). « *Regulation of bank capital and portfolio risk*». Journal of Finance. Vol 35. N°5. PP: 1235-1244.
37. *Köhler. , M.* (2015). « *Wich banks are more risky? The impact of business models on bank stability* ». Journal of Financial Stability. Vol 16. PP: 195-212.
38. *Laeven, L., L. Ratnovski, and H. Tong*. (2014). «*Bank size and systemic risk: Some international evidence*». International Monetary Fund, Mimeo.
39. *Lee, T.H, and S.H. Chih.* (2013). « *Does financial regulation affect the profit efficiency and risk of bank? Evidence from China's commercial banks* ». North Amercian Journal of Economics and Finance. Vol 26. PP: 705-724.
40. *Mendoza, A., and M.E. Terrones.* (2008). «*The anatomy of credit booms: Evidence from macro aggregates and micro data*». NBER Working Paper. N°14049. Cambridge: MA.
41. *Mercieca, S., K. Schaeck, and S. Wolfe.* (2007). « *Small banks in Europe: Benefits from diversification?* ». Journal of Banking and Finance. Vol. 31. PP: 1975-1998.
42. *Mirzaei, A., T. Moore, and G. Liu.* (2013). «*Does market structure matter on banks' profitability and stability? Emerging vs. advanced economies*». Journal of Banking and Finance. N°3. PP: 2920–2937.
43. *Neaime, S.* (2011). « *Monetary policy transmission and targeting mechanisms in six MENA countries* ». M. Boughzala et al. (Eds.) Inflation Targeting in MENA Countries. Palgrave Macmillan, Hampshire. UK. PP: 100-130.
44. *Rochet, J.C.* (1999). «*Solvency regulations and the management of banking risks*». European Economic Review. Vol 43. PP: 981-990.
45. *Rojas, S. L.* (2001). « *Rating banks in emerging markets: What credit rating agencies should learn from financial indicators* ». Peterson Institute for International Economics, Peterson Institute Working Paper Series. WP: 01-6.
46. *Saidane, D.* (2012). « *L'impact de la réglementation de Bâle III sur les métiers des salariés des banques. 1ère partie: Bâle III, explication des dispositifs* ». Observatoires des métiers, des qualifications et de l'égalité professionnelle entre les femmes et les hommes dans la banque. PP: 23-33.
47. *Zhong, Y.* (2007). « *Bank management* ». South China University of Technology Press.

© 2018 Global Journals