

Prudential Regulation and Banking Risk in MENA Countries

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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.

Index terms— banking regulation, banking risk, z-score, mena countries.

1 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.

2 II.

3 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 R 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.

4 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: 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; ?orio 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.

K?shler (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.

5 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 nonperforming 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 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, ?oyd and Graham, 1988) and it can be written as follows:

$$(2.1)$$

In this study, we will divide the two components of the equation by the total assets: At the level of our study, we will calculate this variable by integrating the natural logarithm (Lee and Chih, 2013).

6 III.

7 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.

13 H4: THE VARIABLE «CAPITAL RATIO» HAS A POSITIVE INFLUENCE ON "Z-SCORE".

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.

8 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 ??lomp and Hann (2012), take the following forms:

9 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.

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

? The relationship between liquidity and the level of

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

12 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.

13 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).

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

IV.

15 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.

16 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.

17 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.

18 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.

19 iii. Heteroscedasticity test

We adopted the Breusch-Pagan test, the value of χ^2 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.

20 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

21 . 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.

22 c) The results of the estimates

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

23 Variables ADF PP

In

24 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 ??hosh (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.

25 Variables

Global

26 C

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 ??aufman 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.

27 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 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.

28 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 small banks, which are generally characterized by a low Otherwise, the financial crisis, in recent years, has shown significant shortcomings in the prudential regulation of banks as well as some dead ends in selfregulation. 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.

¹ 2

COAERZYUICE	-0'1230220	0'920504	-1'30	2'111001	-0'1181182	0'0811310	-1'30	2'111001	-0'05850	0'42518	-0'85100	0'30
IZELVATION	0'385053	1'003041	-52'15813	33'12124	0'382414	0'810002	-52'15813	33'12124	0'31033	0'52004	-52'1581	33'12124
RYIE												
IZLEBE2L	5'300504	8'035518	-10'0500	43'20110	5'12130	8'013002	-10'0500	43'20110	1'35030	10'85511	-10'0500	43'20110
CDYCK	4'050101	3'800100	-12'08830	50'11052	4'211108	3'30304	-12'08830	50'11052	2'84500	4'10112	-10'05010	50'11052
CDWEC	10000'14	18100'53	00'10128	00'135'41	12025'1	14045'05	00'10128	00'135'4	50330'41	51850'14	10'11'552	00'135'4
LIIE	3'101431	52'84004	0	102	31'18010	50'01028	0	102	40'13333	51'41200	0	103
SIZE	8'003124	1'104000	1'8423	1'431551								
CVB	50'12310	14'20020	-13'1	582'4	55'48511	11'34121	-13'1	582'4	11'41234	4'41020	0'02	38'1
FDK	0'2010051	0'1110108	0	52'52	0'2280020	0'80021	0	52'52	0'00000	0'55820	0'12100	1'08504
FD	38'88120	31'04043	0'822	222'103	43'00300	32'0300	0'822	220'103	50'01115	13'00510	3'384	03'410
CIB	40'20211	48'41183	0	020	24'00410	20'00131	0	020	31'11111	15'51384	12'121	80'331
KEZ ⁻ LO00	1'210235	8'811131	-0'843	10'001	0'051488	10'11014	-0'843	10'001	4'25418	3'20020	0'430	51'245
KEZ ⁻ DEL	0'342115	13'112105	0	154'04	15'03232	12'45010	0	154'04	4'80031	2'15815	0'02	41'21
FD (X-06016)	3'501003	1'124214	-1'485220	10'33183	3'808381	1'40204	-5'21441	0'82015	4'02125	1'14203	0'42213	8'32035
Attribution	ML	201-D60	ML	ML	ML	201-D60	ML	ML	ML	201-D60	ML	ML
chique labels				same labels				same labels				

Figure 1: ?

1

	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 approach aimed at stabilizing the financial system as a whole
Impact in terms of mastery of 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 ++
Impact on the balance sheet	Low impact: assets, equity, off Balance-sheet	Strong impact on assets	-Pillar 2 and 3 Strong impact on liabilities and strong on equity Balance -sheet
+ Low, ++ Medium, +++ High, and ++++ Very high. (Source: Saidane, 2011, P33)			

Figure 2: Table 1 :

2

Year 2018

Figure 3: Table 2 :

4

	level	Indifference	ln level	Indifference
Ln (Z-SCORE)	0.0295 **		0.0295 **	
RES_NPL	0.0064 ***		0.0072 ***	
RES_Loan	0.0002 ***		0.0002 ***	
CIR	0.0271 **			0.02 **
	(with variation)			(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)	

Figure 4: Table 4 :

?? ————— + —————
 F test that all $u_i=0$: $F(93, 574) = 3.54$ Prob >
 $F = 0.0000$

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