Artificial Intelligence formulated this projection for compatibility purposes from the original article published at Global Journals. However, this technology is currently in beta. *Therefore, kindly ignore odd layouts, missed formulae, text, tables, or figures.*

¹ Banking Interaction and Financial Stability: MENA Countries

Pr. Ezzeddine Zouari

3

2

Received: 11 December 2017 Accepted: 1 January 2018 Published: 15 January 2018

5 Abstract

⁶ This paper represents the relationship between banking risk and financial stability using the

7 indicator "z-score" and its two components: capitalization and profitability.Based on panel

⁸ data and cross-sectional an alysis, we used a sample of the period 2003-2014 to determine the

⁹ specificities of these countries regarding the determinants of financial stability.

10

11 Index terms—financial stability, banking risk, prudential regulation, business model, mena countries.

12 **1** Introduction

uring the past decades, the progress of the financial system has created different types of activities and financial
instruments increasingly diverse and complex. In this context, developments in the financial sector seem to
have played a growing role in the configuration and sometimes the amplification of macroeconomic fluctuations.
Consequential concerns an "excessive" variability in the financial system has highlighted the need to put in
place measures for prudential regulation, accounting, and risk measurement or monetary policy with the goal of
consolidating the financial system and macroeconomic stability.

However, even though the various regulations accompanied by strong supervision aim to guarantee the risk management functions of banks as well as the liquidity management that continuously contribute to financial stability, the risks of instability can't be solved. In these cases, only the central banks can provide liquidity when necessary. Also, financial stability is a source of preoccupation internationally, because of financial crisis since the middle of the Second World War.

The application of prudential regulation standards requires a lot of effort on the part of banks, which must have sophisticated means for measuring credit, operational and Market risks, as well as owning the necessary capital to apply these standards. Hence poor risk management may be causing a problem of financial stability.

The latter corresponds to a reality bringing together both economic and financial issues. Each of these two aspects refers to the consideration of destabilizing events and their influence on the entire financial system.

Initially, financial stability had always been considered as a concept indicating an important function within central banks as well as in public institutions. Indeed, it was only in 1994 that the Bank of England began to use this concept to designate the objectives to attain and which were destabilized by price stability or the efficiency of the Banking system's operation, Weller, (1999).

During the 1990s, the formulation of economic policy was based for the most part on the pursuit of maintaining financial solidity. Thus, a financial system is part of a zone of stability when it can facilitate without hindrance the performance of the economy while having the possibility to reduce problems, Schinasi, (2006). In other words, financial stability is the maintenance of confidence in the financial system.

Thus, to ensure the financial stability, the different actors of the system have a solid accompanied by proper operation and an exchange rate regime and performance concerning other economic actors, in particular, the state, households and non-financial enterprises. In this balance, credit institutions, alongside their traditional intermediation function and their growing involvement in capital markets, play an important role. There are also other financial institutions such as insurance companies, investment companies, and pension funds.

Also, it is still essential to take into account the behavior of the financial markets, especially the equity, and foreign exchange markets. The opening of the financial markets, which are at the origin of large international capital movements as well as significant volatility of the prices of the assets, is considered as a risk taking.

This situation brings us to the following questions: What is the relationship between bank risk and financial stability? What is the impact of prudential regulation on financial stability?

The problem developed is the evaluation, firstly, of the relationship between banking risk and financial stability and, secondly, the impact of banking regulation on financial stability.

II. $\mathbf{2}$ 49

3 Literature Foundations 50

"Financial stability refers to a bank's ability to withstand significant shocks and the resolution of macroeconomic 51 imbalances, thereby reducing the probability of a break in the financial intermediation between savings and 52 investment." BCEAO, (2006). 53

D 4 54

55

Financial stability is an important factor in the proper functioning of the economy. The main aims of this notion are towards economic development, and the assurance of high-quality intermediation between economic 56 agents, through the channeling of financing flows efficiently towards the most growth-enhancing sectors. Indeed, 57 the stability of financial institutions was the absence of tension that can lead to many economic crises whose 58 effects are not limited to economic agents alone. In this context, financial stability requires two main conditions,

59 Salameh (2013): 60

The main markets must be stable so that each actor can trade with confidence at prices reflecting the 61 fundamental data on the market. 62

All of this shows that the definition of financial stability is not limited to banking stability alone, but affects 63 the entire financial system since the financial stability of the banking sector is a factor in the soundness of all 64 financial corporations. 65

In maintaining this stability, central banks provide not only identifying threats to the financial system while 66 trying to reduce, but also protecting the system while recognizing that the instability of markets institutions can 67 cause systemic risks. Central banks have the right to detect these risks. 68

a) Determinants of Financial Stability 5 69

There are many factors and can be classified into three categories: ? Macro-economic conditions: to maintain 70 or restore financial stability, it is essential that macroeconomic policies be enhanced with appropriate structures. 71 When the economic environment is affected by difficulties, the banks suffer the consequences. Indeed, stability 72 depends on the specificities of a country's relationship with the outside world. When a state is highly dependent 73 on foreign aid, it is exposed to significant risks, particularly as regards public finances, external financing or 74 the performance of the private sector. However, this situation mainly affects developing countries or countries 75 with fragile economic conditions. ? Internal Financial Institutions and Markets Management Systems: A stable 76 financial system is always accompanied by an adequate institutional and regulatory framework whose components 77 and functioning determine the potential risks that financial institutions face,? The effectiveness of the regulatory 78 system and supervision of financial institutions: When the institutional framework is efficient and, the financial 79 system can adapt to different innovations and changes in the environment, there will automatically be financial 80 81 stability. Thus, a financial system was considered stable when it can facilitate the efficient allocation of economic

resource and financial processes; evaluates, and manages financial risks (Icard, 2007). 82

Also, one of the main channels of transmission of a financial crisis in the real economy is mainly the seizure 83 of the intermediation activity. In this case, the banks stop granting new financing and no longer proceed to the 84 renewal of credits that are maturing, a situation called by the economists "Credit Crunch." 85

In a "Credit Crunch," it is possible to highlight two types of mechanisms: it could be caused by a lack of 86 banks' funds. When there is an economic and financial turnaround, the banks' capital level can be reduced by 87 the losses. Prudential rules do not allow banks to expose themselves to risk if they do not have sufficient capital. 88 Also, the "credit crunch" may be the consequence of a low level of liquidity. 89

In general terms, the financial system and the banking system represent, through their roles and their vocations, 90 reliable indications of the health of an economy, while allowing investors and the various economic players to 91 plan their actions in advance and effectively manage their capital flows. This situation reflects the importance 92 of banking institutions in the economy as well as the interest granted by public authorities to these institutions. 93

Banking is a fundamental element of any economy, particularly in linking providers and investors. However, 94 even in performing the role of financial intermediation, the activities of banks depend to the stability of all 95 financial mechanisms. It is for this reason; the latter constitutes one of the highest priorities of the public 96 authorities. Indeed, these authorities are in a position where they are forced to organize the banking sector 97 through specific regulations, including "prudential banking regulations." 98

In case of a crisis, the financial markets are no longer able to function normally and, as a result, the banks 99 can no longer refinance and stop providing loans. Therefore, the latter will be unable to finance productive 100 activities; consumption will decline and subsequently curb economic growth. Indeed, for a long time, the monetary 101 authorities have sought ways to impose prudential constraints on banking activities to formulate not only the 102 security but also the soundness of the banking system which is at the heart of the financial system. 103

b) Financial stability and banking regulation 6 104

Prudential regulation has continued to evolve through various provisions aimed at improving or eliminating old 105 rules or introducing new standards. The financial system is experiencing developments posing The institutions 106

of the financial system are stable so that there is sufficient confidence to continue to fulfill their contractual
 obligations without necessarily having external assistance or interruption. as many challenges for both credit
 institutions and regulators.

The various financial crises that have followed one another, as well as the recent global financial crisis, have led regulators, notably the Basel Committee, to review the Basel agreements. For example, the Basel III agreement which is intended to enhance the Basel II brought new regulations to strengthen the requirement for capital and liquidity of banks while aiming to weaken the leverage. However, financial instability, regardless of the level of policies, strongly impacts the smooth running of banking activities, including exposure to different banking risks.

But after more than 30 years of deregulation, the financial crisis of 2007 to 2009 completely changed the role of government and regulators. Knowing that during the 1960s, the theory of financial market is used to explain the range of government intervention. As a result, the weakness of a banking system can threaten financial stability at both the national and global levels. Then to ensure that solidity, several official bodies, the main ones being the Basel Committee on Banking Supervision, Bank of International Settlements, the International Monetary Fund and the World Bank have attempted to examine ways to strengthen financial stability world.

In this case, "financial regulation" is the set of public provisions intended to ensure the smooth running of the banking sector. Most of it is similar to regulations in other industries and relates to consumer protection through.

124 However, the financial system has some features such as a procyclical trend that triggers regular crises while 125 seeking to reduce industry-specific regulations. In other words, financial instruction always tends to balance performance with risk. The majority of financial markets were governed by a certain level of regulation put in 126 place for various reasons (Heffernan, 2005) : ? It's important to protect investors: It is essential that investors 127 know how to shoulder some of this responsibility. However, government guidelines are essential to ensure the 128 capacities of financial companies to provide adequate financial information. ? The high concentration of financial 129 institutions in the market: The financial system consists of several markets that have different characteristics: 130 from the retail bank market to the global bond market. Thus, the competitive structure of each type varies 131 considerably depending on its specificities. ? The fight against illegal activities: Actors who carry out fraudulent 132 activities, tax evasion or money laundering. ? The externalities: These are the various measures implemented 133 by the actors who feel undermined financial stability. In the financial markets, crises often result in negative 134 externalities. 135

¹³⁶ 7 c) Financial stability and Business Model

137 Business model analysis is essential for investors and supervisors.

Previously, supervisors focused on capital, liquidity and risk management. However, the recent financial crisis has shown the value of analyzing the "Business Model" of banks. This model generally describes how banks generate their profits and what are their channels of transmission. It thus goes beyond traditional risk and banking income indicators, allowing supervisors a better understanding of the sustainability of bank profits and stability (Calomiris and Kahn 1991, Huang and Ratnovski 2011).

Most recent studies that have taken into account the period of financial crisis provide mixed results regarding the impact of income diversification on risks and bank profits. Also, these studies analyze how the diversification of funding sources can affect the level of these two criteria.

Demirgüc-Kunt and Huizinga (2010) found a decrease in risk, associated with low levels of noninterest income
 and non-deposit funding. However, for most banks, an increase in interest-free income and non-deposit financing
 is related with strong banking instability.

Also, De Young and Torna (2013) showed that banks with high levels of interest-free income are more likely to go bankrupt during periods of crises.

According to Altunbas and al. (2011), the banks most dependent on wholesale financing were more exposed to the risk of bankruptcy during the crisis. In contrast, banks with a more diversified income structure have been more stable.

For Calomiris and Kahn (1991), wholesale financing can reduce bank risk through better monitoring of banks by sophisticated fund providers and better diversification of financing resources. In contrast, client deposits were revalued more slowly and, as a result, are relatively more stable, Shleifer and Vishny, (2010).

The results of the various theoretical studies suggest that the best-capitalized banks are more stable than other banks. Regarding economic importance, the capitalization of banks is one of the main determinants of bank stability. Indeed, a higher rate of asset growth makes banks significantly riskier; this corroborates with the results of Altunbas and al. (2011) and Demirgüc-Kunt and Huizinga (2010).

For the ratio of net credits / total assets, is an indicator to control the composition of bank assets. Freixas (2005) has argued that specialization in credit activities offers informational benefits, which can reduce the risk of bank failure.

Regarding the "net interest margin" variable, it provides a test of how incentives to engage in traditional banking activities could be a deterrent to the crisis (Ghosh, 2016). A lower net interest margin implies stronger incentives for traditional banks to look for alternative sources of revenue ("yield-seeking") and move to new business models. , Gambacorta and Marques-Ibanez, (2011). As a result, an increase in this margin and the loan

168 portfolio may reduce the level of bank risk.

14 H1: AN INCREASE IN THE SIZE OF THE BANK IS CAUSING A RISK OF BANK INSOLVENCY.

In the study by Ghosh (2016), the size coefficient has a positive and statistically significant effect on Z-score, which is consistent with research on other banking financial systems, ??eck and al. (2009) and suggests that large banks are more stable thanks to the low volatility of their returns. This positive relationship has an important implication for the current debate about the need to restrict the size of banks to protect the financial system from future crises, Adusei (2015). Indeed, the big banks were the source of the problems that caused significant damage to many economies around the world.

K?"§hler (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.

177 **8 III.**

178 9 Methodology

With the succession of financial crises, it is necessary to study the relationship between financial stability and
banking risks by taking into account the effect of prudential regulations in macro terms, in the context of Business
Model in the conventional banks in the MENA zone between 2003 and 2014. Also, it is important to study the
relationship between the size of banks and financial stability. This relation represents the object of this study.

The study would be based on three models to detect the relationship between Z-score and financial stability and the relationship between the level of capitalization and bank profitability and financial stability.

¹⁸⁵ 10 a) Presentation of the model and definition of the variables

186 With the succession of crises, the question arises about the relationship between banking risks and financial 187 stability in this region.

Also, we will represent the following models inspired by K?"§hler's study ??2015) and which take the following forms:

¹⁹⁰ 11 Table 1: Definition of variables

We will use the Z-score to measure the banking risk and to overcome the shortcomings of the ratio method, Stiroh and Rumble, (2006), and Demirgüc-Kunt and Huizinga, (2010). The Z-score can be estimated by the probability of default represented by Roy (1952) and developed by Goyeau and Tarazi (1992). This last is the probability that losses exceed equity ??Roy, 1952, Boyd and ??raham, 1988). This ratio could be written as: In this study, we will present "z-score" following the literature studies conducted by ??tiroh In this same context, and to get a better idea about the components of Z-score and their relationships with dangling dice variables, we use the following ratios:

(3) (4) At this level, we would like to mention that a Skewness-Kurtosis normality test had performed on the
 Z-score, RAROA and RACAR variables and that the latter do not follow the normal distribution, hence the
 integration of natural logarithms. For these three variables in the suite of econometric applications, Laeven and
 Levine, (2009) and Houston et al., (2010).

To get a better idea about the relationship between Ln (Z-score) and its two components, we will draw the following two graphs: From this graph, we can notice that, apart from the peak of 2004, the variable Ln (RACAR) followed the same direction of evolution of Ln (Z-score). In fact, since 2005, both variables have achieved almost the same values. This result means that in recent years, the level of capitalization is stable in banks in the MENA zone.

²⁰⁷ 12 Source: The author

²⁰⁸ 13 b) The hypotheses

The purpose is to determine the effect of financial stability on bank risks. Therefore, we will rely on the calculation of "z-score" as an indicator of bank failure in the framework of "Business Model."

The selection is focused exclusively on conventional banks in the MENA region. We have a sample of 146 banks for which we hold all the financial information necessary to conduct the empirical analysis.

The relationship between size and financial stability Kôhler (2015): He finds a negative rapport between "Z-Score" and the size of the bank. This situation means that big banks are less stable. This observation was based on the results of the subprime crisis, for which the big banks were the least stable.

14 H1: An increase in the size of the bank is causing a risk of bank insolvency.

The relationship between capital ratio and financial stability 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. So, the second hypothesis of the research is this: H2: An increase in the capital ratio will decrease the probability of

222 the risk of bank failure.

223 IV.

²²⁴ 15 Empirical Results

We present the significant statistics followed by the models constructed concerning the regression of the variables defined above on conventional banks of the MENA zone with the empirical results obtained and their interpretations.

²²⁸ 16 a) Descriptive analysis of variables and econometric tests

i. Descriptive analysis 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 note from the table below, 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.

235 17 ii. Econometric tests

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

²³⁸ 18 a. Multicollinearity tests

According to Bourbonnais (2009), to decide on a problem of collinearity between the independent variables

included in a regression model, it is necessary that the correlation coefficient exceeds the order of 0.7. Examination

of the correlation matrix and the VIF test (see appendix 2) highlights the absence of a multicollinearity problem.

²⁴² 19 b. Stationarity test

²⁴³ To do this, we would be based on the tests of Dickey-Augmented Float (ADF) and Phillips-Perron (PP).

²⁴⁴ 20 c. Testing for heteroscedasticity

This test is to examine the variance of the standardized residuals is constant or homoscedasticity, Evrard and al. (2003).

²⁴⁷ 21 Table 3: Heterosedasticity test d. Specification and homo ²⁴⁸ geneity tests

It is a question of checking whether the specification is homogeneous or heterogeneous of the data generating process.

²⁵¹ 22 Table 4: Homogeneity test e. Hausman test

The Hausman test is a specification test that determines whether the coefficients of the two estimates (fixed and random) are statistically different.

254 23 Table 5: Hausman test f. Analysis of results and interpre-255 tation

The estimation results of the fixed effects model using the Ordinary Least Squares method are in the following table: ? Model 1 (Ln Z-score) We note a significantly positive relationship between the NONDEPOSIT ratio and "Ln Z-score". Indeed, this result reflects a high volatility of income in banks in the MENA zone, contrary to the findings of Calomiris and Kahn (1991). This situation calls for better monitoring of banks by financiers as well as better diversification of funding sources.

Also, the capital ratio had positively related to the "Ln Z-score." This result means that this variable is among the most important determinants of banks' financial stability in our sample. Any increase in this ratio will improve the level of solidity of the bank. This result corroborates with the work of K?"§hler (2015).

For the variable Size, it had positively related with "Ln Z-score." This result means that big banks are generally more stable. They have more diversified portfolios than small banks.

The variable "Loans" had positively related in the regression with "Ln Z-score," which indicates that banks that are more focused on lending activities are more stable. Freixas (2005) argues that specialization in a specific type of credit offers informational benefits, which can reduce the risk of bank default.

²⁶⁹ 24 ? Model 2 (Ln RAROA)

At the level of this study, we included the variable "NIM" because banks tend to take excessive risks to restore their returns if their interest margin is low. This variable is positively related to the dependent variable. Banks, whose net interest margin is higher, are also more stable and more profitable.

Also, by introducing the macroeconomic environment control variable "GDPGR" which reflects the growth rate by country, we noticed that it is positively related to "Ln RAROA." This result confirms Kohler's (2015) findings that banks in countries with higher levels of economic development are more profitable than other banks. Regarding the size variable, it was positively related to the variable "Ln RAROA," which means that large

277 banks are generally more profitable.

$_{278}$ 25 ? For model 3 (Ln RACAR)

The capital ratio is positively related to "Ln RACAR." Riskier banks tend to decrease the level of this ratio. This result corroborates with the findings of K?" Shler (2015).

Also, we note a significantly positive relationship between the NONDEPOSIT ratio and "Ln RACAR." Indeed, this result reflects significant volatility of incomes in banks in the MENA zone, contrary to the findings of ???"§hler (2015). This situation requires a better monitoring of the level of capitalization of banks by the financial managers as well as a better diversification of the sources of financing.

Moreover, the variable "LOANS" was positively related to the dependent variable at the level of this regression. This result means that banks with a higher ratio are better capitalized than other banks.

Regarding the size variable, it had positively related to the variable "Ln RACAR." Indeed, large banks rely on high capital ratios to reduce the risk of bank failure. This finding invalidates the results of K?"§hler (2015). This result was explained by the difference between the MENA and German banking systems, in which the big banks are less stable.

In the three previous models, we found the significance of the variable size, from which it is essential to test the evolution of the variables "Ln Zscore," "Ln RAROA," and "Ln RACAR" for small and large banks. To do this, we will use the variable "Ln (total assets)" by the work of Bourgain and al. (2012) that a bank was considered big if its total assets are superior to \$ 10 thousand. Otherwise, it is a small bank. As a result, 40 banks in the sample are considered large and, 106 banks are considered small banks.

²⁹⁶ The results of the estimate are presented in the following table:

Table ??: Results of the estimates of the 3 models for large and small banks *** Significant at 1%, ** significant at 5%, * significant at 10%

Based on the above estimates, we note a significantly positive relationship between the NONDEPOSIT ratio and the "Ln Z-SCORE" and "Ln RACAR" variables for small banks. This result reflects significant volatility of income in small banks in MENA. This is explained by the difficulties encountered by these banks to access large and less risky projects, which invalidates the findings of ???"§hler (2015). This situation requires a better monitoring of the level of capitalization of these banks as well as a better diversification of the sources of financing. Concerning the variable NNINC, it was negatively associated with "Ln RAROA" in the small banks of the

MENA zone. This result shows that the structure of banks' income is decisive in banking stability. Indeed, the
 negative coefficient for this variable means those smaller banks are riskier with a less diversified income structure.
 In this context, several studies have analyzed the impact of the income structure on banking stability during
 a financial crisis. Altunbas and al. (2011) have confirmed that banks with good income diversification are less

likely to encounter difficulties during periods of crisis. As a result, small banks in the MENA zone must try to
diversify their revenue structure to minimize the likelihood of bank failure risks in times of crisis.

For the capital ratio, it was positively related to "Ln Z-SCORE" and "Ln RACAR" for small and large banks 311 in MENA. This result confirms the findings of K?"§hler (2015) in hisStudy on German banks. This result 312 means that banks in the MENA region use capital ratios that are high enough to cope with the risks. Also, the 313 LOANS variable (Net Credits / Total Assets) was positively related to "Ln Z-SCORE" and "Ln RACAR" in 314 small banks. This result means that small banks in the MENA zone generally focus on granting credit to improve 315 their stability. This result confirms the findings of K?" [shler (2015). Freixas (2005) has ensured that the focus 316 on credit agreement can be a source of informational advantage and, therefore, it can reduce the probability of 317 the risk of bank failure. 318

319 The variable NIM (net interest margin) is positively related to "Ln RAROA" of small banks. By K?" Shler's 320 (2015) results, they try to increase their net interest margin to improve their stability. Also, by introducing the 321 GDPGR macroeconomic environment variable that reflects the growth rate by country, we have noticed that it is positively related to the "Ln RAROA" of the big banks. This result means that an increase in this ratio 322 was reflected in an improvement in the profitability of the large banks in the MENA zone. Also, the "GDPPC" 323 rate was positively related to the three dependent variables for the large banks in the MENA zone. This result 324 confirms the findings of ???"§hler (2015). This means that the major banks of the most economically developed 325 countries are more profitable and more capitalized since real GDP per capita is an indicator of the wealth of 326 countries. 327

$\mathbf{26}$ b) Cross-sectional regression 328

To better refine the results, under a technical analysis of the cross-section was carried out as above presented the 329 following model based on the work of K?" [shler (2015) takes shape following: 330

Descriptive analysis of the variables 27331

The table below gives the average, the standard deviation, the maximum and the minimum of the variables 332 studied during the study of the previously defined model. ii. 333

iii. The positive relationship between SDROA and NNINC shows the importance of the income structure as a 334 determinant of bank stability. This result means that an increase in the volatility of banking income will increase 335 the level of risk. This result is in line with the findings of ??tiroh (2004 a,b) and ??eYoung and Roland (2001). 336

Indeed, the enrichment of product and an increase in the share of interest-free income will permit banks to reduce 337

their insolvency risk (Stiroh, 2004b). This result corroborates with recent studies (Altunbas and al. 2011; De 338 Young and Torna, 2013). These authors showed that banks with a diversified income structure were significantly 339

less likely to be distressed during the crisis. 340

Also, the positive relationship between the ratio of capital and SDROA indicates that an increase in 341 capitalization was associated with a lower level of risk. This result confirms the findings of Blum (1999). 342

The MENA region have partially weathered the global crisis, but with rhythms different growth and a level of 343 recovery which varies from one country to another, depending on the initial conditions and the intensity of the 344 impacts on which the global financial crisis has affected this region. 345

However, the area still faces a climate of uncertainty, because of the "Arab Spring" which weighs on the 346 short-term macroeconomic prospects of some countries such as Tunisia and Egypt (World Bank, 2016). 347

As a result, the results show the contagion effect of financial crises around the world and justify the overriding 348 importance given by the monetary authorities to introduce early warnings to avoid problems of instability. 349 \mathbf{V}

$\mathbf{28}$ Conclusion 351

350

From a macro-prudential point of view, financial stability depends on the situation of the banks, as a failure in 352 financial institutions poses a significant threat to financial solidity. 353

In this context, we have tried throughout to analyze the impact of the "Business Model" on financial stability 354 in a sample of 146 conventional banks in MENA countries between 2003-2014. 355

356 The previous results showed that banks with a poorly diversified income structure were significantly more likely to be distressed during a period of crisis and small banks will try to increase this margin to improve their 357 stability. 358

For the macroeconomic environment control variables there are important of economic development of MENA 359 countries on banking stability. 360

The cross-sectional regression over the entire sample shows that an increase in the volatility of banking income 361 will increase the level of risk. 362

To conclude, capitalization is the most determining factor in the Z-score variable at the banks of the MENA 363 364 zone.

This empirical analysis allows us to show that the major banks of the most economically developed countries 365 are more stable. And for smaller banks, the significant volatility of revenues with a little diversified structure of 366 these, make these banks less stable. 367

¹© 2018 Global Journals



Figure 1:



Figure 2: :

 $\mathbf{2}$

Year 2018 16

[Note: *** Significant at 1%, ** significant at 5%, * significant at 10%]

Figure 3: Table 2 :

6

of estimates

Figure 4: Table 6 :

8

Banking Interaction and Financial Stability: MENA Countries i.

variables SDROA NONDEPOSIT 0.8994124 Average 1.215933 NNINC -60.50845 standard deviation Minin

NIM

3.375774 5.005361

Multicollinearity (Appendix 3) We performed the VIF test, which allowed us to and heteroscedasticity tests

critical threshold of 5%. In this case, use the Ordinary Least Squares (OLS) method with the Robust command to correct this problem. Analysis of results and interpretation of model estimation The results of the estimation of the model in the following table:

Figure 5: Table 8 :

9

[Note: *** Significant at 1%, ** significant at 5%, * significant at 10%]

Figure 6: Table 9 :

28 CONCLUSION

372

??-?? 369

- . correlate NNINC NONDeposit CARTotalregulatorycapitalrat Sizelntotalassets NIM Loans GDPpergrowth 370 ??-371 GDPpercapita(obs=141) ??-
- [Icard ()] , A Icard . 2007. 373
- [Beck et al. ()] , T Beck , O Demirguc , Merrouche . 2010. 374
- [Gambacorta and Marques-Ibanez ()], L Gambacorta, D Marques-Ibanez. 2011. 375
- [Altunbas et al. ()] 'Bank risk during the financial crisis: Do Business Models matter?' Y Altunbas, S Manganelli 376 , D M Ibanez . ECB Working Paper Series. N°1394. European Central Bank 2011. 377
- [Bourbonnais ()] R Bourbonnais . « Économétrie : cours et exercices corrigés ». Dunod. 9éme édition, (Paris) 378 2015. р. . 379
- [Calomiris and Kahn ()] C Calomiris, C Kahn. The role of demandable debt in structuring optimal banking 380 arrangements, 1991. 81 p. . 381
- [Demirgüc-Kunt and Huizinga ()] A Demirgüc-Kunt, H Huizinga. Bank activity and funding strategies: the 382 impact on risk and returns, 2010. 98 p. . 383
- [Evrard et al. ()] Y Evrard , B Pras , E Roux . Market : Études et recherches en marketing ». Dunod. 3éme 384 édition, 2003. 385
- [Heffernan ()] S Heffernan . Modern Banking, 2005. Wiley. 386
- [Revue De La Stabilité Financière Dans L'union Économique Et Monétaire Ouest Africaine ()] Revue De La 387
- Stabilité Financière Dans L'union Économique Et Monétaire Ouest Africaine, 2006. Banque Centrale des 388 États de l'Afrique d'Ouest. 389
- [Viñals et al. (2013)] J Viñals , C Pazarbasioglu , J Surti , A Narain , M Erbenova , J Chow . Nº 13/04. Creating 390
- a safer financial system: Will the Volcker, Vickers, and Liikanen structural measures help? ». IMF Staff 391 Discussion Note, 2013. May. 392
- [World Bank Working Paper. N° 5446 «Islamic vs. conventional banking. Business model, efficiency and stability] 393 'World Bank Working Paper. N° 5446'. «Islamic vs. conventional banking. Business model, efficiency and 394 stability, (The World Bank; Washington DC) 395
- [Weller ()] '« A few observations on financial liberalization and financial instability'. C E Weller . Review of 396 Radical Political Economics 1999. 31 p. . 397
- 398 [Laeven and Levine ()] '« Bank governance, regulation and risk-taking »'. L Laeven , R Levine . Journal of Financial Economics. N°93 2009. p. . 399
- [Zhong ()] « Bank management, Y Zhong . 2007. South China University of Technology Press. 400
- [Houston et al. ()] '« Creditor rights, information sharing, and bank risktaking »'. J F Houston, C Lin, P Lin 401 , Y Ma . Journal of Financial Economics. N°96 2010. p. . 402
- [Freixas ()] '« Deconstructing relationship banking'. X Freixas . Investigaciones Economicas 2005. 29 p. . 403
- [Blum ()] '« Do capital adequacy requirements reduce risks in banking?'. J M Blum . Journal of Bank Finance 404 1999. 2 p. . 405
- [Kpodar ()] « Développement financier, instabilité financière et croissance économique: Implication pour la 406 réduction de la pauvreté, K Kpodar . 2006. Université d'Auvergen-Clément-I (Thèse de doctorat) 407
- [Beck et al. ()] '« Financial institutions and markets across countries and over time: The updated financial 408 development and structure database'. T Beck, A K Demirguc, R Levine. The World Bank Economic Review 409 2010. 24 p. 410
- [Bourgain et al. ()] « Financial openness, disclosure and bank risk-taking in MENA countries». Emerging Markets 411 Review. N°13, A Bourgain, P Pieretti, S Zanaj. 2012. p. . 412
- [Salameh ()] « L'architecture du système bancaire comme source d'instabilité financière des économies émergentes: 413
- une proposition de régulation bancaire, M Salameh . 2013. Université de Nice-Sophia Antipolis (Thèse de 414 Doctorat) 415
- 416 [Boyer ()] '« L'économie mondiale : trente ans de turbulences ». Cahiers Français. La documentation Française. N° 357'. R Boyer . Juillet 2010. 417
- [Banque Mondiale ()] « Moyen-Orient & Afrique du Nord Vue d'ensemble, Banque Mondiale . http://www. 418 banquemondiale.org/fr/region/mena/ 2016. 419
- [De Young and Torna ()] '« Nontraditional banking activities and bank failures during the financial crisis'. R De 420 Young, G Torna. Journal of Financial Intermediation 2013. 22 p. . 421
- [Roy ()] '« Safety first and the holding of assets'. A D Roy . Econometrica 1952. 20 p. . 422

- 423 [« Stabilité financière et banques centrales] « Stabilité financière et banques centrales, 1.
- 424 [Stiroh and Rumble ()] '« The dark side of diversification: the case of U.S. financial holding companies»'. K J
 425 Stiroh , A Rumble . Journal of Banking and Finance 2006. 30 p. .
- [Adusei (2015)] '« The impact of bank size and funding risk on bank stability'. M Adusei . Cogent Economics &
 Finance 2015. December.

[Köhler ()] '« Wich banks are more risky? The impact of business models on bank stability'. M Köhler . Journal
 of Financial Stability 2015. 16 p. .

- 430 [Bourbonnais ()] « Économétrie ». Dunod. 7éme édition, R Bourbonnais . 2009. Paris.
- 431 [Goyeau and Tarazi ()] '« Évaluation du risque de défaillance bancaire en Europe'. D Goyeau , A Tarazi . Revue
 432 Économique 1992. 102 p. .
- (Stiroh ()] '«Diversification in banking: is non-interest income the answer?'. K J Stiroh . Journal of Money,
 Credit, and Banking 2004b. 36 p. .
- [Stiroh ()] '«Do community banks benefit from diversification?'. K J Stiroh . Journal of Financial Services
 Research 2004a. 25 p. .
- ⁴³⁷ [Ghosh (2016)] '«Does central bank governors term in office matter for macroprudential policies? Evidence from
 ⁴³⁸ MENA banks'. S Ghosh . International Business and Finance, 2016. December.
- 439 [Schinasi ()] «Safeguarding financial stability: theory and practice, G Schinasi . 2006. International Monetary
 440 Fund.
- [«The Bank Lending Channel: Lessons from the Crisis». Economic Policy] «The Bank Lending Channel:
 Lessons from the Crisis». Economic Policy,
- [Huang and Ratnovski ()] '«The dark side of bank wholesale funding'. R Huang , L Ratnovski . Journal of
 Financial Intermediation 2011. 20 p. .
- [Shleifer and Vishny ()] '«Unstable banking»'. A Shleifer , R W Vishny . Journal of Financial Economics. N°97
 2010. p. .
- [Blum ()] '«Why Basel II may need a leverage ratio restriction?'. J M Blum . Journal of Banking and Finance
 2008. 32 p. .