

# Enhanced Prudential Standards Under Basel Iii: What Consequences for The Profitability of Banks

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## Abstract

Since the subprime financial crisis, international financial regulatory institutions (Basel, MIFID, Dodd-Frank), have strengthened regulatory requirements on systemically important banks. The Basel Committee on Banking Supervision, and based on the G20 recommendations, has drawn up a reform program to reconfigure the banking system, based mainly on increasing the capital requirement. The program has caused strong resistance from the banking industry leaders, saying that an excessive increase in regulatory capital will lead to an increase in the cost of financing of banks, which will have a negative impact on their profitability, and affect in fine the entire economic system. Due to the divergence of opinions regarding the impact of increasing capital requirements on the banking system, and the drastic lack of empirical literature on the Moroccan banking sector, we have decided to direct our research to fill this empirical deficiency. The main question we want to answer through our analytical approach, is how enhanced capital regulation would impact financial performance of the banking industry? To which extent this impact could be alleviated through risk management policies? To do so, and based on the empirical literature on this topic, we have conducted an analytical study, through Mathematical Modeling Analysis to compute the impact of the implementation of reinforced capital regulations on the profitability of banks. the goal of this article is to present the results of the impact analysis on the profitability of Moroccan banks using regression model applied to panel data, covering the 2010-2017 time period. The relevance of this study is derived from the several reforms applied to regulation of capital in the worldwide banking industry during the post-financial crisis period, including Morocco. In Morocco, Bank Al Maghrib, the regulator of banks, introduced reforms in the regulation of capital, through circular 14 / G / 2014 and circular 1 / W / 2016, modifying and strengthening the solvency ratios. This article presents the results of an impact study conducted based on the Panel's Multiple Data Regression Model and applied to 6 Moroccan banks during the post-financial crisis period, i.e., 2010-2017.

**Keywords:** Basel III Agreement, Capital Requirements, Moroccan Banking System, Return on Assets, Return on Equity.

## 1. Introduction

During the financial crisis of 2007-2009, banking economics research has shown its limitations in decoding banking crisis mechanisms and their repercussions. This statement could be explained by the lack of adaptation of the traditional financial theories and paradigms to the specific characteristics of the banking industry. A great number of experts had concluded this insufficiency when trying to estimate the deleterious financial consequences of the subprime crisis. It's worth reminding that during the subprime financial crisis, the US government injected \$ 235 billion into the banking system to mitigate the liquidity crisis suffered by US banks. At the same time, bank regulators found that banks at the time were undercapitalized and that bank capital requirements had to be revised upwards.

The Basel Committee on Banking Supervision, and on the basis of the G20 recommendations, has drawn up a reform program to reconfigure the banking system, based mainly on increasing the capital requirement. The program has caused strong resistance from the banking industry leaders, saying that an excessive increase in regulatory capital will lead to

an increase in the cost of financing of banks, which will have a negative impact on their profitability, and affect in fine the entire economic system. The reform consisted of a qualitative and quantitative review of the solvency and liquidity ratios. According to the Institute of International Finance, abiding by Basel III requirements would cost \$1300 Bn for the banking industry.

Therefore, many impact studies have been conducted by banking federations, and some of them have concluded that this increase in Basel requirements would increase the cost of capital of banks, that will be, in fine, charged to the final borrower, and limit the capacity of banks to finance the economy.

Other impact studies had a favorable conclusion towards Basel III requirements, assuming that the future benefits of stability and resilience of the economic system would exceed the cost incurred by banks to abide by this new regulation. This divergence in impacts is also applicable at a microeconomic level, as some impact studies demonstrated the existence of a negative impact of this new regulation on the profitability of banks (Häle P.et al, Mckinsey), while others concluded the opposite.

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On the other side, and in line with the new international regulatory framework, the Central Moroccan bank, has also increased in 2013, Moroccan bank's capital requirements, at a higher level compared to the Basel III. The Moroccan regulation is more stringent, and Moroccan banks should hold a higher level of capital adequacy ratios, compared to Basel III requirements, that is 50% higher for the Tier1 & Tier 2 ratios (Circulaire relative au fonds propres des établissements de crédit, 2013; Rapport annuel de la supervision bancaire, 2017)

. However, there is a lack of literature concerning the eventual impacts of these new capital requirements, on the profitability of banks in Morocco. Therefore, and due to the divergence of opinions regarding the impact of increasing capital requirements on the banking system, and the drastic lack of empirical literature on the Moroccan banking industry, we have decided to direct our research to fill this empirical deficiency.

Consequently, the purpose of this paper is to evaluate the impact of regulatory capital on the profitability of Moroccan banks, by answering the following question:

Do capital requirements in Morocco, that are more stringent, have any impact on banks 'profitability in Morocco? if so, what is this nature of this impact? is it positive or negative?

To answer these questions, we developed a regression model applied to panel data, covering the 2010-2017 period, in order to assess the impact of capital adequacy ratios on the bank's profitability in Morocco. We have developed a multiple regression model, using the financial data of 6 Moroccan banks. As the Moroccan banking industry in highly concentrated, (3 banks hold more than 60% of market share), we decided to focus our study to the listed banks that have frequent financial disclosure and high compliance with the capital requirements regulation, according to the central bank reports.

## 2. Brief literature Review

### 2.1 Impact studies & empirical review with divergent conclusions

Bank capital and its regulation are at the heart of several debates in the financial literature. They have become increasingly important in recent years because of their strategic role and the trade-offs they require. Banks must meet various constraints: on the one hand, they are required to generate a sufficient minimum return on capital, and, on the other hand, they must align with the prudential regulation of capital. Financial regulators require a minimum level of capital to improve the resilience of banks to encounter any financial or economic distress. The most striking example of this regulation is the Basel Agreement, which has been in force since 1988, defining the "Cooke" ratio, that was mandatory for the member states of the Basel Committee and was extended to the financial institutions of other developed countries. The reform of 2008, which gave birth to the Basel 2 agreements, targeted the member countries of the Basel Committee as well as some US banks of systemic size. Judged useful for maintaining financial and economic stability, the Basel agreements have been a source of inspiration for many national regulators in emerging countries. During the subprime financial crisis, the

regulation of capital was fundamentally questioned as well as the theoretical foundations of bank capital and their shortcomings noticed during the financial crisis of Subprimes. The economic impact of banking capital regulation has been examined in a plethora of research studies. Our conceptual framework can be supported by two types of reference: the Quantitative Impact Studies issued by the various authorities consulted by the Basel Committee and the empirical review.

#### 2.1.1 Macroeconomic impact:

In 2016, the International Settlement Bank published an economic analysis of the long-term impacts of Basel III, comparing the benefits and costs of the new Basel regulatory framework. Thus, the additional solvency and liquidity requirements may be considered advantageous if the economic benefits generated by their application would exceed the costs incurred. The approach of this impact study, which has covered several geographical areas, consists of an analysis of the impact of regulatory requirements on GDP without taking into account the long-term growth rate, and this by comparing the economic costs and benefits caused by the introduction of solvency ratios. The results of this analysis argue that the Basel III reforms will generate a positive net economic benefit. Profits are represented by the decrease in the probability of losing GDP as a result of banking crises. The calculated probabilities were obtained through the combination of the models proposed by the central banks (banks of England, Bank of Canada, Bank of Japan ... etc.). It turns out that increasing the solvency ratio from 7% to 10% would reduce the probability of a bank crisis from 3.3% to 1.2%, which probabilities were multiplied by the cost of a crisis. as a percentage of GDP. To assess the economic costs of the Basel III requirements, economic models were used. These include the models developed by the Macroeconomic Assessment Group's experts, assessing the impact of the one-point increase in the solvency ratio on loan rates. The cost was estimated at 0.12% of GDP. Applied to the euro zone by BNP Paris Bas, this study revealed a higher economic cost for the area in question. The impact of the application of Basel III on European banks has resulted in the reallocation of the banking book, towards less risky activities (less weighted) or via the withdrawal of the most weighted activities (those relating to derivatives). As a result, banks are making some adjustments to their balance sheets to reduce the negative impact of regulatory changes. (Quignon, 2017)

#### 2.1.2 Microeconomic impacts

By analyzing the balance sheets of 45 European banks, including the largest US banks, Häle P. et al, in a report by Mckinsey, expect that the full implementation of the Basel III (2019) regulatory reforms will result in the decrease of the ROE of European banks between 3.7% and 4.3%. It should be noted that ROE was 15% during the pre-financial crisis period. This decrease results from the adequacy of equity and financing costs. The impacts can be broken down according to the type of requirement:

- Equity: Improving the quality of capital contributes to a decline of 0.8% of the ROE (Härle et al., November 2010).
- The leverage ratio: The respect of the leverage ratio of 3% will lead to a decrease in ROE estimated at 0.1%
- Liquidity ratios: Maintaining high quality assets to comply with the CRL will have a negative impact of 0.2% on ROE, while compliance with NSFR requirements will result in a 0.6% decrease in ROE ..

Douglas J. Elliott, in his study, quantifying the Effects on Lending Increased Capital Requirements, estimates that the rate of financing billed by the bank to customers, can cover the financing costs incurred by the bank following the increase in regulatory requirements. Commercial banks, have built powerful portfolios in the commercial banking segment, targeting large companies, which have significant commercial potential. In order to maintain good business relations with these companies, loans granted before the crisis were intentionally undervalued. The analyzes carried out show that the transition from 6% to 8% of the solvency ratio costs 3.4% of ROE, while the increase of 8% to 10% of the same ratio costs 2% of the ROE (Elliott, September 2009) . In sum, the above studies demonstrate the existence of a negative impact of the increase in regulatory capital on bank profitability. From a macroeconomic point of view, the regulation of capital generates a net profit estimated at 30% of GDP of the G20 countries.

In a research work, developed within the Department of Banking and Finance of the University of Zurich, the author examined the possible effects of regulation on the profitability of banks. The empirical study focused on a sample of 104 European banks, and mobilized the multiple linear regression model, using as a dependent variable, the bank profitability indicators (ROA, ROE, alpha, price-to-book) and explanatory variables: the Tier I ratio, the Beta coefficient, the size of the bank and the country. The results of this study have been mixed, in some cases of small, weakly capitalized banks, the causality between the profitability of banks and the Tier I capital ratio, has been significantly negative, while for the big banks the link is reversed (Mukhlynina, 2012).

In sum, the studies demonstrate the existence of a negative impact of the increase in regulatory capital on the profitability of banks. From a macroeconomic point of view, the regulation of capital generates a net benefit estimated at 30% of the GDP of the G20 countries. We believe that this regulation of bank capital is necessary for global financial stability, except it is insufficient. These standards are considered very low to limit excessive risk-taking by the banking sector. In addition, they do not cover other players in the financial system, such as investment banks, hedge funds and Special Purpose Vehicles, which also present a very significant systemic risk, due to their high exposure to market risks.

In our paper, the objective is to measure the impact of the solvency ratios on the Moroccan banks that have an average solvency ratio of 14.2%, that is 20% higher than the local regulation and 45% than the international one. The industry is highly concentrated with the three first banks (AttijariWafaBank, Banque Centrale Populaire, and BMCE Bank of Africa), holding more than 60% of the market share. In line with the empirical literature discussed earlier,

our empirical study will allow us to verify the following hypothesis :

H: The Core Tier One ratio increase has a negative impact on the ROE of Moroccan Banks.

### 3. Empirical Analysis

#### 3.1 Sample

A panel data on yearly basis was developed for the period of 2010 to 2017, covering the main 6 banks in Morocco to test the proposed hypotheses. Two different secondary sources were used to obtain the data, which include the financial statements of the banks and The World Data DataBank.

#### 3.2 Methodology

In line the empirical review, we conducted our impact study using the multiple regression model applied to Panel data. Panel data is cross-referenced data collected on a set of individuals over a period. In our case, we will treat a sample of 6 Moroccan banks listed, over a period of eight years. That is, our sample represents both dimensions, characterizing the Panel data. Panel data provide a better estimate of the coefficients of the explanatory variables, due to the large number of observation points. So our econometric model is as follows:

$$y_i = a_0 + a_1x_{i,1} + a_2x_{i,2} + \dots + a_px_{i,p} + \varepsilon_i ; i = 1, \dots, n \quad (1)$$

The gaps related to the inadequacies of the model, existing between the real values and those predicted by the model will be quantified by the term of error  $\varepsilon_i$ . The objective is to estimate the coefficients and expressing the linearity link between the explanatory variables and the dependent variable to be explained. These coefficients represent the marginal propensity and are the unknown variables that we seek to estimate. The parameters express the specific effect of the independent variable on the dependent variable.

#### 3.4 Variables

As part of our study, the dependent variable to be explained and which measures the performance of banks is the Return On Equity.

In keeping with previous empirical work, we first chose a group of eight explanatory variables to measure the impact of the increase in Core Tier One on the profitability of Moroccan banks, which are presented in the table 1.

Through this descriptive table, we notice that our sample has a large dispersion. The standard deviations are significant which highlights the heterogeneous nature of our sample, so the selected Moroccan banks record significantly different levels of performance. Return on equity averages 9.47% with a standard deviation of 3.63%. This means that 68% of the banks in our sample are within one standard deviation of plus or minus 3.63%.

According to the table, the core tier one ratio is 14.2% on average with a standard deviation of 1.2%. The core capital ratio represents the level of hedging risk-weighted assets by the hard core of equity (common and similar shares, reserves, retained earnings, etc.). Moroccan banks are above

regulatory requirements and have an average solvency ratio of 14.2%, according to Bank Al Maghrib's latest banking supervision report. Between 2015 and 2016, Moroccan banks increased equity by \$ 10 billion, of which \$ 5 billion from category 1 funds, from retained earnings and the other half from fixed-term subordinated debt.

### 3.5 Results

Table 1 shows descriptive statistics, which include mean, standard deviation, minimum and maximum values and lastly, total number of observations in each variable. The

Table 1  
Descriptive Statistics

Variable	Unit	Mean	Std. Dev.	Max.	Min.	Obs.
Return on Equity	Ratio	9,47%	22.86	20,5%	2,03%	48
Liquidity	Ratio	73,0%	12.56	100,9%	6,75%	48
Risk Taking	Ratio	6,8%	6.62	69,0%	0,57%	48
Diversification	Index	58,7%	2.07	82,1%	19,27%	48
The Core Tier One	Percentage (%)	10,5%	6.78	14,2%	7,82%	48
Size	Index	7,99		8,5	7,45	48
Inflation variation	Percentage (%)	120,1%		188,8%	43,55%	48
GDP Growth	Percentage (%)	3,6%		5,2%	1,10%	48

Table 2 shows the results of correlation analysis to select the most significant variables in our regression model. It is a statistical tool to eliminate the variables representing a collinearity problem. It makes it possible to evaluate the dependence between the explanatory variables. Thus, the predictive quality of the variables is measured by their degree of dependence on the other explanatory variables of the model.

The higher the correlation coefficient between two variables (close to 1), the greater the collinearity link between said variables. In this case one of the two must be eliminated, to finally keep only the variables whose correlation coefficient

results show that female labor has the mean value of 65.88 with a standard deviation of 22.86%. The upper limit of female labor among total 80 observations was 100% with a lower limit 36.69%. Similarly, fertility has the mean value of 46.93 with a standard deviation of 12.56%. The upper limit of fertility among total 80 observations was 83.51% with a lower limit 16.97%. In addition, democracy has the mean value of 65.88 with a standard deviation of 22.86%. The upper limit of democracy among total 80 observations was 100% with a lower limit 36.69%.

is low (close to zero) or negative. At first glance, we find that bank liquidity shows a high correlation coefficient with diversification at the rate of 80%.

Liquidity is strongly correlated with the diversification of the banking portfolio, as measured by the balance sheet concentration index, because a concentrated balance sheet structure means that the bank's activity is focused on granting loans, which results in high ratio of loans to total assets. Consequently, we decided to eliminate the diversification variable. Following the same principle, we also eliminate the inflation variable because of its moderate collinearity with the core capital ratio.

Table 2  
Correlation matrix under SPSS

	Liquidity	Risk Taking	Diversification	Size	Inflation	GDP variation	Core Tier One	ROE (t-1)
Liquidity	1	-,642**	,802**	-,350*	0,173	0,181	-,026	-,173
Risk Taking	-,642**	1	-,346*	-,158	-,206	-,112	-,073	0,104
Diversification	,802**	-,346*	1	-,330*	0,022	0,136	-,140	-,116
Size	-,350*	-,158	-,330*	1	0,024	-,047	-,277	,392**
Inflation	0,173	-,206	0,022	0,024	1	-,008	0,218	-,080
GDP Variation	0,181	-,112	0,136	-,047	-,008	1	-,262	0,179
Core Tier One Ratio	-,026	-,073	-,140	-,277	0,218	-,262	1	-,191
ROE (t-1)	-,173	0,104	-,116	0,392**	-,080	0,179	-,191	1

In order to improve the predictive quality of our model, we will integrate the effect of persistence in our model. Based on the work of (S.Cousin 2011) and (Belkhaoui et al 2012)

we will integrate the delayed dependent variable to fill the problem of persistence. Our model then becomes (Belkhaoui, Lakhal, & Hellara, 2012) :

$$ROE_t = a_0 + a_1RT + a_2CT1 + a_3S + a_4L + a_5GDP + a_6ROE_{t-1} + \varepsilon_i \tag{2}$$

$i = 1 \text{ to } 6$

After specifying our model, we opted for the software Eviews, widely used by researchers in econometrics and is characterized by its simplicity and efficiency, especially for samples, whose number of observations is average (335).

There are two types of models applied to the Panel data:

**Fixed effects model:** This model assumes that "unobserved individual effects are correlated with other explanatory variables"

**Random effects models:** Assumes that "individual and temporal specific effects are not fixed and follow a random distribution".

In order to choose between these two models, the Hausman test must be performed. This test has the null hypothesis of the validity of the random effects model, which in case of rejection is invalidated by the alternative hypothesis favoring the fixed effects model.

Given the characteristics of our sample, where the number of individuals is less than the number of explanatory variables, we decided to build two models:

The complete model with all the explanatory variables applying the fixed effects analysis:

$$ROE_t = a_0 + a_1RT + a_2CT1 + a_3S + a_4L + a_5GDP + a_6ROE_{t-1} + \varepsilon_i \tag{3}$$

$i = 1 \text{ to } 6$

A reduced model using both Panel methods, fixed effects and random effects, while applying the Hausman test. To define the variables of our reduced model, we referred to the correlation matrix to eliminate additional variables by

applying the same principle we eliminated the risk taking because of its low use in the empirical literature. Our model is as follows:

$$ROE_t = a_0 + a_1CT1 + a_2S + a_3L + a_4GDP + a_5ROE_{t-1} + \varepsilon_i \tag{4}$$

$i = 1 \text{ to } 6$

Table 3  
Results of the fixed model

Dependent Variable: ROE			
Method: Panel Least Squares			
Date: 05/24/18 Time: 18:42			
Sample (adjusted): 2011 2017			
Periods included: 7			
Cross-sections included: 6			
Total panel (balanced) observations: 42			
Variable	Coefficient	Cross-section fixed (dummy variables)	
C	-0.250827	R-squared	0.742760
LA_LIQUIDITE	0.067241	Adjusted R-squared	0.636316
PRISE_DE_RISQUE	0.078700	S.E. of regression	0.018982
VAR_DU_PIB	-0.287591	Sum squared resid	0.010450
TAILLE	0.041696	Log likelihood	114.6807
RATIO_SUR_FONDS_PROPRES_DE_BASE	-0.616743	F-statistic	6.977926
ROE__T_1_	0.323127	Prob(F-statistic)	0.000010

Table 3 shows the results of the fixed model results. the results of the regression show that the relationship between the performance of Moroccan banks, measured by return on equity and the core tier one ratio is significantly negative and stands at -61%. All things being equal, following the 1% increase in the core tier one ratio, the profitability of Moroccan banks deteriorated by 61%. We also find that the ROE t-1 coefficient, measuring the speed of adjustment of banking performance, is average 0.38, which reflects the average competitiveness of the Moroccan banking sector (Belkhaoui et al., 2012). We also note that risk taking has a non-significant positive impact on the profitability of

Table 4

Moroccan banks. The predictive quality of our model, which is measured by the coefficient of determination (R-Square), is 74%.

In our case, the coefficient of determination is 74%, that is, the model explains the dispersion of the data at 74%. Generally, the higher the coefficient, the better is the predictive quality of the model.

Table 4 shows the results of the random regression multiple regression model and the results of the Hausman test.



Random effect model results & the Hausman test

Dependent Variable: ROE  
 Method: Panel EGLS (Cross-section random effects)  
 Date: 05/21/18 Time: 18:17  
 Sample: 2010 2017  
 Periods included: 8  
 Cross-sections included: 6  
 Total panel (unbalanced) observations: 47  
 Swamy and Arora estimator of component variances

Variable	Coefficient		
C	0.096104...	R-squared	0.465242...
LA_LIQUIDITE	-0.01130...	Adjusted R-squared	0.400028...
VAR_DU_PIB	-0.37269...	S.E. of regression	0.027659...
RATIO_SUR_FONDS_PROPRES_DE_BASE	-0.60773...	F-statistic	7.134053...
ROE__T_1_	0.574077...	Prob(F-statistic)	7.006818...
TAILLE	0.003588...		

Correlated Random Effects - Hausman Test  
 Equation: Untitled  
 Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	6.762454562502531	5	0.23891...

**4. Discussion**

The main results of our study confirm the existence of a negative impact of the regulation of capital on the profitability of Moroccan banks. According to the results of the multiple linear regression applied on Panel Data, and this for 6 Moroccan banks during the post-crisis period, the ratio of regulatory capital has a negative impact of around -60% on bank's profitability.

The analysis was performed based on an econometric model of multiple regression, applied to the Panel data. This model allowed us to integrate bank-specific variables, such as size, liquidity, and risk-taking, and other macroeconomic variables, such as GDP. This study has a double interest. At first glance, it makes it possible to analyze and define the explanatory variables for the profitability of Moroccan banks in general. It therefore has an important managerial contribution, allowing banks to identify the factors that significantly affect their profitability, and better define banking policies. Thus, we find that among the three bank-specific variables, risk taking is the most significant variable. About macroeconomic variables and to our great surprise, GDP growth has a negative impact on the profitability of Moroccan banks, which demonstrates the existence of a certain disconnection between the economic and financial spheres. This result joins some recent studies which empirically prove the existence of a disconnect between the demand for credit and economic growth. As for the persistence which reflects the level of competitiveness of the banking sector, it shows an average level of the competitiveness of the banking sector in Morocco, and this because of the existence of significant barriers to entry, including increasing capital requirements. These requirements constitute the cornerstone of our study, representing the second theoretical and managerial

contribution of our study. Through the two models, fixed effects and random effects, we find that the basic equity ratio has a negative impact on the profitability of Moroccan banks, measured by the return on equity. These results are consistent with certain previous empirical studies, notably that of Arijan Stovrag and Lilia Mukhlynina, whose work focuses on Swiss and European banks respectively, and which also demonstrate the existence of a negative impact on the capital ratio on the profitability of banks. We can also interpret these results considering the work of Modigliani and Miller, claiming that the capital structure has no impact on the value of the company and therefore its result. This is the case for Moroccan banks, as an increase in core capital did not translate into a proportional improvement in the bank profit, which caused the ROE to decline.

**5. Conclusion**

The results of the multiple regression according to the different models, prove the existence of a negative impact of the Core Tier One on the ROE of Moroccan banks, which allows us to confirm our main hypothesis. This result explains the strong resistance of bank's industry leaders to any reinforcement or increase of banks capital requirement, claiming that it would decrease their profitability and have a macroeconomic negative impact in the long term. Based on our study, the first claim is proven statistically, as we demonstrated that the marginal effect of a 1% increase in the core capital ratio is -60% on the ROE of Moroccan banks. However, this negative impact of the regulation of capital on the profitability of Moroccan banks does not call into question the resilience of the Moroccan banking system, which is favorably assessed by the International Monetary Fund. Moreover, as stated in the literature review above, from a macroeconomic point of

view, the regulation of capital generates a net profit estimated at 30% of GDP of the G20 countries. We believe that this regulation of bank capital is necessary for global financial stability, including the Moroccan financial stability. We believe that Moroccan banks should limit the attribution of the increase in financing costs to the pricing scales, and implement more sophisticated credit risk management strategies, consuming the most regulatory capital as it represents 80% of the risk weighted assets.

The analysis that have been carried out have a certain number of limits, which can be exploited in future research work:

1. We used a single indicator to measure the performance of Moroccan banks, namely the return on equity. Other indicators can also be used, such as the net interest margin and the return on assets.
2. We focused on the assessment of the impact of the core capital ratio, other prudential measures, such as the LCR or the NSFR can also be assessed.
3. Our analysis is focused on a sample of six Moroccan banks, an analysis of all the banks could be interesting.

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