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# Regulatory capital, default risk and efficiency: a comparative analysis between Islamic and conventional banks in the MENA region

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## Abstract

The main objective of this article is to study the effect of the regulatory environment on the behaviour of Islamic and conventional banks in 10 countries in the MENA region regarding the level of capital, the risk of default and banking efficiency. In other words, we seek to show the importance of the conventional and Islamic banking system in MENA countries and to assess the efficiency of these banks under the pressure of prudential regulations through a comparative analysis. Our results show that the riskiest banks are those with a high level of capital. Furthermore, the results suggest that the most profitable banks in the MENA region tend to increase their level of risk. We also find that a higher capital requirement encourages banks to take a higher risk with higher profitability.

**Keywords:** capital regulation, banking efficiency, default risk, simultaneous equations

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## 1. Introduction

For a long time, conventional and Islamic banks have played an important role in the growth and stability of national and international economies. However, the traditional banking system is the most risky in the world, it has suffered over time a panoply of economic and financial crises. The most striking example being the crash of 2007 called the "subprime crisis" and the failure of several American banks and insurance companies. This crisis hit not only the US economy, but also the global economy. Furthermore, the last decades have been characterized by dramatic losses in the banking sectors of several countries around the world. The best performing banks suddenly announced major losses (the case of Lehman Brothers, Merrill Lynch and Halifax-Bank of Scotland). In addition, European banks have experienced great difficulty, namely: BNP Paribas, Natixis, Crédit Agricole. In the area of this new vulnerable banking landscape, and to deal with new types of banking risks, measures and prudential laws were taken around 2009. In this case, of major importance was the actions of the international and national control authorities to calm the tensions that were triggered around the loss of confidence in the international and national banking systems. This new architecture has given rise to an international movement of new regulation, namely the emergence of Basel 3 ratio and Islamic finance as a solution to this crisis (Boora, Jangra 2019; BCBS 2017; Hasan, Dridi 2010; Boumediene, Caby 2009). Indeed, Islamic finance is a subject that has aroused the interest of several researchers insofar as these rules have created widespread controversy. Islamic finance is based on several new principles compared to conventional finance, namely, the prohibition of interest, the prohibition of excessive risk, the backing of real assets, the sharing of profits, the prohibition of illicit activities and backing to real assets. Moreover, the main role of conventional finance as well as Islamic finance is to meet the demands of agents with financing needs and agents with financing capacities. On the other hand, competition between the two types of bank has intensified and the search for performance is the ultimate goal. Moreover, this new banking architecture promotes several debates regarding the specific risks inherent in Islamic banking and the holding of a minimum capital requirement. Therefore, the two relations capital/risk and capital-risk/efficiency may exist and the question that remains valuable is the nature of the relationship in the case of Islamic banks. To this end, several empirical studies have attempted to conduct comparative studies regarding the efficiency, the default risks and the application of prudential norms across Islamic finance. The study of the interrelation between capital, default risk and efficiency of Islamic banks focuses on the case where regulatory capital plays an important role in improving banking efficiency and reducing bank risks. For this reason, Islamic banks need to take control of their capital in order to better control their risks. This research is motivated by various elements, namely the importance of prudential regulations for the stability of banking systems, to study whether these Basel laws are effective in the case of Islamic banks, and to be able to carry out a comparative study between Islamic banks and conventional banks with regard to the effectiveness of prudential rules. The aim of this article is to conduct a comparative study between Islamic banks and conventional banks in terms of regulatory capital, risk and efficiency. In other words, the article consists in determining the different efficiency scores in the first part and defining in the second part a simultaneous relationship between capital, risk and banking efficiency. The econometric analysis through the simultaneous equations can help us to better stimulate this relation and to draw the relevant remarks. This study is motivated by several reasons, namely the importance of the problem. Moreover, it is a subject that interests many researchers and economists and which is still

relevant today. The remainder of this paper is as follows, we review the main theoretical and empirical results of the effect of regulation on default risk and banking efficiency (Section 2), next we present our research methodology and the specification of models and variables (Section 3) and in conclusion we summarize the main results (Section 4).

## 2. Literature review

If we look at the issue at the theoretical as well as empirical level, there is not enough empirical research on the simultaneous relationship between regulatory capital, default risk and bank efficiency and especially in the case of Islamic banks in the MENA region. In fact, Barth, Caprio and Levine (2004) point out various reasons for and against the restriction of banking activities; however, their overall results indicate that the restriction may not only weaken bank efficiency, but also increase the likelihood of a banking crisis. Barth, Caprio and Levine (2008) show that capital adequacy standards do not improve the efficiency of banks. Therefore, Zhang, Liu and Wu (2008) suggest that changes in the capital of Chinese commercial banks are negatively associated with the changes in portfolio risk. In the Islamic context, studies examining risks are rather limited. Ghosh (2014) indicates that conventional banks try to increase the amount of capital to absorb risks. They also show that the regulatory pressure and market discipline may affect a bank's attitude toward risk and capital. Moreover, Islamic banks increased their capital as compared to conventional banks. On the other hand, by applying the generalized moments method (GMM) for a dynamic panel of banks, Ben Mbarek, Ben Mbarek and Khemiri (2015) argue that strengthening regulation and supervision improves profitability and the stability of European banking systems and there is a positive correlation between capital adequacy, deposit guarantee schemes and bank profitability. Finally, they showed that strengthening the powers of supervisors reduces risk-taking and promotes stability in the banking sector. Syed (2018) finds that higher capital buffers and efficiency boost each other and decrease default risk, although greater risk interrupts efficiency in emerging economies. Additionally, Saeed et al. (2020) found that the effect of capitalization on the increase in insolvency risk is more marked for Islamic banks and better cost efficiency is linked to lower risk for conventional banks. Recently, for the case of ASEAN commercial banks, Do Van Anh (2022) showed that the best-capitalized banks are the most efficient, take less risk, and have low levels of capital, while low yielding banks have higher capital ratios.

## 3. Data and methodology

### 3.1. Sample

Our sample includes a panel of 97 banks in the MENA region, including 30 Islamic banks and 67 conventional banks during 2012–2021. It is selected from the IBCA Bank Scope database with an annual frequency and the website of the different banks. We also incorporated institutional and regulatory variables, for this reason we use the Barth, Caprio and Levine (2001) database from the World Bank. Our period remains important since it incorporates the period of crisis and reforms. The choice of banks in our sample is not arbitrary; it is based on the size of the capital of Islamic

and conventional banks (the 2004 world ranking). On the other hand, three selection criteria were developed taking into account the objectives of the study and the constraints of data availability. The first criterion was to list only countries belonging to the MENA region (Middle East and North Africa) in order to have a sample that answers our research question. The second selection criterion was to select only commercial banks, which only carry out banking intermediation activity. Finally, we excluded financial institutions specializing in leasing, specialized state credit institutions, banks specializing in granting mortgage loans and central banks or postal banks. This selection criterion aimed to limit the sample size to 10 countries, and from these criteria, we can conduct a comparative study between conventional banks and Islamic banks, since they represent comparable sizes. Table 1 provides our breakdown of the sample by country.

## 3.2. Methodology

### Estimated level of efficiency

The level of efficiency of both types of bank in the MENA region is estimated by using the SFA approach developed by Battese and Coelli (1995). We measure banking efficiency year by year in order to capture the efficiency scores over time. The stochastic frontier is written as follows.

$$\ln TC_{jt} = \alpha_0 + \alpha_1 \ln y_{1jt} + \alpha_2 \ln y_{2jt} + \beta_l \ln(w_{Ljt}) + \beta_k \ln(w_{kjt}) + \beta_f \ln(w_{Fjt}) + v_{jt} + u_{jt} \quad (1)$$

where:

$TC$ – total cost banking = interest + non-interest expenses,
$w_L$ – price of labour = salaries/full-time equivalent employees,
$w_k$ – price of physical capital = expenditures on premises and fixed assets/premises and fixed assets,
$w_F$ – price of financial capital = interest expenses paid on deposits/total deposits,
$y_1$ – net total loans,
$y_2$ – other earning assets,
$\alpha_0, \alpha_1, \alpha_2, \beta_l, \beta_k, \beta_f$ – the parameters to be estimated,
$v_{jt}$ – random error terms,
$u_{jt}$ – the terms measuring inefficiency.

### Simultaneous equation model

In this section, we proceed to a comparative study between the two types of banks, and we adopt a simultaneous equation model of Shrieves and Dhal (1992) and taken up by Jacques and Nigro (1997), Aggarwal and Jacques (1998) and Ediz et al. (1998) which includes variables explaining the regulatory environment, default risk and bank efficiency. The choice of simultaneous equations is justified by the fact that the presence of lagged variables makes the model dynamic, and the dynamic character makes it possible to exploit the inter-individual and intertemporal dimensions of the data. Moreover, from an economic point of view, recourse to the dynamic model is justified by the fact that the panels constitute the best choice, making it possible to capture the dynamic effects on the behaviour of agents

and to control individual and/or temporal heterogeneity. Otherwise, the regressions are not pooled, but estimated for different group of banks.

$$\Delta CAP_{j,t} = \Delta^d CAP_{j,t} + E_{j,t} \tag{2}$$

$$\Delta RISK_{j,t} = \Delta^d RISK_{j,t} + U_{j,t} \tag{3}$$

$$\Delta EFFICIENCY_{j,t} = \Delta^d EFFICIENCY_{j,t} + v_{j,t} \tag{4}$$

where:

$\Delta CAP_{j,t}$, $\Delta RISK_{j,t}$ and $\Delta EFFICIENCY_{j,t}$ – the observed changes in the capital ratio, the risk levels and the efficiency level of the bank *j* at time *t*,

$\Delta^d CAP_{j,t}$, $\Delta^d RISK_{j,t}$ and $\Delta^d EFFICIENCY_{j,t}$ – the endogenous adjustments to capital ratio, levels of risk and levels of efficiency,

$E_{J,T}$, $U_{J,T}$ and $V_{J,T}$ – the exogenous random shocks.

We assume that banks may not be able to adjust their capital ratios and risk levels as well as their cost efficiency scores instantly. Discretionary changes in capital, risk and efficiency are modelled using the framework of partial adjustment.

$$\Delta^d CAP_{j,t} = \alpha(CAP^*_{j,t} - CAP_{j,t-1}) \tag{5}$$

$$\Delta^d RISK_{j,t} = \beta(RISK^*_{j,t} - RISK_{j,t-1}) \tag{6}$$

$$\Delta^d EFFICIENCY_{j,t} = \gamma(RISK^*_{j,t} - RISK_{j,t-1}) \tag{7}$$

where $CAP^*_{j,t}$, $RISK^*_{j,t}$ and $EFFICIENCY^*_{j,t}$ are respectively the desired levels of capital, risk and efficiency; $0 < \alpha$ and $\beta < 1$.

By substituting equations (5), (6) and (7) in (2), (3) and (4), we obtain:

$$\Delta CAP_{j,t} = \alpha(CAP^*_{j,t} - CAP_{j,t-1}) + E_{j,t} \tag{8}$$

$$\Delta RISK_{j,t} = \beta(RISK^*_{j,t} - RISK_{j,t-1}) + U_{j,t} \tag{9}$$

$$\Delta EFFICIENCY_{j,t} = \gamma(EFFICIENCY^*_{j,t} - EFFICIENCY_{j,t-1}) + U_{j,t} \tag{10}$$

The desired capital ratio, the desired level of risk and the desired level of bank efficiency are not observable, but are assumed to depend on a certain set of observable variables. As a result, the ratio $CAP^*$ is influenced by several variables, namely the size of the bank, the level of capital at time $t - 1$, changes in efficiency scores at time *t*, changes in the level of risk at time *t*, liquidity risk at the moment *t*, and a regulatory variables (*REG*). As well as, the ratio $RISK^*$ is influenced by the size of the bank, the provision at time *t*, the level of risk at time $t - 1$, changes in capital, changes in efficiency and

a regulatory variable (*REG*). Moreover, the efficiency variable is influenced also by the size of the bank, changes in capital, changes in the level of risk, liquidity risk at time *t*, the efficiency scores at time $t-1$ and regulatory variables (*REG*).

Given these variables, equations (8), (9) and (10) can be written as follows:

$$\Delta CAP_{j,t} = \alpha_j + \alpha_1 SIZE_{j,t} + \alpha_2 \Delta RISK_{j,t} + \alpha_3 LIQUID_{j,t} + \alpha_4 CAP_{j,t-1} + \alpha_5 \Delta EFFICIENCY_{j,t} + REG_{j,t} + \varepsilon_{j,t} \quad (11)$$

$$\Delta EFFICIENCY_{j,t} = \gamma_j + \gamma_1 SIZE_{j,t} + \gamma_2 \Delta CAP_{j,t} + \gamma_3 \Delta RISK_{j,t} + \gamma_4 LIQUID_{j,t} + \gamma_5 EFFICIENCY_{j,t-1} + REG_{j,t} + \nu_{j,t} \quad (12)$$

$$\Delta RISK_{j,t} = \beta_j + \beta_1 SIZE_{j,t} + \beta_2 \Delta CAP_{j,t} + \beta_3 LIQUID_{j,t} + \beta_4 PROV_{j,t} + \beta_5 RISK_{j,t-1} + \beta_6 \Delta EFFICIENCY_{j,t} + REG_{j,t} + \mu_{j,t} \quad (13)$$

On the other hand, we add to these explanatory variables other proxy variables of the environmental regulation derived from a database developed by Barth, Caprio and Levine (2001).

## 4. Results and discussion

In this first part, we introduce the efficiency scores obtained by the SFA method, and then we show our main results using the generalized two-step method (Hansen's two-step GMM). Table 5 suggests that Islamic and conventional banks in the MENA region present various levels of efficiencies. In fact, the result shows that conventional banks are more efficient than Islamic ones in terms of cost (Hanif et al. 2012). Moreover, it should be noted that the two tests of Sargan-Hansen and Arellano and Bond are checked, which means that we have validated instruments and there is not a first order autocorrelation and second order.

### 4.1. Estimation results taking into account the effects of years

Table 6 presents the empirical results associated with the three models in simultaneous equations. Our results from the first three regressions show that the size of the bank has a positive and significant impact on the changes in capital and the changes in risk for both types of banks. This result indicates that large banks in the MENA region tend to increase their level of equity and tend to operate in high--risk projects (Shrieves, Dahl 1992; Van Roy 2004). Furthermore, the results indicate that the Liquid variable, which measures liquidity risk, has a positive and significant impact on changes of capital and the changes in default risk of conventional and Islamic banks. In fact, the most liquid banks have the highest levels of capital and risk. On the other hand, the amount of provisions positively affects the risk of default within Islamic and conventional banks, which suggests that banks with a high level of provisions are those with a high probability and a high default risk. Further, for lagged variables such as $t-1$ capital, $t-1$ risk and $t-1$ efficiency, there is a negative and statistically significant impact on regulatory capital, default risk and bank efficiency. Thus, these results imply that banks in the MENA

region are not able to adjust their levels of capital, risk and profitability for the period 2012 to 2021. Moreover, the econometric results also show that for our endogenous variables, there is a positive and statistically significant relationship between the changes in capital and the changes in default risk for Islamic and conventional banks. This finding indicates that banks with the highest risk are those with a high level of capital (Jacques, Nigro 1997; Saibal 2016). Indeed, there is a positive and statistically significant relationship between the changes in capital and the changes in bank efficiency. This reveals that the most profitable banks tend to increase their level of capital (Awdeh, El-Moussawi, Machrouh 2011). Similarly, there is a positive and a simultaneous relationship between the changes in risk and the changes in efficiency for Islamic and conventional banks. This result suggests that the most profitable banks in the MENA region tend to increase their risk level and choose portfolios that pose higher risks. In addition, Table 6 gives us some rather interesting indications on the estimation of the parameters of the models (11), (12) and (13) under the effect of the years. Indeed, we notice that the year effect has a major influence on our results.

## 4.2. Estimates results with the deposit insurance

Table 7 shows that the existence of a deposit insurance system in both types of banks in MENA countries has a positive and statistically significant impact on the capital ratio (Fonseca, Gonzalez 2010); however, it has a negative and statistically significant effect on default risk and cost efficiency. This finding shows that Islamic and conventional banks in the MENA region, which have a deposit insurance system, have a high level of equity and a lower risk compared to a bank that does not have this deposit insurance. Nevertheless, these banks show a low level of profitability. Similarly, it should be noted that in the MENA region, the existence of a deposit insurance system is supposed to influence the risk-taking behaviour of banks (Saeed et al. 2020; Demirguc Kunt, Kane 2002).

## 4.3. Results of estimates with regulatory variables

Moreover, Table 7 presents the results of the estimation taking into account the effect of the regulatory variables on the capital ratio, the default risk and the cost efficiency of Islamic banks compared to their conventional counterparts. Indeed, we found that banks which bring large financial activity, highly capitalized, and that impose strong restrictions on activity are financially stable (Fell, Schinasi 2005; Do Van Anh 2022). In addition, the capital regulation variable has a positive effect on the capital ratio of Islamic and conventional banks. On the other hand, a positive effect on default risk and efficiency with a significance of 1% (Barth, Caprio, Levine 2008, Shrieves et al. 1992), this means that such strict regulation amplifies regulatory capital and increases banks' efficiency and risk. Finally, the Islamic banking supervision has a positive and statistically significant impact of around 1% on the capital ratio and efficiency. This implies that strict banking supervision improves regulatory capital and efficiency resulting from the intermediation activity of banks in the MENA region. To conclude, our regressions confirm that banks with high risk and more profitability are those with a high level of capital.

## 5. Conclusion

In recent years, Islamic finance has become an integral component of the new global banking architecture. For this reason, the researchers attempt to study this new finance with its conventional counterpart. Among the issues, this article studies the relationship between regulatory capital, default risk and banking efficiency for 67 conventional and 30 Islamic banks during 2012–2021. We use a model with simultaneous equations of Shrieves and Dahl (1992) and taken up by Jacques and Nigro (1997), Aggarwal and Jacques (1998) and Ediz et al. (1998). The research show several crucial findings: first, the study find that conventional banks are more efficient in terms of cost than Islamic banks. Second, we conclude that a higher capital requirement encourages banks to take higher risk with higher profitability. Third, strict banking supervision improves capital requirements and efficiency. As a conclusion, we find that the most profitable and risky banks are those that tend to increase their capital ratio. Finally, in terms of recommendations, Islamic regulators are advised to create their own regulatory ratio structures, taking into account the heterogeneity of Islamic banks in terms of size, liquidity and stability. This comes from the fact that the operation of Islamic banks differs so much from the operation of traditional banks, hence the questioning of the application of Basel rules on Islamic banks. In fact, they are invited to strengthen the control of Islamic banks through good governance and to improve the risk management policies of Islamic banks. Furthermore, market regulators should not only focus on prudential regulation to maintain the stability and solvency of financial systems, but also put in place a battery of warning indicators. At the same time, it is recommended that the regulatory policy in force concretely uses market discipline to induce more efficiency and less risk in the regulation of capital. In addition, a revision of the weightings is necessary to take into account the risk of the assets held by the banks and to preserve their profitability and their durability. Finally, banking systems must put in place early warning indicators to avoid any possible banking crisis.

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# Appendix

Table 1
Description of the sample by country

| Country | Conventional | | Islamic | | Total | |
|---|---|---|---|---|---|---|
| | Number | Obs. | Number | Obs. | Number | Obs. |
| Bahrain | 10 | 100 | 8 | 80 | 18 | 180 |
| Egypt | 6 | 60 | 2 | 20 | 8 | 80 |
| Jordan | 5 | 50 | 4 | 40 | 9 | 90 |
| Kuwait | 2 | 20 | 1 | 10 | 3 | 30 |
| Palestine | 1 | 10 | 1 | 10 | 2 | 20 |
| Qatar | 6 | 60 | 2 | 20 | 8 | 80 |
| Sudan | 1 | 10 | 2 | 20 | 3 | 30 |
| UAE | 14 | 140 | 6 | 60 | 20 | 200 |
| Yemen | 2 | 20 | 2 | 20 | 4 | 40 |
| Tunisia | 10 | 100 | 2 | 20 | 12 | 120 |
| Total | 67 | 670 | 30 | 300 | 97 | 970 |

Table 2
Dependent variables definition

| Variable | Definition |
|---|---|
| $\Delta CAP_{j,t}$ | The observed changes in capital for bank $j$ at time $t$ |
| $CAP_{j,t}$ | Equity / risk weighted assets |
| $\Delta RISK_{j,t}$ | The observed variations in the level of risk for bank $j$ at time $t$ |
| $RISK_{j,t}$ | This variable measures the default risk as proposed by Roy (1952); Blair and Heggestad (1978); Boyd and Graham (1988) and Goyeau and Tarazi (1992). The risk of default is the probability of losses becoming greater than equity. Z-score = ROA + equity to assets ratio / the standard deviation of ROA, where ROA (return on asset) = net income to total assets |
| $\Delta EFFICIENCY_{j,t}$ | The observed changes in bank efficiency for bank $j$ at time $t$ |
| $EFFICIENCY_{j,t}$ | The efficiency scores determined by the SFA method for bank $j$ at time $t$ The SFA method consists of calculating parametric frontiers and thus measuring banking efficiency through inputs and outputs. This econometric method is easy to use, and it is based on the most flexible cost function which is the translog function (please see equation 1) |

Table 3
Independent variables definition

| Variable | Definition |
|---|---|
| $SIZE_{j,t}$ | Log of total assets for the bank $j$ at the moment $t$ |
| $LIQUID_{j,t}$ | Liquid assets / customer deposits |
| $PROV_{j,t}$ | Depreciation charges / total assets |
| $CAP_{j,t-1}$ | Equity / risk weighted assets for the bank $j$ at time $t-1$ |
| $RISK_{j,t-1}$ | Z-score of Roy (1952) for the bank $j$ at the moment $t-1$ |
| $EFFICIENCY_{j,t-1}$ | The efficiency scores determined by the SFA method for bank $j$ at time $t-1$ |

Table 4
The environmental regulation variable

| Variable | Definition |
|---|---|
| Insurance deposit | This variable measures whether regulators allow banks to carry out insurance activities. This variable is equal to 1 if there is a deposit insurance system, 0 otherwise |
| Restriction on banking activity | The total value for this variable is determined based on the level of regulatory restriction for the bank's investment in securities, insurance, real estate and voting property in non-financial corporations. We create a global index by calculating the natural logarithm of the sum of the values of the four categories |
| Capital regulation | This variable of regulation is a sign counting the rigor of capital regulation; it is equal to the sum of the answers to 9 questions coming from the database elaborated by Barth, Caprio and Levine (2001). As well as, this variable is equal to the sum of these answers. Higher values indicate greater rigor |
| Official monitoring power | This is an index measuring the extent of the power of the supervisory authorities to take specific measures to prevent problems. It also comes from the database used by Barth, Caprio and Levine (2001) and via the sum of the answers of 16 questions. The score varies between 0 and 16. Thus, this variable is equal to the sum of these answers, with higher values indicating greater monitoring power |

Table 5
Average cost efficiency scores

| Year | Average cost efficiency of Islamic banks | Average cost efficiency of conventional banks |
|---|---|---|
| 2012 | 0. 952 | 0.956 |
| 2013 | 0.933 | 0.957 |
| 2014 | 0.969 | 0.975 |
| 2015 | 0.978 | 0.952 |
| 2016 | 0.934 | 0.963 |
| 2017 | 0.987 | 0.978 |
| 2018 | 0.966 | 0.977 |
| 2019 | 0.965 | 0.976 |
| 2020 | 0.978 | 0.974 |
| 2021 | 0.963 | 0.985 |

Note: Average profitability is calculated via the stochastic frontier approach.

Table 6
Regression results with the effect of years

| | Islamic banks | | | | | | Conventional banks | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Δ CAP | | Δ Risk | | Δ Efficiency | | Δ CAP | | Δ Risk | | Δ Efficiency | |
| | Coef. | P > \|z\| | Coef. | P > \|z\| | Coef. | P > \|z\| | Coef. | P > \|z\| | Coef. | P > \|z\| | Coef. | P > \|z\| |
| CAP $t-1$ | -0.21*** | 0.000 | 2.598* | 0.043 | – | – | -0.257*** | 0.000 | – | – | – | – |
| Risk | -0.25*** | 0.000 | – | – | 0.028 | 0.897 | -0.196*** | 0.000 | – | – | -1.687*** | 0.000 |
| Efficiency | -0.001 | 0.789 | 1.895** | 0.011 | – | – | -0.075*** | 0.007 | 1.005 | 0.587 | – | – |
| Size | 8.56** | 0.012 | 0.012*** | 0.001 | -0.0158 | 0.369 | 0.0125*** | 0.002 | 2.3696*** | 0.0001 | 0.0002*** | 0.000 |
| Liquid | 0.006 | 0.998 | 0.158** | 0.027 | 0.189 | 0.789 | 0.086* | 0.074 | 0.598*** | 0.001 | -0.095*** | 0.000 |
| Prov | – | – | 22.58*** | 0.001 | – | – | – | – | 52.698*** | 0.000 | – | – |
| CAP | – | – | 0.0854** | 0.0012 | 0.211** | 0.002 | – | – | 1.036*** | 0.0002 | 0.0258*** | 0.000 |
| Risk $t-1$ | – | – | -0.147** | 0.029 | – | – | – | – | -5.369*** | 0.0031 | – | – |
| Efficiency $t-1$ | – | – | – | – | 0.406*** | 0.000 | – | – | – | – | 0.0759 | 0.721 |
| 2012 | 2.369* | 0.049 | 0.965** | 0.035 | – | – | – | – | – | – | – | – |
| 2013 | 1.829 | 0.321 | 0.568 | 0.912 | -6.415 | 0.879 | -0.789 | 0.327 | – | – | 0.158*** | 0.000 |
| 2014 | -12.7*** | 0.000 | 2.879 | 0.895 | -0.241** | 0.038 | -2.369** | 0.002 | 2.659*** | 0.000 | 0.214** | 0.044 |
| 2015 | -18.9*** | 0.000 | 5.265 | 0.471 | – | – | -7.951*** | 0.000 | 8.369*** | 0.002 | 1.479*** | 0.0001 |
| 2016 | -4.21 | 0.789 | 1.215 | 0.985 | -4.856 | 0.891 | -1.879 | 0.352 | 1.258*** | 0.000 | 0.598** | 0.035 |
| 2017 | 4.874** | 0.021 | – | 0.008 | -2.732 | 0.259 | 1.851*** | 0.0012 | 4.528*** | 0.000 | -0.045 | 0.758 |
| 2018 | 1.258 | 0.741 | 0.810 | 0.562 | -1.962 | 0.951 | -1.552*** | 0.000 | 2.698*** | 0.001 | -0.147*** | 0.0001 |
| 2019 | -6.19* | 0.051 | -1.895 | 0.789 | -6.247 | 0.125 | -2.265*** | 0.008 | 5.874*** | 0.000 | -0.020** | 0.049 |
| 2020 | -1.02 | 0.812 | 2.659 | – | -2.659 | 0.247 | -1.698*** | 0.006 | 3.125** | 0.050 | – | – |
| 2021 | 9.21*** | 0.000 | -1.258* | 0.062 | -5.845 | 0.596 | -1.659*** | 0.0001 | 0.258** | 0.036 | 2.129*** | 0.000 |

***, ** and * denote that the coefficients are statistically significant at 1%, 5% and 10%, respectively.

Table 7
Results of regressions with the effect of regulatory variables

| | Islamic banks | | | | | | Conventional banks | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Δ CAP | | Δ Risk | | Δ Efficiency | | Δ CAP | | Δ Risk | | Δ Efficiency | |
| | Coef. | P > \|z\| | Coef. | P > \|z\| | Coef. | P > \|z\| | Coef. | P > \|z\| | Coef. | P > \|z\| | Coef. | P > \|z\| |
| CAP *t* – 1 | -0.26*** | 0.000 | – | – | – | – | -0.489*** | 0.002 | – | – | – | – |
| Risk | 0.458*** | 0.000 | – | – | 0.129*** | 0.000 | 1.068*** | 0.000 | – | – | -0.186*** | 0.000 |
| Efficiency | -0.012 | 0.523 | 0.010 | 0.278 | – | – | 1.698*** | 0.0001 | -0.659*** | 0.000 | – | – |
| Size | 0.0008** | 0.035 | 0.0001* | 0.098 | 0.00002** | 0.032 | -0.044*** | 0.000 | -1.987*** | 0.0001 | 0.0048*** | 0.0001 |
| Liquid | -0.078 | 0.498 | -0.009 | 0.593 | 0.059** | 0.05 | 1.036 | 0.792 | 0.120*** | 0.000 | -0.125*** | 0.000 |
| Prov | – | – | 120.170*** | 0.000 | – | – | – | – | 89.259*** | 0.000 | – | – |
| CAP | – | – | 0.055*** | 0.000 | -0.701*** | 0.000 | – | – | 0.029*** | 0.000 | -0.0098 | 0.211 |
| Risk *t* – 1 | – | – | -0.057*** | 0.000 | – | – | – | – | -0.249*** | 0.000 | – | – |
| Efficiency *t* –1 | – | – | – | – | -0.982*** | 0.0001 | – | – | – | – | 0.259*** | 0.000 |
| Deposit insurance | 2.148*** | 0.250 | 0.810** | -0.050 | -2.369** | 0.423 | 0.412*** | 0.000 | 1.201*** | 0.0002 | -1.512*** | 0.0002 |
| Restriction on banking activity | 9.128*** | 0.0001 | -2.026 | 0.638 | 2.068*** | 0.000 | 5.987*** | 0.000 | -2.981*** | 0.000 | 0.981*** | 0.000 |
| Capital regulation | 0.30* | 0.089 | 1.215*** | 0.000 | 1.069*** | 0.002 | 0.059*** | 0.000 | 1.915*** | 0.000 | 0.191*** | 0.0001 |
| Banking supervision | 1.269*** | 0.000 | 0.367 | 0.158 | 0.020* | 0.080 | 0.159 | 0.895 | -0.891*** | 0.001 | 0.049* | 0.054 |

***, ** and *denote that the coefficients are statistically significant at 1%, 5% and 10%, respectively.

# Kapitał regulacyjny, ryzyko niewypłacalności i efektywność: analiza porównawcza banków islamskich i tradycyjnych w regionie MENA


## Streszczenie

Pomimo że międzynarodowy system bankowy jest jednym z najbardziej uregulowanych obszarów aktywności finansowej, wykazuje znaczną ekspozycję na wiele rodzajów ryzyka oraz niejednokrotnie jest źródłem kryzysów i paniki bankowej. Dlatego też międzynarodowe instytucje regulacyjne i nadzorcze w celu ustabilizowania systemów bankowych w poszczególnych krajach opracowują i wprowadzają w życie różne zestawy dobrych praktyk. Jedną z takich praktyk jest ustalanie norm dla tzw. kapitału regulacyjnego. „Można go interpretować jako minimalny, nakazany przez regulatora poziom kapitału własnego, który powinna posiadać instytucja zaufania publicznego prowadząca działalność narażoną na ryzyko" (Pawłowicz 2011, s. 150). Mimo wysiłków krajowych nadzorów bankowych w zakresie regulacji przepływów kapitałowych nadal jesteśmy świadkami kryzysów, których natura jest często nieprzewidywalna i coraz bardziej skomplikowana.

W obliczu takiej sytuacji celem badania podjętego w artykule jest analiza wpływu międzynarodowych standardów makroostrożnościowych na reakcje banków islamskich i konwencjonalnych funkcjonujących w regionie MENA (Middle East and North Africa) odnośnie do trzech aspektów: wymogów kapitałowych, ryzyka niewypłacalności oraz ekonomicznej efektywności. W tym kontekście bardziej szczegółowe pytanie badawcze dotyczy porównania skuteczności pakietów makroostrożnościowych stosowanych przez banki islamskie i konwencjonalne.

Głównym powodem podjęcia badania było zainteresowanie autora studiami dotyczącymi porównania efektywności funkcjonowania bankowości islamskiej i konwencjonalnej w różnych aspektach. W celu sformułowania wniosków na temat odmienności reakcji banków islamskich i konwencjonalnych na wdrażane kapitałowe standardy makroostrożnościowe wykorzystano panel danych przestrzenno-czasowych obejmujący 97 banków (30 islamskich i 67 konwencjonalnych) w okresie 2012–2021. W analitycznej części artykułu wykorzystano modele wielorównaniowe, które zawierają zmienne opisujące procesy regulacyjne, ryzyko niewypłacalności oraz efektywność funkcjonowania banków (Shrieves, Dhal 1992; Jacques, Nigro 1997; Aggarwal, Jacques 1998; Ediz et al. 1998).

Analiza modelowa pozwoliła sformułować kilka wniosków:

– banki konwencjonalne są bardziej efektywne pod względem kosztów prowadzenia działalności operacyjnej niż banki islamskie,

– bardziej restrykcyjne wymogi kapitałowe zachęcają banki do podejmowania aktywności w obszarach o wyższej rentowności i równocześnie wyższym ryzyku,

– ścisły nadzór bankowy poprawia zabezpieczenia kapitałowe i równocześnie wpływa na poprawę efektywności.

Z powyższych ustaleń wynikają kierunki rekomendacji:

- Regulator bankowości islamskiej powinien zaostrzyć kryteria nadzoru nad bankami islamskimi.
- Działania regulatora powinny się koncentrować nie tylko na polityce makroostrożnościowej, ale również na konstruowaniu wskaźników i procedur wczesnego ostrzegania przed potencjalnym kryzysem.
- Konieczna wydaje się rewizja wag, która bardziej realistycznie odzwierciedlałaby rozkład ryzyka w poszczególnych segmentach aktywów banków islamskich.

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**Słowa kluczowe**: kapitał regulacyjny, efektywność banku, ryzyko niewypłacalności, modele wielorównaniowe