The Effect of Applying Banking Regulations on Banking Performance of MENA Region Countries

Nader Alber and Hatem Ramadan

ABSTRACT

This paper attempts to investigate the effect of applying banking regulations on banking performance. This has been conducted on 19 MENA region countries (Egypt, Sudan, Lebanon, Libya, Iraq, Tunisia, Algeria, Morocco, Qatar, United Arab Emirates, Saudi Arabia, Bahrain, Palestine, Oman, Djibouti, Turkey, Kuwait, Jordan, and Mauritania), on a yearly basis over the period from 2008 to 2018.

Banking regulations have been measured by each of capital adequacy requirements (capital base to risk-weighted assets), liquidity requirements (liquid assets to total assets), legal reserve requirements (balances with CB to banks' deposit), leverage requirements (total equity to total assets) and provisions policy (total provisions to total capital), while Banking performance has been measured by each of banking efficiency using (data envelopment analysis "DEA" & operational efficiency ratio), banking stability (ABSI & Z-score indexes), credit risk ("non-performing loans" & "provisions for non-performing loans") and profitability (return on assets & return on equity).

Results indicate that there is a significant effect of applying banking regulations on each of "banking efficiency", "banking stability", "credit risk" and "profitability". This has been conducted using panel data analysis according to static panel models (SPM) according to three models (pooled regression, fixed effects, and random effects).

Keywords: Banking regulations, Banking performance, MENA region, Capital adequacy, Liquidity, Legal reserve, Efficiency, Stability, Credit risk, Data Envelopment Analysis (DEA), Aggregate Banking Stability Index (ABSI), Static Panel Models (SPM).

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Nader Alber*

Professor of Finance, Faculty of Business,
Ain Shams University, Cairo, Egypt.

(e-mail:naderalberfanous@yahoo.com)

Hatem Ramadan

Ph.D. Holder, Faculty of Business, Ain
Shams University, Cairo, Egypt.

(e-mail: hatem-eladly@hotmail.com)

**Corresponding Author*

I. INTRODUCTION

Recently, the Middle East and North Africa region has faced many challenges and obstacles, starting with the impact of the global financial crisis on it that erupted during the last quarter of 2008, and the accompanying collapse and bankruptcy of some of the giants of the international banking and financial industry, and what happened next from the political turmoil experienced the region in a number of countries where demonstrations took place against the existing political regimes in late 2010, known as the Arab Spring revolutions. Specifically have occurred this series of anti-government protests in Tunisia and Egypt respectively, which led to the overthrow of their governments, in addition to the existence of conflicts in both Iraq, Libya, and Lebanon, along with increased labor unrest, deteriorating mining, low oil production rates in the GCC countries, and low credit growth, at the same time the region faces persistent challenges, it suffers from extremely high unemployment rates and refugee crises, all these factors have weakened Economic activity, which depends mainly on the banking

sector in this region.

Banking sector plays a vital role in the economies of the Middle East and North Africa Countries, it is an integral part of the economic system of these countries and affects their economic performance and stability, and that is through what central banks provide funds for private & public investments and productive activities as well as to provide payment and adjustment systems, the borrowing and lending mechanism, in addition, to finance deficits in government budgets, protect consumers from excessive prices or opportunistic behavior, and other activities that lead to the growth and stability of the economy.

The banking sector in the Middle East and North Africa Countries is also exposed to many banking crises and problems, whether at the sector level in general or banks in particular that require major reforms in their banking systems, the problems in the banking sector affect not only the financial system but also the entire economy, as these problems are due to several reasons, of which that banks in this region have a weak supervisory environment and less stringent regulations compared to other countries, in addition

to not fully complying with banking regulations such as Insufficient capital and other regulations that have not been adequately implemented, and as a result, banking regulation reform initiatives have begun in most MENA countries under the auspices of multilateral organizations such as the World Bank, the International Monetary Fund and the International Settlement Bank, where the Basel Committee provides a structural framework for these initiatives in areas such as capital adequacy, disclosure, risk management and regulation aimed at reducing bank risk behavior and improving efficiency (OECD, 2009).

These initiatives have also prompted policy makers and monetary authorities, i.e. central banks, to adopt strategies, policies and tools for reform, through the issuance of new laws and regulations and amendments to the previous regulations in such a way as to ensure an appropriate level of regulation, supervision and transparency in the banking sector, helping to reduce the risks to which it is exposed, increase performance and improve the capacity and efficiency of banking performance in this region. It's important to pinpoint that profitability has lost its attractiveness as a key performance indicator and this may explain why literature trends focus on financial stability and banking efficiency (e.g., Alber, 2015; 2016) more than profitability and market share (e.g., Alber, 2009; Gayed *et al.*, 2009). Moreover, Alber (2018) indicates that "Optimality of Banking Financial Structure" may affect both of "financial stability" and "banking efficiency". Recently, financial inclusion is demonstrated in terms I-SIP that explores the linkage between financial inclusion, stability, integrity, and consumer protection (Alber, 2019).

A. Regarding Banking Regulations

refers to a set of laws, rules and regulations issued by central banks to all banks operating in the banking sector, to determine the legal and regulatory status of these banks, to know the permitted activities, and to determine the banking operations they carry out and how to implement them, with the aim of ensuring the protection, safety and stability of the banking sector.

Regarding Banking Performance capacity of a financial institution to generate sustainable profitability and efficiency (European Central Bank, 2010).

This paper addresses the main question about the effect of applying banking regulations on banking performance. This has been applied to central banks located in Middle East and North Africa (MENA) region countries (Egypt, Sudan, Lebanon, Libya, Iraq, Tunisia, Algeria, Morocco, Qatar, Emirates, Saudi Arabia, Bahrain, Palestine, Oman, Djibouti, Turkey, Kuwait, Jordan, Mauritania), on yearly basis over the period from 2008 to 2018. So, this paper tries to address the following questions:

- What are the banking regulations applied by central banks in Middle East and North Africa countries?
- Is there a difference in applying banking regulations between Middle East and North Africa countries?
- Is there an effect of applying banking regulations on banking performance?

The paper is arranged as follows: after this introduction, section II reviews the related research literature. Section III illustrates banking regulations in MENA region countries.

Section IV explains how to measure research variables and illustrates how to test the hypotheses, while section V presents descriptive and diagnostic statistics. Section VI is for empirical work, presenting results, discussing how these results answer research questions. Section VII summarizes the paper and provides remarks about conclusions.

II. LITERATURE REVIEW

This section tries to present some of previous work, which has been conducted in the fields of banking regulation, banking performance, financial stability, and banking efficiency.

Regarding "banking regulation", Tchna (2008) focuses on the impact various for types of banking regulation on the banking system stability and also on the implication of some types of regulation for economic dynamic and welfare. The study used the Markov-switching model to assess empirically the impact of regulation on the banking system stability; this has been applied to the Indonesian banking system. Banking regulation has been measured by entry restriction, reserve requirement, deposit insurance, and capital adequacy requirement, whereas used a monthly index of banking system fragility, which captures almost every source of risk in the banking system. Results indicate that entry restriction reduces crisis duration and also the probability of their occurrence, the findings also indicate that larger reserve requirements reduce crisis duration but increase banking instability. Moreover, deposit insurance increases banking system stability and reduces crisis duration. Finally, capital adequacy requirement improves stability and reduce the expected duration of banking crises.

Pasiouras, Tanna & Zopounidis (2009) elaborate on the impact of banking regulations on banks' cost and profit efficiency. This has been applied to 615 banks in 74 countries during the period from 2000 to 2004. Banking regulation has been measured by capital adequacy requirements, official supervisory power, market discipline mechanisms and restrictions on bank activities. Results suggest that banking regulations that enhance market discipline and empower the supervisory power of the authorities increase both the cost and profit efficiency of banks. In contrast, stricter capital requirements improve cost efficiency but reduce profit efficiency, while restrictions on bank activities have the opposite effect, reducing cost efficiency but improving profit efficiency.

Tiryaki (2012) focuses on the relationship between banking regulations and financial stability in Turkey, using quarterly data of Turkish banking system over the period from 1990 to 2010. Banking regulation has been measured by Capital Adequacy, Liquidity Management, Provision Policy and Reserve Requirement, while financial stability has been measured by financial stability index (FSI). Results indicate that banking regulations, specifically liquidity management, capital adequacy and provision policy are meaningful and influential factors over financial stability in the long run. Also, in the short run, provision policy and liquidity management are significant banking regulation tools.

Alam (2012) shows the Impact of Regulatory and Supervisory Structures on Bank Risk and Efficiency. This has

been applied to 165 conventional banks and 70 Islamic banks operating in 11 countries that have a dual banking system over the period from 2006 to 2010. Banking regulation has been measured by capital requirements, official supervisory power, market discipline, and restrictions on bank activities, while banking efficiency has been measured by DEA model, and loan loss reserves as a fraction of total assets have been used as a measure of banking risk. Results suggest that regulations and strict monitoring of banking operations, and higher supervisory power of the authorities, increase the technical efficiency for Islamic banks but decreases conventional banks efficiency, we observe the opposite effect in the case of restrictions on bank activities, with higher restrictions having a reduction in risk taking of Islamic banks while increasing the risk taking of conventional banks. In addition, stricter regulations, related to the first Pillar (i.e., capital requirements) had a positive impact on technical efficiency for both groups of banks, higher capital requirements also induce the lower level of risk behaviour for both types of banks. Results also indicate that Islamic banks are better prepared for the implementation of Basel III guidelines compared to their conventional counterparts.

Barth, Lin, Ma, Seade & Song (2013) examine whether bank regulation, supervision and monitoring enhance or impede bank operating efficiency. This has been applied in 72 countries over the period from 1999 to 2007. Results indicate that tighter restrictions on bank activities are negatively associated with bank efficiency, while greater capital regulation stringency is marginally and positively associated with bank efficiency. The findings also indicate that a strengthening of official supervisory power is positively associated with bank efficiency only in countries with independent supervisory authorities. Moreover, independence coupled with a more experienced supervisory authority tends to enhance bank efficiency. Finally, market-based monitoring of banks in terms of more financial transparency is positively associated with bank efficiency.

Haque (2014) analyzes how bank regulations and ownership structure individually and interactively influence bank risk-taking behaviour. The study used the generalized method of moments (GMM) estimation technique to analyze unbalanced panel data on 153 commercial banks from 12 Middle East and North Africa countries. Results indicate that supervisory power having a positive effect on portfolio risk and a negative effect on credit risk, whereas activity restrictions show opposite effects on these two risk measures. In addition, the estimation results for the GCC banks show capital regulations and market discipline having negative relationships with portfolio risk.

Al-Smadi (2015) investigates the impact of banking regulations, supervision on bank soundness, using a sample of 177 banks operating in 10 MENA countries. Four explanatory variables were used: capital regulatory requirements, regulatory restrictions on banks' activities, independence of supervisory authorities, and official supervisory power while controlling for other macroeconomic and banking industry characteristics. Results indicate that capital regulatory requirement has a strong impact on bank soundness, greater capital stringency increases banks soundness. A similar effect was found between restrictions on banks' activities and bank soundness,

suggesting that tighter restrictions on bank activities lead to increasing bank soundness. In addition, the independence of supervisory power was found to have a positive impact on bank soundness. Greater supervisory authority independence tends to enhance bank soundness. Finally, official supervising power is not significantly related to banking soundness.

Bitar, Pukthuanthong & Walker (2015) sheds light on the effect of banking regulation on the efficiency of Islamic banks. This has been applied to 639 conventional and Islamic banks in 29 countries during the period from 2006 to 2012. Banking regulation has been measured by capital adequacy requirement, liquidity requirement and leverage requirement, while efficiency has been measured by the cost to income ratio and DEA. The findings suggest that capital ratios negatively affect the efficiency of Islamic banks relative to conventional banks, in addition, no evidence of any significant differences between Islamic and conventional banks regarding the relationship between capital ratios and efficiency, whether we employ risk-based capital measures or non-risk based capital measures. The results indicate also that liquidity ratios are negatively associated with the efficiency of Islamic banks. Finally, the leverage positively affects the efficiency of Islamic banks relative to conventional banks.

Kufnerová (2016) examines the impact of the regulatory and supervisory instruments on bank efficiency in the countries of European Union. This has been applied to 836 banks in 28 countries over the period from 2005 to 2013. Results indicate having a positive impact for supervisory independence on the cost efficiency, which implies that a higher degree of overall independence improves the bank's cost efficiency. In addition, show that the capital adequacy requirements have a positive impact on cost efficiency, indicating that tighter capital requirements may lead to higher capital levels which are potentially lowering the probability of bank failure.

Mwongeli (2016) analyzes the Effect of Regulations on Financial Performance of Commercial Banks, using a sample of 43 commercial banks in Kenya during the period from 2010 to 2015. The findings suggest that there is no relationship between regulations and the financial performance of commercial banks. In addition, most of the banks have been able to comply with the minimum capital requirement.

Anagaw (2017) studies the effect of bank regulation on performance of private commercial banks in Ethiopia. Banking regulation has been measured by equity investment, legal reserve requirement, capital requirement, Capital adequacy and bank size, while profitability has been measured by return on asset (ROA). This has been applied to seven private commercial banks during the period 2005 to 2015. Results indicate that capital requirement and bank size have a positive and significant effect on the profitability of private commercial banks, while Capital adequacy and reserve requirement has a negative and significant effect on profitability, equity investment has a negative but insignificant effect on the performance of private commercial banks in Ethiopia.

Haque & Brown (2017) examines the impact of bank regulation and ownership on the efficiency of banks in 12 MENA countries, using data envelopment analysis (DEA) with one-step maximum likelihood estimation. The study is

based on an unbalanced panel dataset covering 718 observations from 132 commercial banks over a period of 11 years – 2002 to 2012. Results indicate that bank regulation has positive effects on cost efficiency in the post global crisis period and full sample period. For specific bank regulation type effects on efficiency find that capital regulation has a positive effect on cost efficiency. In a similar fashion official, supervisory power has a positive influence on cost efficiency while bank regulation that restricts activities of banks has the expected negative influence on cost efficiency. Moreover, government ownership has positive effects on cost efficiency.

Zgarni & Hassouna (2018) assess the effect of regulation on the accounting performance of Tunisian banks. Using a sample of all listed Tunisian commercial banks in the Stock Exchange (ten banks) over the period from 2001 to 2016. Regulation has been measured by solvency and liquidity ratios, while accounting performance has been measured by return on assets. The findings suggest having a positive relationship between each of the solvency ratios and liquidity ratios with the accounting performance of the banks. In addition, show that the size and age of the bank have a positive effect on the accounting performance of Tunisian commercial banks.

Noman, Gee & Isa (2018) explore the role of bank regulation on the relationship between competition and financial stability. This has been applied to 180 commercial banks of Southeast Asian countries over the period from 1990 to 2014. Banking regulation has been measured by capital requirements, activity restrictions, deposit insurance, and official supervision, while financial stability has been measured by (Z-score, NPL ratio), and H-Statistic has been used as a measure of competition. Results indicate that competition promotes financial stability and reduces credit risk. Further, capital requirements and official supervision are the most effective and straightforward bank regulations promoting financial stability irrespective of the level of competition. In addition, activity restrictions are effective in shaping financial stability only in a highly competitive environment, while deposit insurance promotes financial stability in a less competitive environment.

Regarding "banking performance", Arif & Anees (2012) examines liquidity risk in Pakistani banks and evaluate the effect on banks' profitability, using a sample of 22 Pakistani banks during the period from 2004 to 2009. Multiple regressions have been applied to assess the impact of liquidity risk on banks' profitability. Liquidity risk has been measured by deposits, cash reserves, liquidity gap and provisioning for NPLs, while bank performance has been measured by profitability. The results show that liquidity risk affects bank profitability significantly, in addition, having a positive relationship for each of deposits and cash reserves with the profitability of the banking system. In contrast, having a negative relationship for each liquidity gap and provisioning for NPLs with the profitability of the banking system.

Kayode, Obamuyi, Owoputi & Adeyefa (2015) investigates the impact of credit risk on banks' performance in Nigeria, using a sample of six banks over the period from 2000 to 2013. Credit risk has been measured by the ratios of; non-performing loans to total loans and advances, total loans and advances to total assets, and loan-loss provisions to total loans and advances, while bank performance has been

measured by return on assets. The findings suggest that credit risk is negatively and significantly related to bank performance. This implies that an increased exposure to credit risk reduces bank profitability. Results also indicate that total loan has a positive and significant impact on bank performance.

Bitar, Saad & Benlemlih (2016) investigate the impact of capital requirements on bank risk and performance. This has been applied to 168 banks from 17 MENA countries during the period from 1999 to 2013. The findings suggest that compliance with the Basel capital requirements enhances bank protection against risk and improves efficiency and profitability.

Alber & Nabil (2016) attempts at investigating the impact of information security on the performance of Egyptian banks. This has been conducted using a sample of 13 banks (out of 32 banks), during 2013. Information security is measured by the degree of the application of ISO 27001 and PCI-DSS standards on Egyptian Banks, while banks' performance is measured by indicators of profitability and asset quality. Results indicate that implementation of ISO 27001 standards may affect profitability indicators as measured by "Return on Capital", while implementation of PCI-DSS standard may affect asset quality as measured by "Non-Performing Loan Ratio".

Caporale, Lodh & Nandy (2017) attempts to investigate the impact of the global financial crisis upon domestic and foreign banks' performance in the Middle East and North Africa region, using a sample of 76 foreign and 46 domestic banks from the 17 MENA countries during the period 2000 to 2012. This study uses for measuring the performance of banks two accounting measures: both return on average assets (ROAA) and return on average equity (ROAE). Results indicate that domestic banks outperformed foreign banks during the crisis. Foreign banks had a higher degree of exposure to risk given their higher number of subsidiaries in developed economies. As for the determinants of profitability, size does not appear to play a role, whilst the liquidity ratio and net interest revenues seem to have a negative and positive effect respectively; GDP has a positive effect in the case of domestic banks.

Wahdan (2017) attempts to investigate the Effect of Financial Risks on the Financial Performance of Commercial Banks. This has been applied to all the commercial banks listed on the Amman Stock Exchange (13 banks) during the period from 2008 to 2015. Financial risks have been measured by (credit risk, interest rate risk, liquidity risk, capital adequacy risk), while Financial performance has been measured by (Share Turnover, ROE, ROA, and EPS). The results of the study have shown that credit risk and capital adequacy risk have a significant effect on financial performance, and liquidity risk and interest rate risk do not significantly affect the financial performance of commercial banks.

Tomuleasa (2017) aims to identify and analyze determinants of bank performance and soundness of European Banking Systems, and explore the role of several bank specific, industry specific and macroeconomic factors on the evolution of European bank performance and soundness during the international financial crisis. The data required was collected from Bankscope for 263 EU

commercial banks in the period 2005 to 2012. Results indicate that variables that have a positive effect on bank Performance and Soundness namely (financial structure; management quality; private ownership), while the variables that have a negative effect on bank Performance and Soundness namely (non-performing loans; state ownership; bank age; or international financial crises).

Regarding "banking efficiency", Carvallo & Kasman (2005) examines the cost efficiency of a sample of 481 Latin American and Caribbean banks in 105 countries during the period from 1995 to 1999 using a stochastic frontier model (SFA). The study used three inputs: loans, deposits, and other earning assets and output (three prices of factors of production): the price of labor, the price of purchased funds, and the price of physical capital. The findings suggest that on average, very small and very large banks are significantly more inefficient than large banks.

Adjei-Frimpong (2013) investigates the level of bank efficiency and the degree of bank competition and their determinants in Ghana. In addition, the study also examines the causal relationship between bank efficiency and competition. The study used annual data spanning from 2001 to 2010. The results suggest reveals that well-capitalized banks in Ghana are pure technically efficient and competitive but are cost inefficient. In addition, bank size influences bank pure technical efficiency suggesting that larger banks are pure technically efficient but have no influence on cost efficiency and competition. The findings also exhibit that the loan loss provision ratio has no effect on bank efficiency and competition in Ghana. Furthermore, this study finds GDP growth negatively influences bank cost efficiency while the rate of inflation positively affects bank pure technical efficiency but has no impact on bank cost efficiency and bank competition. The findings also indicate that there is no causal relationship between bank pure technical efficiency and competition in Ghana.

Maletić, Kreća, & Maletić (2013) uses DEA technique in measuring operation efficiency of the banking sector in Serbia, using a sample of 33 banks. Banking efficiency has been measured using two models with different input-output indicators, where input and output indicators are different according to the used models A and B. According to Model A, inputs include interest expenses and non-interest expenses, whereas outputs include interest income and net non-interest income. According to Model B, inputs include deposits and employees, whereas outputs include loans and operating income.

Regarding "banking stability", Karanovic & Karanovic (2015) aims to develop an aggregate financial stability index that measures financial stability levels in nine countries that belong to the Balkan region. The paper used annual data covering the period from 1995 to 2011. The index is constructed as a weighted average of 16 indicators grouped into four sub-indices: financial development index, financial vulnerability index, financial soundness index and world economic climate index. Equal weights were assigned to indicators within each sub-index. Results indicate that the aggregate financial stability index reflects a relatively low stability level of the Balkans region. Two main episodes of instability are reflective of 2001 and 2007 crisis. The world economic climate sub-index demonstrates the biggest

fluctuations in value and leads to a prolonged deterioration in the index. Moreover, examining each sub-index' volatility contribution relative to the aggregate index' volatility concludes two remarks. First, the financial soundness index shows the most important contribution to the aggregate index till 2004. Then the volatility contribution of the world economic climate index begins to skyrocket, showing how international trends take over domestic prudent policies.

Sorour (2018) proposes to develop an aggregate financial stability index for Egyptian banking sector. Data on individual indicators are used on quarterly frequency over the period March 2011 to June 2017. This research adopts the equal-variance weighting method to compute the aggregate index. This index is constructed as a weighted average of micro-prudential indicators of the soundness of banks and macro-economic indicators in its coverage of risks affecting financial stability. The index is compiled using statistical normalization which expresses indicators in terms of standard deviation from the mean. Therefore, a level above zero implies that the stability is higher than average and vice versa for a level lower than zero. Results indicate that the index constructed shows deterioration in the Egyptian banking system stability after the revolution. Furthermore, the index shows an improvement in the banking system stability after the decision to float the domestic currency, made during November 2016, the regression results show that there is a positive relationship between the volatility in REER and the index; this implies that volatility of REER has an important positive impact on financial stability. This is supported by the positive consequences of the decision of floating the Egyptian Pound. In addition, there is a negative relationship between the change in 91 days treasury-bill yield and the index; this could indicate that the increase in interest rates can stimulate deterioration in aggregate stability by stimulating an increase in the default rate on loans.

Compared with previous work, the current study tries to:

- Investigate the effect of applying banking regulations on banking performance in Middle East and North Africa Countries.
- Measure the performance of the banking sector using four main measures, namely: banking efficiency, banking stability, credit risk, and bank profitability.

III. BANKING REGULATIONS IN THE MENA REGION COUNTRIES

The following tables illustrate banking regulations in the MENA region countries, during the period from 2008 to 2018.

TABLE I: BANKING REGULATIONS IN NORTH AFRICAN COUNTRIES

Year	Banking Regulations in North African Countries		
	Egypt	Tunisia	Morocco
2008	<ul style="list-style-type: none"> ♦ Establishing a new mechanism within the central bank whose task is to assist and follow up banks in applying these standards. 	<ul style="list-style-type: none"> ♦ Reducing the legal reserve ratio in December 2008 to 7.5%. ♦ Establishing an internal control system and a permanent internal audit committee in banks. 	<ul style="list-style-type: none"> ♦ Reducing the legal reserve ratio from 15% to 12%. ♦ Raise the minimum for solvency factor from 8% to 10%. ♦ Applying a new system called "Credit Risk Analysis Assistance" (SAARC).
2009	<ul style="list-style-type: none"> ♦ Set the regulations of the banking finance granted for the acquisition of companies and assign risk weights within a range of 150% to 200% when calculating capital adequacy ratio. ♦ Applying Basel (2) in Egyptian banks to enhance their ability for risk management. 	<ul style="list-style-type: none"> ♦ Issue instructions related to the fight against terrorism and the prevention of money laundering. ♦ Continuing oblige the banks to hold legal reserve ratio 7.5%. 	<ul style="list-style-type: none"> ♦ Requiring banks to submit monthly reports on standards for sector risk monitoring and credit concentration. ♦ Central Bank of Morocco reduced the legal reserve ratio twice in a row, from 12% to 10% and then to 8%.
2010	<ul style="list-style-type: none"> ♦ The CBE set out strategy for applying Basel (2). ♦ Banks started increasing their "risk reserves" annually, by 10% of the value of assets that are transferred to their ownership. 	<ul style="list-style-type: none"> ♦ The Central Bank of Tunisia obliged commercial banks to set up an internal control system, relation to risk and credit policy. 	<ul style="list-style-type: none"> ♦ Bank of Morocco issued a new publication on capital adequacy requirements to cover credit, market and operating risks, according to norms Basel (2). ♦ Bank of Morocco reduced the legal reserve ratio from 8% to 6%.
2011	<ul style="list-style-type: none"> ♦ Providing banks with Quantitative Impact Studies (QIS) under Pillar II regarding liquidity, concentration risks. 	<ul style="list-style-type: none"> ♦ The Central Bank of Tunisia has reduced the legal reserve ratio more than once, dropping from 5.4% to 2%. 	<ul style="list-style-type: none"> ♦ Applying Basel (2) standards and work to raise the ratio of conformity of the Banking Supervision Framework to the 25 Principles of Basel.
2012	<ul style="list-style-type: none"> ♦ The CBE decided to reduce the legal reserve ratio from 14% to 12% and then to 10%. ♦ The instructions for the minimum capital adequacy standard were approved, so Egyptian banks are obligated to maintain a minimum ratio of 10%. 	<ul style="list-style-type: none"> ♦ Central Bank of Tunisia applied Pillar (3) market discipline according to Basel (2) norms. ♦ Requiring banks to provide the Central Bank of Tunisia monthly all documents and information about their financial position, levels of capital and banking risks. 	<ul style="list-style-type: none"> ♦ Central Bank of Morocco reduced the legal reserve ratio from 6% to 4%. ♦ Central Bank of Morocco raised the capital adequacy ratio (CAR) to 12% and the minimum level of Tier 1 capital to 9%. ♦ Bank Al-Maghrib has prepared a strategy to implement the components of Basel III.

Source: Processed by the researchers based on data obtained from Arab Monetary Fund & Central banks' reports.

TABLE II: BANKING REGULATIONS IN NORTH AFRICAN COUNTRIES

Year	Banking Regulations in North African Countries		
	Egypt	Tunisia	Morocco
2013	<ul style="list-style-type: none"> ♦ Implementing the instructions related to the minimum capital adequacy standard. ♦ Setting the regulations for practicing bank insurance activity. 	<ul style="list-style-type: none"> ♦ Implementation of new solvency standards with the requirement of a solvency ratio of 9% and a TIER1 ratio of 6%. ♦ Applying Pillar (2) "Supervisory Review Process" according to Basel (2) norms. 	<ul style="list-style-type: none"> ♦ Adoption of modern standards related to capital adequacy and liquidity coverage ratio (LCR). ♦ Bank Al-Maghrib started discussions on Basel 3 reforms, related to the leverage ratio.
2014	<ul style="list-style-type: none"> ♦ Issuing instructions regarding the implementation of Basel (3), providing online banking, and consumer financial protection. 	<ul style="list-style-type: none"> ♦ Central Bank of Tunisia reduced the legal reserve ratio to reach 1%. ♦ Central Bank of Tunisia raised the capital adequacy ratio (CAR) to 10%. 	<ul style="list-style-type: none"> ♦ Issuing the new banking law relating to Credit Institutions and Similar Bodies. ♦ Central Bank of Morocco reduced the legal reserve ratio from 4% to 2%.
2015	<ul style="list-style-type: none"> ♦ Issuing the regulations for the leverage ratio that obliged banks by applying the minimum 3% according to Basel III on a quarterly basis as an indicative ratio. ♦ Issuing regulations for the development of internal controls at banks. 	<ul style="list-style-type: none"> ♦ The Central Bank of Tunisia issued instructions regarding the liquidity ratio according to Basel (3) norms, which oblige banks to apply the liquidity coverage standard (LCR). 	<ul style="list-style-type: none"> ♦ Bank Al-Maghrib issued instructions requiring banks to build, for macro-prudential considerations, a countercyclical capital buffer, composed of core capital, whose level ranges between 0% and 2.5% of weighted risks.
2016	<ul style="list-style-type: none"> ♦ Applying the "Capital Conservation Buffer" as of the beginning of 2016. ♦ Issuing instructions on Internal Capital Adequacy Assessment Process (ICAAP). ♦ Issuing instructions on managing liquidity risks the liquidity coverage ratio (LCR) and the net stable funding ratio (NSFR) in July 2016. 	<ul style="list-style-type: none"> ♦ The Central Bank of Tunisia issued instructions related to operational risk coverage. ♦ Issuing the new banking and financial institutions law. 	<ul style="list-style-type: none"> ♦ Central Bank of Morocco amended the rules on capital calculation (first and second tranche) and adjusted risk weights according to Basel requirements (3). ♦ Raising the legal reserve ratio from 2% to 5%.
2017	<ul style="list-style-type: none"> ♦ The Central Bank of Egypt raised the legal reserve ratio from 10% to 14%. 	<ul style="list-style-type: none"> ♦ Inclusion market risk in the calculation of capital adequacy ratio. ♦ Adoption of Basel (3) standards related to liquidity ratio (NSFR). 	<ul style="list-style-type: none"> ♦ Revising instructions related to the fight against terrorism and the prevention of money laundering.
2018	<ul style="list-style-type: none"> ♦ Issuing the regulations for the leverage ratio that obliged banks by applying the minimum 3% according to Basel III on a quarterly basis as a mandatory ratio as of 2018. 	<ul style="list-style-type: none"> ♦ The Central Bank of Tunisia issued instructions on capital adequacy standards to ensure compliance with the minimum capital requirements. 	<ul style="list-style-type: none"> ♦ Continuing the legal reserve ratio unchanged at 4% from 2016 until 2018.

Source: Processed by the researchers based on data obtained from Arab Monetary Fund & Central banks' reports.

TABLE III: BANKING REGULATIONS IN NORTH AFRICAN COUNTRIES

Year	Banking Regulations in North African Countries		
	Algeria	Sudan	Libya
2008	<ul style="list-style-type: none"> Bank of Algeria raised the bank's capital to 10 billion Algerian dinars and to determine the minimum capital, to implement the first pillar of Basel Agreement (2). Central Bank of Algeria obliged banks to retain the legal reserve ratio of 8%. 	<ul style="list-style-type: none"> Central Bank of Sudan obliged banks to retain the legal reserve ratio of 11%. Central Bank of Sudan issued instructions to apply capital adequacy standard requirements according to Basel (2) norms. Issuing instructions to apply international standards for banking risk management in accordance with requirements of Basel Committee and (IFSB). 	<ul style="list-style-type: none"> Central Bank of Libya obliged banks to retain the legal reserve ratio of 15%. Determining risk management standards. Setting the regulations governing the granting of credit and studying the rules concerning credit concentration. Regulate the credit policy of commercial banks, so that the credit portfolio should not exceed 70% of the total liabilities.
2009	<ul style="list-style-type: none"> Continuing obligation the banks to retain the legal reserve ratio of 8%. Bank of Algeria adopted the principle of bank evaluation (scores), which helps in developing supervision over banks based on the degree of risk. 	<ul style="list-style-type: none"> Central Bank of Sudan reduced the legal reserve ratio from 11% to 8%. Continuing to apply both supervisory standards of Islamic Financial Services Board, capital adequacy standard (Basel 2), and international risk management standards. 	<ul style="list-style-type: none"> Raising the legal reserve ratio from 15% to 20%. Issue instructions related to the fight against terrorism and the prevention of money laundering. The Central Bank of Libya adopted a strategic plan to develop banking supervision.
2010	<ul style="list-style-type: none"> Bank of Algeria raised the legal reserve ratio from 8% to 9%. Bank of Algeria strengthened the legal framework for the internal control process of banks to use the best methods of assessing and managing risks according to Basel (2). 	<ul style="list-style-type: none"> Follow-up on extent of the obligation of banks with the regulations of forming boards of directors and their committees. Obliging banks to apply international measures and standards in the field of fight against money laundering and terrorist financing. 	<ul style="list-style-type: none"> Issuing the instructions related to not allowing for banks to write off a debt except after composition the provision for this debt at a rate equal to 100% of debt value and interest due on it.
2011	<ul style="list-style-type: none"> The Bank of Algeria issued instructions regarding how to apply the coefficient of liquidity. Obliging banks to present a coefficient of liquidity at least equal to 100%. 	<ul style="list-style-type: none"> Central Bank of Sudan raised the legal reserve ratio from 8% to 13%. Set the regulations for the banking finance granted. Central bank decided to raise the minimum paid-up capital for banks to 100 million pounds. 	<ul style="list-style-type: none"> Continuing obliged banks to retain the legal reserve ratio of 20%. Issuing instructions related to determining the financial position structures of banks and their credit portfolios.
2012	<ul style="list-style-type: none"> Bank of Algeria raised the legal reserve ratio from 9% to 11%. Bank of Algeria introduced a new system related to fight against money laundering and terrorist financing. 	<ul style="list-style-type: none"> Amending the regulations concerning fight against money laundering and terrorist financing. 	<ul style="list-style-type: none"> Central Bank of Libya issued instructions regarding to apply capital adequacy ratio.

Source: Processed by the researchers based on data obtained from Arab Monetary Fund & Central banks' reports.

TABLE IV: BANKING REGULATIONS IN NORTH AFRICA COUNTRIES

Year	Banking Regulations in North Africa Countries		
	Algeria	Sudan	Libya
2013	<ul style="list-style-type: none"> Bank of Algeria raised the legal reserve ratio from 11% to 12%. Central Bank of Algeria issued a law against money laundering and terrorist financing. Issuing a system for evaluating the performance of commercial banks. 	<ul style="list-style-type: none"> Central Bank of Sudan conducted a periodic revise of international standards issued by Basel Committee and Muslim Action Committee. Central Bank of Sudan raised the legal reserve ratio from 13% to 18%. 	<ul style="list-style-type: none"> Issuing instructions related to credit information. Set the regulations governing clearing instruments. Issuing instruction regarding Regulation of dealing in foreign exchange.
2014	<ul style="list-style-type: none"> Applying Pillar (2) "Supervisory Review Process" according to Basel (2) norms. Obliging banks to apply a minimum solvency ratio of 9.5%. Obliging banks to provide safety cushion consisting of core capital and covering 2.5% of weighted risks "Basel 3". 	<ul style="list-style-type: none"> Central Bank of Sudan issued instructions related to implementation Basel (3) committee norms. Set the regulations regarding money laundering and terrorist financing. 	<ul style="list-style-type: none"> Set the regulations governing for the issuance of electronic banking cards. Continuing obliged banks to retain the legal reserve ratio of 20%.
2015	<ul style="list-style-type: none"> Bank of Algeria issued instructions regarding Basel 3 agreement, including raising the capital adequacy rate to 9.5%, and Core capital shall cover at least 7% of operational, market and credit risks. 	<ul style="list-style-type: none"> Central Bank of Sudan developed a general framework for liquidity management. 	<ul style="list-style-type: none"> Central Bank of Libya issued regulations governing the handling of electronic banking cards.
2016	<ul style="list-style-type: none"> Bank of Algeria reduced the legal reserve ratio from 12% to 8%. Bank of Algeria issued instructions concerning financing operations. 	<ul style="list-style-type: none"> Central Bank of Sudan worked to facilitate the implementation of standards relevant to the calculation of internal capital adequacy and liquidity risk management, in accordance with Basel requirements. 	<ul style="list-style-type: none"> Issuing the regulations related to set mechanism to regulate the opening of Documentary credits. Issuing instruction regarding Regulation of dealing in foreign exchange.
2017	<ul style="list-style-type: none"> Bank of Algeria reduced the legal reserve ratio from 8% to 4%. 	<ul style="list-style-type: none"> Central Bank of Sudan issued instruction to apply Liquidity Coverage Ratio (LCR) and Net Stable Funding Ratio (NSFR). Reduce non-performing loans ratio to the international agreed safe ratio of (6%). 	<ul style="list-style-type: none"> Set the regulations and instructions related to mobile payment services.
2018	<ul style="list-style-type: none"> Bank of Algeria raised the legal reserve ratio from 4% to 8%. Bank of Algeria issued instructions related to minimum capital. 	<ul style="list-style-type: none"> Continuing obliged banks to retain the legal reserve ratio of 18%. Reduce NPLs ratio to the international agreed safe ratio of (4%). 	<ul style="list-style-type: none"> Continuing obliged banks to retain the legal reserve ratio of 20%.

Source: Processed by the researchers based on data obtained from Arab Monetary Fund & Central banks' reports.

TABLE V: BANKING REGULATIONS IN MIDDLE EAST COUNTRIES

Year	Banking Regulations in Middle East Countries		
	Saudi Arabia	United Arab Emirates	Iraq
2008	<ul style="list-style-type: none"> ♦ Saudi Arabian Monetary Agency raised the legal reserve ratio from 9% to 10% and then to 13%. ♦ Requiring banks to implement all three Pillars of Basel II. ♦ All banks embarked on implementing the Standardized Approach for Credit risk and the Basic Indicator and Standardized approach for Operational Risk. 	<ul style="list-style-type: none"> ♦ Central Bank of the UAE obliged banks to retain the legal reserve ratio of 14%. ♦ Central Bank of the UAE issued instructions related to money laundering and terrorist financing. 	<ul style="list-style-type: none"> ♦ Central Bank of Iraq obliged banks to retain the legal reserve ratio of 25%. ♦ Central Bank of Iraq calculated the liquidity ratios. ♦ Review the capital adequacy schedules of banks on a monthly basis.
2009	<ul style="list-style-type: none"> ♦ Reducing the legal reserve ratio more than once, dropping from 13% to reach 7%. ♦ Applying Internal Capital Adequacy Assessment Process (ICAAP). ♦ Issuing a number of documents related to Basel II, including Risk Management, and International Framework for Liquidity Risk Measurement. 	<ul style="list-style-type: none"> ♦ Central Bank of the UAE completed the process of experimental applying of Basel system (2). ♦ Announcement of the increase in commercial banks' capital adequacy ratio & Tier-1 capital ratio. ♦ Establishment of the Financial Stability Unit to deal with systemic risks and ensure the stability of the financial system. 	<ul style="list-style-type: none"> ♦ The Central Bank of Iraq restructured the banks. ♦ Prepare credit worthiness reports for private banks according to the approved CAMEL system.
2010	<ul style="list-style-type: none"> ♦ SAMA issued instructions regarding requirements of bank disclosure enhancement under Basel (2). ♦ Issuing instructions regarding BCBS consultative document: counter capital buffer proposal, protecting the banking system against future potential risks. 	<ul style="list-style-type: none"> ♦ Central Bank of the UAE revision of the regulations for the classification of loans and determining their provisions. ♦ Raise the minimum capital adequacy rate from 11% to 12%. 	<ul style="list-style-type: none"> ♦ Central Bank of Iraq reduced the legal reserve ratio twice in a row, from 25% to 20% and then to 15%. ♦ Preparing the guideline regulation for classification of credit and obligating banks to set the appropriate financial provision for facing the risks of each category.
2011	<ul style="list-style-type: none"> ♦ Issuing instructions regarding disclosure requirements (pillar 3). ♦ Issuing instructions concerning the liquidity risk monitoring. 	<ul style="list-style-type: none"> ♦ Issuing instructions for regulating loans and other services offered to individuals. 	<ul style="list-style-type: none"> ♦ Obligation commercial banks to raise their capital to a high level and increase solvency according to international standards.
2012	<ul style="list-style-type: none"> ♦ Issuing instructions regarding rules on banks' disclosure of the composition of capital, supervisory guidance for managing risks. 	<ul style="list-style-type: none"> ♦ Issuing instructions concerning qualitative and quantitative requirements for liquidity in banks. ♦ Amendment to the regulation regarding bank loans. 	<ul style="list-style-type: none"> ♦ Continuing obliged banks to retain the legal reserve ratio of 15%. ♦ Raising commercial banks' capital to 150 billion dinars.

Source: Processed by the researchers based on data obtained from Arab Monetary Fund & Central banks' reports.

TABLE VI: BANKING REGULATIONS IN MIDDLE EAST COUNTRIES

Year	Banking Regulations in Middle East Countries		
	Saudi Arabia	United Arab Emirates	Iraq
2013	<ul style="list-style-type: none"> ♦ Continuing obliged banks to retain the legal reserve ratio of 7%. ♦ SAMA issued an instruction regarding Liquidity Coverage Ratio (LCR). ♦ Issuing draft related to Loan Classification Rules. 	<ul style="list-style-type: none"> ♦ Central bank of the UAE issued instructions related to the monitoring of credit concentrations limits. ♦ Creating a new framework for banking data. 	<ul style="list-style-type: none"> ♦ Central Bank of Iraq obliged banks to set the regulations related to granting of cash credit. ♦ Amending the regulations concerning the fight against money laundering and terrorist financing. ♦ Creating a system for credit information exchange.
2014	<ul style="list-style-type: none"> ♦ SAMA issued its final guidance document regarding Basel standards for disclosure for liquidity coverage ratio and lending ratio. ♦ Requiring banks to maintain aggregate provisions ratio of at least 100% of non-performing loans and increase this ratio to 200% at the peak of the economic cycle. 	<ul style="list-style-type: none"> ♦ Revising the regulations related to risk management, internal controls at banks. ♦ Revising the requirements for Banks' Regulatory Capital, according to Basel III Capital Framework. ♦ Creating a new system for liquidity. 	<ul style="list-style-type: none"> ♦ Continuing obliged banks to retain the legal reserve ratio of 15%. ♦ Raising the capital for Branches of Foreign Banks operating in Iraq to 70 million dollars. ♦ Central Bank of Iraq issued instructions regarding Credit Information Exchange System.
2015	<ul style="list-style-type: none"> ♦ SAMA issued a framework for Countercyclical Capital Buffer (CCyB) requirements. ♦ SAMA started to implement and monitor the Basel III Capital Adequacy Ratio (CAR). 	<ul style="list-style-type: none"> ♦ Central Bank of the UAE issued regulations regarding liquidity requirements for banks, such as obliged banks to retain liquid assets in the event of financing shocks. 	<ul style="list-style-type: none"> ♦ Central Bank of Iraq issued instructions on related to adjusting liquidity calculation ratios.
2016	<ul style="list-style-type: none"> ♦ Implementation of Basel III in regard to Pillar I capital requirements, Pillar II requirements on the supervisory review process and Pillar III requirements on disclosure of bank data. 	<ul style="list-style-type: none"> ♦ Issuing a guideline to applying liquidity in Basel (3) framework. ♦ Prepare a set of new risk management regulations. ♦ The Central Bank has finalized new Basel III capital requirements for banks operating in the country. 	<ul style="list-style-type: none"> ♦ Central Bank of Iraq issued the regulations related to liquidity risk management, including the obligation to both a minimum liquidity coverage ratio of 80% and a minimum stable net financing ratio of 100%.
2017	<ul style="list-style-type: none"> ♦ SAMA issued the guidelines for the management and measurement of step-in risk by Basel Committee on Banking Supervision (BCBS). 	<ul style="list-style-type: none"> ♦ Central Bank of the UAE issued a guideline to applying capital in Basel (3) framework. 	<ul style="list-style-type: none"> ♦ Central Bank of Iraq issued the regulations related to applying Basel (3) norms in regards to liquidity and fight against money laundering and terrorist financing.
2018	<ul style="list-style-type: none"> ♦ SAMA updated its "guidance document concerning Basel III": the net stable funding ratio (NSFR) and rules on large exposures of banks. 	<ul style="list-style-type: none"> ♦ Issuing a new regulatory framework for risk management in banks, it comprises five regulations. 	<ul style="list-style-type: none"> ♦ Central Bank of Iraq issued instructions concerning capital adequacy standard, according to Basel (3) requirements.

Source: Processed by the researchers based on data obtained from Arab Monetary Fund & Central banks' annual reports.

TABLE VII: BANKING REGULATIONS IN MIDDLE EAST COUNTRIES

Year	Banking Regulations in Middle East Countries		
	Kuwait	Qatar	Oman
2008	<ul style="list-style-type: none"> Central Bank of Kuwait obliged banks to retain the legal reserve ratio of 20%. Amending the instructions related to the Basel II capital adequacy standard. CBK made notable adjustments to some supervisory measures and controls that organize the credit extended by local banks to their clients. 	<ul style="list-style-type: none"> Qatar Central Bank raised the legal reserve ratio to 3.75% and then from 3.75% to 4.75%. Qatar Central Bank obliged all banks to use the secured "SEEB NET" in inter-banking transactions. QCB instructed all banks to adopt a security policy that includes data confidentiality, adoption of procedures of customer identification and verification. 	<ul style="list-style-type: none"> Central Bank of Oman obliged banks to retain the legal reserve ratio of 8%.
2009	<ul style="list-style-type: none"> Central Bank of Kuwait reduced the legal reserve ratio from 20% to 18%. CBK has amended the second part of the Basel II capital adequacy requirements related to the supervisory review process, internal evaluation of capital adequacy (ICAAP). 	<ul style="list-style-type: none"> QCB amended its instructions pertaining to the capital adequacy ratio, in accordance with Basel II. QCB issued instructions to amend the methods of classification and evaluation of the banks' financial investments granting. QCB instructed all banks to provide monthly reports on the financial statements of the bank. 	<ul style="list-style-type: none"> Central Bank of Oman reduced the legal reserve ratio from 8% to 5%.
2010	<ul style="list-style-type: none"> CBK directed banks to strengthen their capital base. Conduct financial stress tests on the Kuwait banks in order to measure their ability to resist shocks. Direct banks to build precautionary provisions along with specific and general provisions. 	<ul style="list-style-type: none"> Qatar Central Bank obliged banks to retain the legal reserve ratio of 4.75%. Qatar Central Bank issued instructions concerning regulations fight against money laundering and terrorist financing. 	<ul style="list-style-type: none"> Central Bank of Oman issued the regulations on credit, in regards to non-performing loans. Continuing obliged banks to retain the legal reserve ratio of 5%.
2011	<ul style="list-style-type: none"> Following-up the conduct by banks of financial stress tests on a semi-annual basis, as well as emphasize the implementation of internal evaluation of capital adequacy (ICAAP). 	<ul style="list-style-type: none"> Qatar Central Bank imposed certain exposure limits and credit controls on commercial banks in order to ensure consumer protection. 	<ul style="list-style-type: none"> Central Bank of Oman allowed conventional banks to provide Islamic banking services.
2012	<ul style="list-style-type: none"> CBK conducted risk assessment measures in accordance with the (CAMEL-BCOM) method, and (EWS). 	<ul style="list-style-type: none"> Requiring banks to applying Basel III requirements related to liquidity ratios (LCR & NSFR), and leverage ratio. 	<ul style="list-style-type: none"> Issuing the regulations regarding to applying capital adequacy rate, according to Pillar 2 from Basel II agreement.

Source: Processed by the researchers based on data obtained from Arab Monetary Fund & Central banks' reports.

TABLE VIII: BANKING REGULATIONS IN MIDDLE EAST COUNTRIES

Year	Banking Regulations in Middle East Countries		
	Kuwait	Qatar	Oman
2013	<ul style="list-style-type: none"> CBK approved the minimum capital adequacy ratio of 13% to be implemented in stages between 2014 and 2016. CBK directed banks to build precautionary provisions requested. 	<ul style="list-style-type: none"> Amending the investment ceiling of banks whereby one aggregate investment limits up to 25% of bank's capital & reserves was prescribed. Qatar Central Bank issued instructions concerning Basel III in regard to Pillar 3 and stress tests. 	<ul style="list-style-type: none"> Central Bank of Oman issued final instructions for regulatory capital and components of capital disclosure requirements according to Basel committee requirements. Applying capital adequacy ratio according to Basel III.
2014	<ul style="list-style-type: none"> CBK issued instructions regarding Basel III capital adequacy for conventional and Islamic banks with a minimum capital adequacy ratio of 13%. CBK approved the leverage standard for banks, according to Basel III requirements, requiring a minimum leverage limit of 3%. CBK approved the standard of liquidity coverage ratio (LCR) for banks. 	<ul style="list-style-type: none"> Qatar Central Bank issued clarifications on guidelines for implementing pillar 2 (ICAAP), according to Basel committee norms. QCB started implementing the Leverage Ratio requirement from September 2014 to test a Tier 1 leverage ratio of 3.0%. Liquidity Coverage Ratio (LCR) has been implemented in a phased manner starting from 60% in 2014. 	<ul style="list-style-type: none"> Central Bank of Oman issued guidelines banks regarding to applying Internal Capital Adequacy Assessment Process (ICAAP). Issuing final framework for liquidity coverage ratio according to Basel (3) instructions. Start applying additional capital for hedging purposes.
2015	<ul style="list-style-type: none"> CBK approved the implementation of net stable funding ratio (NSFR) standard instructions for banks. Applying banking measures regarding writing-off bad debts. 	<ul style="list-style-type: none"> QCB implemented Net Stable Funding Ratio (NSFR) according to Basel (3) requirements. Regarding the implementation of Liquidity Coverage Ratio (LCR), the minimum LCR to be maintained by banks increased by 10% to 70%. 	<ul style="list-style-type: none"> Central Bank of Oman issued instructions related to applying capital conservation buffer (CCoB) and countercyclical capital buffer (CCyB).
2016	<ul style="list-style-type: none"> Continuing obliged banks to retain the legal reserve ratio of 18%. Issuing instructions to banks new terms of reference for the continuous examination of all loans. 	<ul style="list-style-type: none"> Obliging banks to apply the Countercyclical Buffer – CCyB methodology, which banks should take into account when determining the minimum capital adequacy ratio according to Basel III. 	<ul style="list-style-type: none"> Applying banks operating in Oman liquidity coverage ratio (LCR).
2017	<ul style="list-style-type: none"> CBK issued instructions to banks concerning the minimum standards required to deal with the theft of ATM data. 	<ul style="list-style-type: none"> Qatar Central Bank reduced the legal reserve ratio from 4.75% to 4.5%. 	<ul style="list-style-type: none"> Central Bank of Oman amended the regulations concerning the calculation of provisions.
2018	<ul style="list-style-type: none"> Central Bank of Kuwait amended instructions concerning the rules & regulations for granting personal loans and financing facilities. 	<ul style="list-style-type: none"> Qatar Central Bank issued executive instructions for banks to measure and control major exposures. 	<ul style="list-style-type: none"> Applying (NSFR) ratio. Reducing the minimum capital adequacy ratio from 12% to 11%. Applying leverage ratio at 4.5%.

Source: Processed by the researchers based on data obtained from Arab Monetary Fund & Central banks' reports.

TABLE IX: BANKING REGULATIONS IN MIDDLE EAST COUNTRIES

Year	Banking Regulations in Middle East Countries		
	Palestine	Bahrain	Lebanon
2008	<ul style="list-style-type: none"> ♦ Palestine Monetary Authority obliged banks to retain the legal reserve ratio of 9%. ♦ Issue instructions regarding capital adequacy, so that the ratio is not less than 12%, and measured on a quarterly basis. ♦ PMA Issued instructions concerning how to calculate provisions and their classification. 	<ul style="list-style-type: none"> ♦ Central Bank of Bahrain increased the legal reserve ratio from 5% to 7%. ♦ CBB issued Pillar Two requirements for Capital Adequacy Assessment Plans, accordingly Basel (2) norms. 	<ul style="list-style-type: none"> ♦ Banque Du Liban obliged banks to retain the legal reserve ratio of 25%. ♦ Central Bank of Lebanon issued instructions to banks regarding Capital Adequacy Assessment and follow up bank solvency, according to Basel (2) norms. ♦ Starting the implementation of Basel II standards for calculating capital adequacy ratios.
2009	<ul style="list-style-type: none"> ♦ PMA issued instructions regarding the elimination of the ceiling on interest or returns on facilities and financing. ♦ Issuing instructions related to managing business continuity in banks, including risks and threats to banks. ♦ PMA issued regulations concerning security and safety requirements to reduce operational risks. 	<ul style="list-style-type: none"> ♦ Central Bank of Bahrain reduced the legal reserve ratio from 7% to 5%. ♦ Follow up on the implementation of Basel II requirements. ♦ Central Bank of Bahrain conducted a detailed review of the banks' large exposure policies. ♦ Revision for the risk management system. ♦ Strengthening regimes for controlling liquidity management. 	<ul style="list-style-type: none"> ♦ Central Bank of Lebanon issued an instruction regarding strengthening regimes for risk management in banks. ♦ Issuing instruction related to reducing credit risk.
2010	<ul style="list-style-type: none"> ♦ Palestine Monetary Authority Conducted financial stress tests in banks in order to measure their ability to resist shocks and risks. ♦ PMA obliged commercial banks to establish specialized departments for risk management. 	<ul style="list-style-type: none"> ♦ Central Bank of Bahrain issued instructions related to liquidity risk management. ♦ Central Bank of Bahrain obliged banks to have a credit policy and Lending Committee. 	<ul style="list-style-type: none"> ♦ Continuing obliged banks to retain the legal reserve ratio of 25%.
2011	<ul style="list-style-type: none"> ♦ Issuing instructions concerning counter-cyclical reserve: These instructions oblige banks to appropriate 15% of their annual net profits under the name of "counter-cyclical reserve". 	<ul style="list-style-type: none"> ♦ Issuing instructions regarding credit risk management, including adjustments to banks' large exposure limits. ♦ Issuing an advisory paper regarding amendments to Basel II standards. 	<ul style="list-style-type: none"> ♦ Central Bank of Lebanon issued instructions related to solvency ratios. ♦ Revising and developing of debt classification mechanism, according to international standards.
2012	<ul style="list-style-type: none"> ♦ PMA issued instructions concerning the Required Reserve Base. ♦ Issuing instructions concerning counterfeit currency. 	<ul style="list-style-type: none"> ♦ CBB issued instructions regarding operational risk management in banks. ♦ Issuing new guidance concerning capital adequacy requirements. 	<ul style="list-style-type: none"> ♦ Central Bank of Lebanon amended decisions related to ATM, credit cards, lending operations and required reserve.

Source: Processed by the researchers based on data obtained from Arab Monetary Fund & Central banks' reports.

TABLE X: BANKING REGULATIONS IN MIDDLE EAST COUNTRIES

Year	Banking Regulations in Middle East Countries		
	Palestine	Bahrain	Lebanon
2013	<ul style="list-style-type: none"> ♦ PMA issued instructions concerning risk reserve, by which the risk reserve ratio was amended. ♦ Issuing instructions concerning liquidity ratios in banks. 	<ul style="list-style-type: none"> ♦ CBB issued its directives to all banks requiring them to report pro-forma Basel 3 ratios on leverage, capital adequacy and liquidity on a quarterly basis. ♦ Issuing instructions to banks on amendments to ("Capital Adequacy"), including the new definition of Regulatory Capital according to Basel 3 requirements. 	<ul style="list-style-type: none"> ♦ Central Bank of Lebanon issued instructions related to managing, operating, and supervising of retail payment systems.
2014	<ul style="list-style-type: none"> ♦ PMA prepared working papers in the area of credit and market risks, operational risks and the Supervisory Review Process (Pillar 2), according to Basel II. ♦ Issuing instructions concerning lowering of risk reserves. 	<ul style="list-style-type: none"> ♦ CBB issued revised Prudential Information Returns (PIR) as per Basel III requirements. ♦ CBB issued a consultation paper on Basel III public disclosure requirements. 	<ul style="list-style-type: none"> ♦ Central Bank of Lebanon issued instruction related to composition capital conservation Buffer (CCB) of 2.5% of total risk-weighted assets.
2015	<ul style="list-style-type: none"> ♦ Issuing instructions regarding stress testing. ♦ PMA issued instructions concerning capital requirements, these instructions clarify capital requirements from the banks' Paid-up capital should not be less than USD 75 million. ♦ Amending instructions on the determinants and controls for credit granting. 	<ul style="list-style-type: none"> ♦ Central Bank of Bahrain Started to apply a capital adequacy ratio, according to Basel III requirements. ♦ Central Bank of Bahrain issued a consultation paper concerning Basel III requirements in regard to leverage ratio. 	<ul style="list-style-type: none"> ♦ Central Bank of Lebanon issued instructions related to the setting mechanism for restructuring debt and non-productive Loans. ♦ Issuing instructions regarding Principles of Conducting banking and financial operations with customers.
2016	<ul style="list-style-type: none"> ♦ Issuing instructions on the implementation of capital adequacy requirements according to Basel II Accord. 	<ul style="list-style-type: none"> ♦ Central Bank of Bahrain conducted amendments on the credit risk management framework. ♦ Amending operational risk management framework. 	<ul style="list-style-type: none"> ♦ Revising and evaluating the internal capital adequacy assessment process (ICAAP) conducted by banks. ♦ Issuing instructions related to amending the minimum for solvency ratios in banks.
2017	<ul style="list-style-type: none"> ♦ Starting to apply Basel (3) requirements. ♦ Issuing instructions on operational risk. 	<ul style="list-style-type: none"> ♦ Continuing obliged banks to retain the legal reserve ratio of 5%. 	<ul style="list-style-type: none"> ♦ Continuing obliged banks to retain the legal reserve ratio of 25%.
2018	<ul style="list-style-type: none"> ♦ Issuing instructions regarding to apply each of cyclical fluctuation reserve, liquidity ratios (LCR & NSFR), leverage ratio and regulatory capital requirements. 	<ul style="list-style-type: none"> ♦ CBB Issued instructions related to both liquidity coverage ratio, net stable funding ratio and leverage ratio. 	<ul style="list-style-type: none"> ♦ Central Bank of Lebanon issued instructions regarding liquidity coverage ratio and capital adequacy regulatory framework, according to Basel III norms.

Source: Processed by the researchers based on data obtained from Arab Monetary Fund & Central banks' reports.

TABLE XI: BANKING REGULATIONS IN MIDDLE EAST COUNTRIES

Year	Banking Regulations in Middle East Countries	
	Turkey	Jordan
2008	<ul style="list-style-type: none"> Banking Regulation and Supervision Agency obliged banks to retain the legal reserve ratio of 10%. 	<ul style="list-style-type: none"> Central Bank of Jordan reduced the legal reserve ratio from 10% to 9%. Issuing the instructions of capital adequacy according to Basel II standards. Issuing new instructions regarding the legal liquidity of Islamic banks.
2009	<ul style="list-style-type: none"> Continuing obliged banks to retain the legal reserve ratio of 10%. Banking Regulatory and Control Agency became a representative of Turkey by being a member of Basel committee on banking supervision. 	<ul style="list-style-type: none"> Central Bank of Jordan reduced the legal reserve ratio from 9% to 7%. Issuing instructions regarding stress testing according to Basel II standard. Amending instructions related to the classification of credit facilities.
2010	<ul style="list-style-type: none"> BRSA raised the legal reserve ratio from 10% to 11%. Issuing regulations regarding measuring and assessing the liquidity adequacy of banks. 	<ul style="list-style-type: none"> Issuing instructions on the capital adequacy of Islamic banks according to (IFSB). CBJ amended instructions related to the minimum amount of authorized capital of licensed banks.
2011	<ul style="list-style-type: none"> Amending to the regulation concerning measurement and assessment of Capital Adequacy of Banks. BRSA raised the legal reserve ratio from 11% to 16%. 	<ul style="list-style-type: none"> Central Bank of Jordan issued an instruction related to Basel III norms. Starting the process of Supervisory Review and Evaluation (SREP) for the internal evaluation of capital adequacy in banks.
2012	<ul style="list-style-type: none"> BRSA reduced the legal reserve ratio from 16% to 11%. Issuing regulation related to measuring and assessing of the capital and liquidity adequacy of banks. 	<ul style="list-style-type: none"> Issuing instructions on "Transparency and Fairness in dealing with Clients" which banks have to follow and take the necessary measures to implement.
2013	<ul style="list-style-type: none"> Issuing regulations related to measuring and assessing of the capital adequacy and leverage ratio of banks, according to Basel III. BRSA raised the legal reserve ratio from 11% to 11.5%. BRSA Issued advisory paper regarding each of capital conservation buffer and countercyclical capital buffer. 	<ul style="list-style-type: none"> Central Bank of Jordan issued instructions concerning regulations fight against money laundering and terrorist financing. Central Bank of Jordan issued amendments for "Transparency and Fairness in dealing with Clients" instructions, which banks have to follow and take the necessary.
2014	<ul style="list-style-type: none"> BRSA issued the executive regulation on Calculation of the Liquidity Coverage Ratio (LCR) of Banks, according to Basel III norms. 	<ul style="list-style-type: none"> Continuing obliged banks to retain the legal reserve ratio of 7%. Issuing instructions on risk management principles for electronic banking.
2015	<ul style="list-style-type: none"> Continuing obliged banks to retain the legal reserve ratio of 11.5%. 	<ul style="list-style-type: none"> Amendment draft to the CBJ Law and the Banking Law. Issuance of the new Law for exchange companies.
2016	<ul style="list-style-type: none"> Amendment regulations related to Calculation of the Liquidity Coverage Ratio (LCR) of Banks. 	<ul style="list-style-type: none"> Issuing Basel III regulations for banks, which include new capital adequacy criteria.
2017	<ul style="list-style-type: none"> BRSA reduced the legal reserve ratio from 11.5% to 10.5%. Amending the Regulations on Credit Transactions of Banks. 	<ul style="list-style-type: none"> Issuing regulations to Domestic Systemically Important Banks "D-SIBs". Issuing instructions concerning fight against money laundering and terrorist financing.
2018	<ul style="list-style-type: none"> Continuing obliged banks to retain the legal reserve ratio of 10.5%. BRSA amended regulations related to Loans Classification. 	<ul style="list-style-type: none"> Continuing obliged banks to retain the legal reserve ratio of 7%. Issuing instructions related to capital adequacy in Islamic banks.

Source: Processed by the researchers based on data obtained from Arab Monetary Fund & Central banks' reports.

A. Measuring Variables and Developing Hypotheses

Banking regulations have been measured by each of capital adequacy requirements, liquidity requirements, legal reserve requirements, leverage requirements and provisions policy, while banking performance has been measured by banking efficiency, banking stability, credit risk and profitability. Data are obtained from central banks of Egypt, Sudan, Lebanon, Libya, Iraq, Tunisia, Algeria, Morocco, Qatar, Emirates, Saudi Arabia, Bahrain, Palestine, Oman, Djibouti, Turkey, Kuwait, Jordan, Mauritania, on a yearly basis during the period from 2008 to 2018. Table III illustrates the research variables, as follows:

This paper aims at testing the following four hypotheses:

- There's no significant effect of applying "banking regulations" on "efficiency of banking sector" in Middle East and North Africa countries.
- There's no significant effect of applying "banking regulations" on "stability of banking sector" in Middle East and North Africa countries.
- There's no significant effect of applying "banking regulations" on "credit risk for banking sector" in Middle East and North Africa countries.
- There's no significant effect of applying "banking regulations" on "profitability of banking sector" in Middle East and North Africa countries.

Regarding the first hypothesis, the null hypothesis H_0 states that, $\beta_n = 0$, while the alternative hypothesis H_1 states

that, $\beta_n \neq 0$ where:

$$DEA = \alpha + \beta_1 CAR + \beta_2 LIQR + \beta_3 RESR + \beta_4 LEVR + \beta_5 PROP + \varepsilon \quad (1)$$

$$OPE = \alpha + \beta_1 CAR + \beta_2 LIQR + \beta_3 RESR + \beta_4 LEVR + \beta_5 PROP + \varepsilon \quad (2)$$

Regarding the second hypothesis, the null hypothesis H_0 states that, $\beta_n = 0$, while the alternative hypothesis H_1 states that, $\beta_n \neq 0$ where:

$$ABSI = \alpha + \beta_1 CAR + \beta_2 LIQR + \beta_3 RESR + \beta_4 LEVR + \beta_5 PROP + \varepsilon \quad (3)$$

$$Z\text{-score} = \alpha + \beta_1 CAR + \beta_2 LIQR + \beta_3 RESR + \beta_4 LEVR + \beta_5 PROP + \varepsilon \quad (4)$$

Regarding the third hypothesis, the null hypothesis H_0 states that $\beta_n = 0$, while the alternative hypothesis H_1 states that, $\beta_n \neq 0$ where:

$$NPLS = \alpha + \beta_1 CAR + \beta_2 LIQR + \beta_3 RESR + \beta_4 LEVR + \beta_5 PROP + \varepsilon \quad (5)$$

$$LPNPLS = \alpha + \beta_1 CAR + \beta_2 LIQR + \beta_3 RESR + \beta_4 LEVR + \beta_5 PROP + \varepsilon \quad (6)$$

Regarding the fourth hypothesis, the null hypothesis H_0 states that, $\beta_n = 0$, while the alternative hypothesis H_1 states

that, $\beta_n \neq 0$ where:

$$ROA = \alpha + \beta_1 CAR + \beta_2 LIQR + \beta_3 RESR + \beta_4 LEVR + \beta_5 PROP + \varepsilon \quad (7)$$

$$ROE = \alpha + \beta_1 CAR + \beta_2 LIQR + \beta_3 RESR + \beta_4 LEVR + \beta_5 PROP + \varepsilon \quad (8)$$

TABLE XII: MEASURING OF RESEARCH VARIABLES

Variable	Calculation	Sign
Independent Variables		
Banking Regulations		
Capital Adequacy Requirements	Capital Base to Risk-Weighted Assets	CAR
Liquidity Requirements	Liquid Assets to Total Assets	LIQR
Reserve Requirements	Balances with CB to Banks' deposits	RESR
Leverage Requirements	Total Equity to Total Assets	LEVR
Provisions Policy	Provisions of Non-Performing Loans + Other Provisions to Total Capital	PROP
Dependent Variables		
Banking Performance		
Efficiency Model (1)		
Banking Efficiency	Data Envelopment Analysis Inputs: (Total Deposits & Capital) Outputs: (Total Assets & Total Loans)	DEA
Operation Efficiency	Non-Interest Expenses to Net Income	OPE
Stability Model (2)		
Aggregate Banking Stability Index	This index is based on financial soundness indicators developed by IMF to monitor the health of the banking sector, these indicators follow the CAMELS framework which refers to four groups of indicators: Capital adequacy, Asset quality, Liquidity and Earnings. It is a composite indicator constructed as a weighted average of partial micro-prudential indicators.	ABSI
Z-score Index	This indicator equals the return on assets plus (equity to total assets) divided by the standard deviation of return on assets.	Z-score
Credit Risk Model (3)		
Non-Performing Loans	Non-performing Loans to Total Loans	NPLS
Provisions Non-Performing Loans	Loan Provisions to Non-performing Loans	LPNPLS
Profitability Model (4)		
Return on Assets	Bank's Net Income divided by Average Total Assets	ROA
Return on Equity	Bank's Net Income divided by Average Total Equity	ROE

Data obtained from Arab Monetary Fund (AMF) & Central banks' annual reports.

IV. DESCRIPTIVE AND DIAGNOSTIC STATISTICS

Tables XIII and XIV illustrate descriptive statistics of the research variables using a sample of 19 countries, over the period from 2008 to 2018 and Table XV indicates the Variance Inflation Factor (VIF) test is used to check for Multicollinearity among the independent variables as follows:

Regarding normality, Probability for Jarque-Bera test is smaller than 0.05 this implies that most variables are not normally distributed. Regarding multicollinearity, the mean VIF is 1.26 this is lower than the 10 which is taken as the standard benchmark for multicollinearity to exist if it is higher than the number. In this case, there is no presence of multicollinearity in the panel data because mean VIF of 1.26 is lower than 10 as a thumb rule.

Table XVI illustrates diagnostic tests i.e., (Chow test, LM Breusch-Pagan test and Hausman test) that have been used for the selection of the appropriate model to test hypotheses.

The below shown table indicates that the fixed effects model is the best and appropriate model for testing each of the first hypotheses (DEA Model), second hypothesis (ABSI Model & Z-score Model), third hypothesis (LPNPLS Model) and fourth hypothesis (ROE Model), while random effects model is the best and appropriate model for test each of first hypothesis (OPE Model), third hypothesis (NPLS Model) and fourth hypothesis (ROA Model).

TABLE XIII: DESCRIPTIVE STATISTICS OF INDEPENDENT VARIABLES

Variables	CAR	LIQR	RESR	LEVR	PROP
Mean	0.234	0.327	0.222	0.104	0.499
Median	0.169	0.284	0.142	0.104	0.323
Maximum	2.850	0.743	0.920	0.203	3.216
Minimum	0.071	0.045	0.012	0.014	0.040
Std. Dev.	0.302	0.168	0.204	0.037	0.506
Skewness	5.256	0.801	1.485	0.261	2.236
Kurtosis	35.665	2.829	4.570	2.726	9.608
Jarque-Bera	10254.28	22.575	98.288	3.030	554.395
Probability	0.000	0.000	0.000	0.220	0.000
Observations	209	209	209	209	209

Source: Outputs of data processing using Eviews 10.

TABLE XIV: DESCRIPTIVE STATISTICS OF DEPENDENT VARIABLES

Variables	DEA	OPE	ABSI	Z-score	NPLS	LPNPLS	ROA	ROE
Mean	0.894	0.441	-0.005	0.487	0.088	0.851	0.015	0.151
Median	0.928	0.440	0.003	0.418	0.060	0.753	0.013	0.136
Maximum	1	1.088	1.003	1.246	0.453	2.539	0.047	0.947
Minimum	0.420	-0.174	-1.317	0.041	0.011	0.100	0.002	0.025
Std. Dev.	0.116	0.180	0.392	0.302	0.076	0.403	0.008	0.095
Skewness	-1.90	-0.208	-0.243	0.849	1.628	2.135	1.603	3.598
Kurtosis	6.871	5.168	3.498	2.865	6.164	8.387	6.490	26.38
Observations	209	209	209	209	209	209	209	209

Source: Outputs of data processing using Eviews 10.

TABLE XV: VARIANCE INFLATION FACTOR (VIF) TEST

Variables	R-Squared	VIF	1/ VIF
CAR	0.15	1.18	0.85
LIQR	0.14	1.16	0.86
RESR	0.23	1.30	0.77
LEVR	0.25	1.33	0.75
PROP	0.25	1.33	0.75
Mean VIF		1.26	

Source: Outputs of data processing using Eviews 10.

TABLE XVI: DIAGNOSTIC TESTS TO CHOOSE OF APPROPRIATE MODEL IN HYPOTHESES TESTING

First Hypothesis (Efficiency Models)					
DEA Model			OPE Model		
Diagnostic test	P-value	Recommended Model	Diagnostic test	P-value	Recommended Model
Chow	0.0000	Fixed Effects Model	Chow	0.0000	Fixed Effects Model
Breusch-Pagan	0.0000	Random Effects Model	Breusch-Pagan	0.0000	Random Effects Model
Hausman	0.0000	Fixed Effects Model	Hausman	0.0665	Random Effects Model
Second Hypothesis (Stability Models)					
ABSI Model			Z-score Model		
Diagnostic test	P-value	Recommended Model	Diagnostic test	P-value	Recommended Model
Chow	0.5942	Pooled Regression Model	Chow	0.0000	Fixed Effects Model
Breusch-Pagan	0.0058	Random Effects Model	Breusch-Pagan	0.0000	Random Effects Model
Hausman	0.0076	Fixed Effects Model	Hausman	0.0163	Fixed Effects Model
Third Hypothesis (Credit Risk Models)					
NPLS Model			LPNPLS Model		
Diagnostic test	P-value	Recommended Model	Diagnostic test	P-value	Recommended Model
Chow	0.0000	Fixed Effects Model	Chow	0.0000	Fixed Effects Model
Breusch-Pagan	0.0000	Random Effects Model	Breusch-Pagan	0.0000	Random Effects Model
Hausman	0.4094	Random Effects Model	Hausman	0.0097	Fixed Effects Model
Fourth Hypothesis (Profitability Models)					
ROA Model			ROE Model		
Diagnostic test	P-value	Recommended Model	Diagnostic test	P-value	Recommended Model
Chow	0.0000	Fixed Effects Model	Chow	0.0000	Fixed Effects Model
Breusch-Pagan	0.0000	Random Effects Model	Breusch-Pagan	0.0000	Random Effects Model
Hausman	0.1661	Random Effects Model	Hausman	0.0001	Fixed Effects Model

Source: Outputs of data processing using Eviews 10.

V. TESTING HYPOTHESES

This section is for investigating the effect of Applying Banking Regulations on each of "Banking Efficiency", "Banking Stability", "Credit Risk" and "Bank Profitability". To investigate these effects, a panel data analysis has been conducted using static panel models (SPM) and provides the following results:

Regarding the first hypothesis, Table VIII illustrates the effect of applying banking regulations on banking efficiency in Middle East and North Africa countries.

TABLE VIII: THE EFFECT OF APPLYING BANKING REGULATIONS ON BANKING EFFICIENCY

Independent Variables	Banking Efficiency Models	
	DEA	OPE
	Fixed Effects Model	Random Effects Model
A	1.273568 (0.043083)***	0.281494 (0.073828)***
CAR	-0.074890 (0.044890)*	-0.114322 (0.064013)*
LIQR	-0.679760 (0.078202)***	0.228336 (0.108337)**
RESR	0.041478 (0.080502)	0.160585 (0.105029)
LEVR	-1.450985 (0.290924)***	0.514879 (0.448866)
PROP	0.004181 (0.023019)	0.045653 (0.036361)
F	15.92286 (0.000000)***	2.146859 (0.061377)*
R-squared	0.750162	0.050223
Obs.	209	209

Each cell contains the estimated parameters, with std. error between brackets, where * denotes p-value of 10%, ** denotes 5% and *** denotes 1%.

The above shown table indicates that R^2 ranges from 5.02% to 75.02%. Results show that there is a significant effect of applying banking regulations on efficiency of the banking sector in Middle East and North Africa countries, where there is a negative effect for each of (capital adequacy requirements, liquidity, and leverage) on banking efficiency "DEA", in addition to that capital adequacy requirements have a negative effect on operational efficiency, while liquidity requirements have a positive effect on operational efficiency. So, for the first hypothesis, the null hypothesis is rejected and the alternative one could be accepted.

Regarding the second hypothesis, Table IX illustrates the effect of applying banking regulations on banking stability in Middle East and North Africa countries.

The below shown table indicates that R^2 ranges from 9.50% to 99.14%. Results show that there is a significant effect of applying banking regulations on the stability of banking sector in Middle East and North Africa countries, where there is a positive impact of legal reserve requirements on aggregate banking stability index "ABSI", while provisions policy has a negative effect on aggregate banking stability index "ABSI", in addition to the presence of a positive effect for each of (legal reserve requirements, leverage) on banking stability index "Z-score", while liquidity requirements have a negative effect on banking stability index "Z-score". So, for the second hypothesis, the null hypothesis is rejected and the alternative one could be accepted.

TABLE IX: THE EFFECT OF APPLYING BANKING REGULATIONS ON BANKING STABILITY

Independent Variables	Banking Stability Models	
	ABSI	Z-score
	Fixed Effects Model	Fixed Effects Model
A	-0.444543 (0.265339)*	0.127559 (0.019893)***
CAR	0.387893 (0.269054)	-0.026378 (0.020172)
LIQR	0.327553 (0.446996)	-0.061299 (0.033513)*
RESR	0.806744 (0.480082)*	0.181169 (0.035994)***
LEVR	2.567682 (1.751824)	3.388920 (0.131341)***
PROP	-0.409414 (0.141646)***	-0.015271 (0.010620)
F	3.830000 (0.002500)***	930.1906 (0.000000)***
R-squared	0.095018	0.991427
Obs.	209	209

Each cell contains the estimated parameters, with std. error between brackets, where * denotes p-value of 10%, ** denotes 5% and *** denotes 1%.

Regarding the third hypothesis, Table X illustrates the effect of applying banking regulations on credit risk for the banking sector in Middle East and North Africa countries.

TABLE X: THE EFFECT OF APPLYING BANKING REGULATIONS ON CREDIT RISK

Independent Variables	Credit Risk Models	
	NPLS	LPNPLS
	Random Effects Model	Fixed Effects Model
A	-0.002355 (0.025070)	0.927159 (0.177550)***
CAR	-0.004287 (0.018641)	-0.122347 (0.180036)
LIQR	0.053891 (0.031042)*	0.632218 (0.299105)**
RESR	-0.038527 (0.032501)	0.191977 (0.321245)
LEVR	0.477041 (0.122836)***	-2.516183 (1.172225)**
PROP	0.064717 (0.009952)***	-0.068555 (0.094782)
F	14.93347 (0.000000)***	12.91570 (0.000000)***
R-squared	0.268909	0.616231
Obs.	209	209

Each cell contains the estimated parameters, with std. error between brackets, where * denotes p-value of 10%, ** denotes 5% and *** denotes 1%.

The above shown table indicates that R^2 ranges from 26.89% to 61.62%. Results show that there is a significant effect of applying banking regulations on credit risk for the banking sector in Middle East and North Africa countries, where there is a positive effect for each of (liquidity requirements, leverage, and provisioning policy) on non-performing loans, in addition to having a positive effect of liquidity requirements on provisions for non-performing loans, while leverage requirements have a negative effect on provisions for non-performing loans. So, for the third hypothesis, the null hypothesis is rejected and the alternative one could be accepted.

Regarding the fourth hypothesis, Table XI illustrates the effect of applying banking regulations on bank profitability in Middle East and North Africa countries.

The below shown table indicates that R^2 ranges from 11.11% to 77.85%. Results show that there is a significant effect of applying banking regulations on the profitability of

banking sector in Middle East and North Africa countries, where there is a positive effect for each of (liquidity requirements, legal reserve) on return on assets, while provisions policy has a negative effect on return on assets, in addition to the presence of a positive effect for each of (capital adequacy requirements, liquidity, legal reserve) on return on equity, while there a negative effect for each of (leverage requirements, provisioning policy) on return on equity. So, for the fourth hypothesis, the null hypothesis is rejected and the alternative one could be accepted.

TABLE XI: THE EFFECT OF APPLYING BANKING REGULATIONS ON BANK PROFITABILITY

Independent Variables	Profitability Models	
	ROA	ROE
	Random Effects Model	Fixed Effects Model
α	0.010273 (0.002550)***	0.160022 (0.031939)***
CAR	-0.001553 (0.002004)	0.085397 (0.032386)***
LIQR	0.009466 (0.003341)***	0.190545 (0.053805)***
RESR	0.006737 (0.003471)**	0.312293 (0.057787)***
LEVR	0.021807 (0.013266)	-1.382635 (0.210866)***
PROP	-0.003218 (0.001075)***	-0.033764 (0.017050)**
F	5.072990 (0.000210)***	28.27315 (0.000000)***
R-squared	0.111072	0.778518
Obs.	209	209

Each cell contains the estimated parameters, with std. error between brackets, where * denotes p-value of 10%, ** denotes 5% and *** denotes 1%.

VI. SUMMARY AND CONCLUDED REMARKS

This paper attempts to investigate the effect of applying banking regulations on banking performance. This has been conducted on 19 MENA region countries (Egypt, Sudan, Lebanon, Libya, Iraq, Tunisia, Algeria, Morocco, Qatar, United Arab Emirates, Saudi Arabia, Bahrain, Palestine, Oman, Djibouti, Turkey, Kuwait, Jordan, and Mauritania), on a yearly basis over the period from 2008 to 2018.

Banking regulations have been measured by each of capital adequacy requirements (capital base to risk-weighted assets), liquidity requirements (liquid assets to total assets), legal reserve requirements (balances with CB to banks' deposit), leverage requirements (total equity to total assets) and provisions policy (total provisions to total capital), while Banking performance has been measured by each of banking efficiency using (data envelopment analysis DEA & operational efficiency ratio), banking stability (ABSI & Z-score indexes), credit risk ("non-performing loans" & "provisions for non-performing loans") and profitability (return on assets & return on equity).

Overall, the findings indicate that there is a significant effect of applying banking regulations on banking performance. This has been conducted using panel data analysis according to static panel models (SPM) according to three models (pooled regression, fixed effects, and random effects).

Regarding Banking efficiency, results support the significant effect of applying each of (capital adequacy

requirements, liquidity, and leverage) on Banking Efficiency (measured by Data Envelopment Analysis "DEA"). Besides, they support the significant effect of applying each of (capital adequacy requirements and liquidity) on Banking Efficiency (measured by operational efficiency).

In regard to Banking Stability, results indicate that there is a significant effect of applying each of (legal reserve requirements and provisions policy) on Banking Stability (measured by aggregate banking stability index "ABSI"). In addition, they support the significant effect of applying each of (legal reserve requirements, leverage, and liquidity) on Banking Stability (measured by Z-score).

Concerning Credit Risk, results support the significant effect of applying each of (liquidity requirements, leverage and provisioning policy) on Credit Risk (measured by both non-performing loans to gross loans and loan provisions to non-performing loans).

Finally, in regard to Bank Profitability, results show that there is a significant effect of applying each of (liquidity requirements, legal reserve and provisioning policy) on Bank Profitability (measured by return on assets). Besides, they support the significant effect of applying each of (capital adequacy requirements, liquidity, legal reserve, leverage and provisioning policy) on Bank Profitability (measured by return on equity).

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Dr. Nader Alber is a Professor of Finance and the head of the department. He has more than three decades of experience in teaching, research, and academic administration. Dr. Nader has participated and presented research papers in 11 international conferences held in France, Italy, Greece, Cyprus, Turkey, and Malaysia. Moreover, he has published more than 45 papers. Dr. Nader has participated in supervision and discussion of more than 300 researches submitted for MSc, PhD, MBA and DBA degrees. He is interested in research areas that are related more specifically to financial modeling, banking performance, financial stability, and banking efficiency.

Dr. Hatem Ramadan is a Finance lecturer and consultant. He has obtained his MSc in Business Administration (2017) and PhD in Financial Management Major (2021) from Ain Shams University. He is interested in areas of banking regulations, banking performance, financial stability, and banking efficiency.