The Impact of Country Credit Risk Management on the Egyptian Commercial Banks' Performance: The Moderating Role of Country Liquidity Risk Management

Dr. Ahmed Hassan Elgayar

Business Administration Department

Faculty of Commerce, Tanta University, Tanta, Egypt

ahmed_elgayar@commerce.tanta.edu.eg

Dr. Ahmed Hassan Elgayar

The Impact of Country Credit Risk Management on the Egyptian Commercial Banks' Performance: The Moderating Role of Country Liquidity Risk Management

Dr. Ahmed Hassan Elgayar

Abstract:

The purpose of this study is to investigate how country liquidity risk management influences the potential impact of country credit risk management on the performance of the commercial banks sector in Egypt. The research methodology employed an empirical approach, collecting secondary data from the Egyptian banking sector spanning from 2012 to 2022. This analysis focuses on the three largest commercial banks dominating the Egyptian market, namely the National Bank of Egypt (NBE), Banque Misr (BM), and Banque du Caire (BdC). Three hypotheses were formulated, and empirical time-series simple linear and multiple regression models were utilized to test these hypotheses. The findings confirm the validity of all three hypotheses and provide insights into the relationships among the variables outlined in these hypotheses. Notably, the results align with the expected theoretical impact.

For future research, several recommendations are proposed. Firstly, exploring various performance determinants could enrich understanding, as different variables may yield diverse results. Conducting a detailed analysis of the credit and liquidity risk components within the CAMELS framework (Asset Quality and Liquidity) will be very useful to understand how these factors influence overall bank performance and financial stability. Expanding the study beyond the commercial banking sector to encompass other banking sectors would provide a more comprehensive perspective on how credit risk management affects bank performance across different sectors. Additionally, future empirical research could incorporate global health, political events, and socio-economic developments in the MENA region, such as the COVID-19 pandemic crisis and ongoing geopolitical conflicts, to better understand their influence on the relationship between credit risk management, liquidity risk management, and bank performance. Investigating bidirectional effects between each pair of variables using Granger causality tests could offer further insights into the causal relationships among credit risk management, liquidity risk management, and bank performance. Lastly, future studies could explore how credit risk management's impact on bank performance changes when moderated by other macroeconomic variables, providing practical insights for decision-makers in the banking sector. By exploring these avenues, scholars can deepen their understanding of how credit risk management and liquidity risk

management interact to shape firm performance across various contexts and time frames, offering valuable insights for banks and policymakers.

Keywords: Credit risk management, Bank Performance, Liquidity Risk Management, Moderator, Commercial Banks Sector, National Bank of Egypt (NBE), Banque Misr (BM), Banque du Caire (BdC), Time-Series, Simple Linear and Multiple Regression Models.

Paper Type: Research paper

1. INTRODUCTION

The primary driver of economic development is the banking sector. No economic system can progress without a functioning banking system, making the bank an essential institution in any economic setup. The pivotal role it plays in propelling economic development underscores its indispensability. Credit risk management stands out as a crucial tool to minimize losses stemming from loans and non-performing facilities. Such losses can freeze a significant portion of the bank's funds, diminishing profits and amplifying losses. Customer inability to meet installment and interest payments may lead to actual losses, especially if there are insufficient guarantees to cover non-performing loans. Given this perspective, credit risk management has garnered significant attention to formulate tailored strategies for studying and controlling the escalating credit risk phenomenon. This is vital for mitigating the adverse effects of these risks (Fareed, 2020).

The Central Bank plays a crucial role in mitigating credit risks by employing credit control tools and overseeing bank performance to safeguard their financial stability and prevent collapse. The Basel Committee ensures this through setting unified standards and rules for international settlements to regulate banking practices (Al-Jabri, 2017). Credit risk, constituting 50% of total risk elements, is the most critical risk type, directly impacting bank financial accounts. Successful banking depends on effective credit portfolio management to achieve investment goals such as profit increase and capital deployment. Credit risk management is a major indicator of a bank's strength, especially in the aftermath of financial crises that led to bank failures and bankruptcies (Qassem, et al., 2020).

The last quarter of the previous century witnessed significant developments in markets and the banking sector due to globalization and financial liberalization. Banking, being an intermediary between financial surplus owners (depositors) and deficit owners (borrowers), exposes banks to varying risks. These risks can lead not only to a failure in achieving expected returns but also to actual losses (Marzouk, 2020). Commercial banks, as providers of

financial resources to the economy through financial intermediation, face liquidity risks, which are irregular financial risks resulting from friction with customers. Insufficient liquidity may lead to the loss of customers, while excess liquidity can negatively impact profits and capital. Thus, managing liquidity risk is crucial for the profitability of commercial banks (Traboulsi, 2018).

Profitability ratios serve as vital indicators for evaluating a bank's performance and efficiency in utilizing resources and generating additional income. Maximizing profits is the primary goal of each bank to ensure its survival, maintain activity, and satisfy shareholders in wealth maximization (Othmania, 2021). Profitability, as a measure of economic effectiveness, influences decision-making processes related to debt and lending, making it a crucial tool in the hands of decision-makers (Kamoush and Maatouk, 2019).

In a logical sense, credit risk management is expected to enhance the performance of commercial banks. However, introducing the role of liquidity risk management into this dynamic introduces potential adverse consequences. Maintaining higher liquidity levels within the bank may inadvertently increase credit risk due to less judicious management of that risk. This stems from a reduction in the utilization of bank resources to generate profits in favor of holding more liquidity. Consequently, the initially positive impact of credit risk management on commercial performance may be reversed, turning it into a negative influence when liquidity risk management is taken into account. Therefore, this study aims to investigate the influence of credit risk management on profitability in commercial banks while considering the moderating effect of liquidity risk management.

2. LITERATURE REVIEW

2.1 Literature about the Determinants of Commercial Banks' Performance:

Bank performance is commonly assessed through key metrics such as return on assets (ROA), return on equity (ROE), and the net interest margin (NIM), and is influenced by a combination of internal and external determinants. Internal factors, often termed microeconomic determinants or inherent performance, are juxtaposed with external determinants, representing variables that mirror the economic and legal milieu within which a bank operates. Numerous studies have sought to elucidate the impact of specific variables on bank performance. Notably, authors often encounter varying and sometimes contradictory results, a phenomenon attributed to divergent data sources spanning different regions and time periods.

Researchers adopt diverse approaches, with some exploring performance data across multiple countries, as exemplified by studies such as Molyneux & Thornton (1992), Kunt & Huizinga (1999), Abreu & Mendes (2002), Goddard, Molyneux & Wilson (2004), and Athanasoglou, Delis, & Staikouras (2006). On the other hand, certain scholars, including Berger, Hanweck, and Humphrey (1987) in the context of the United States, and Mamatzakis and Remoundos (2003) focusing on Greece, delve into the intricacies of specific countries. This dichotomy in research focus underscores the diverse perspectives employed in understanding and evaluating bank performance.

2.1.1 The Internal Determinants

1) Size

The impact of size on bank performance is a subject of vigorous debate within the research community, with divergent views leading to classification into three distinct groups. The first group, advocating a positive impact of size on performance, is supported by studies such as Short (1979), Smirlock (1985), Bikker & Hu (2002), and Pasiouras & Kosmidou (2007). Proponents of this view argue that larger banks enjoy cost reductions attributable to economies of scale, and their ability to raise capital at a lower cost contributes to enhanced performance.

Contrarily, the second group, exemplified by the work of Stiroh and Rumble (2006), emphasizes the negative effects of size. They highlight the challenges of managing larger banks, pointing out that extensive size may result from aggressive growth strategies that sacrifice margins and overall performance. Kasman (2010) further contributes to this perspective by identifying a statistically significant and negative impact of size on the net interest margin across a panel of 431 banks in 39 countries.

In the study by Jonghe (2010), the third group contends that small banks exhibit greater resilience in challenging economic conditions. Barros, Ferreira, and Williams (2007) align with this group, asserting that smaller banks are more likely to achieve good performance and less prone to poor results. Conversely, large banks face higher odds of underperforming and greater susceptibility to unfavorable outcomes. Some researchers, like Berger et al. (1987), counter this by responding to the economies of scale argument, suggesting that increased size can lead to reduced costs.

The third group, represented by studies such as Micco, Panizza & Yanez (2007) and Athanasoglou, Brissimis & Delis (2006), maintains that there is no statistically significant impact of size on the performance of banks. This divergence of perspectives underscores the complexity of evaluating the relationship between the size of a bank and its overall performance.

2) **Capitalization**

Capitalization, typically assessed through the Capital to Asset Ratio (CAR), prompts initial considerations suggesting that a higher CAR ratio might diminish the Return on Equity (ROE) for two primary reasons. Firstly, a heightened ratio implies lower risk, aligning with market theories emphasizing a strong inverse relationship between risk and profitability. Secondly, an increased CAR ratio may signify a reduced reliance on debt, implying lower earnings from the tax advantages associated with debt.

However, various studies, including those by Bourke (1989) and Berger (1995), offer comprehensive explanations to justify their findings. One key rationale is that a higher capital level acts as a buffer against the risk of bankruptcy, enabling banks to maintain or even increase their risk exposure by investing in potentially higher-yielding, albeit riskier, assets. This strategic approach leads to improved overall performance.

Moreover, a robust equity position sends a highly positive signal to the market regarding the bank's solvency and low credit risk. Consequently, such well-capitalized banks can negotiate lower financing costs, exemplified by paying reduced interest rates on their debt. Beyond cost advantages, a strongly capitalized bank, when compared to a weakly capitalized counterpart, requires less external borrowing to finance a given level of assets. This reduction in dependence on external funds contributes to enhanced financial stability.

The signal theory further emphasizes the use of equity, even though it is more expensive than debt, to fund projects. This choice communicates the bank's confidence in its projects to the market, signaling that profitability expectations are likely to be met. In summary, a high level of capitalization yields multifaceted benefits, including risk mitigation, cost advantages, reduced reliance on external funding, and positive signaling of confidence in project success.

3) Liquidity

Liquidity is commonly assessed through the ratio of loans to assets, where a higher ratio indicates lower liquidity due to the varying maturities of loan agreements. In times of urgent capital needs, relying on these loans can be challenging as they will only be reimbursed later. Surprisingly, the majority of authors identify a positive relationship between the loan-to-assets ratio and performance, implying a negative link between liquidity and performance. This finding is intriguing, especially in crisis periods where banks actively seek liquidity.

Berger and Bouwman (2009) provide a detailed explanation of the positive impact of liquidity on the value of banks, even though they did not specifically study its impact on performance. According to their reasoning, a bank with a high ratio of loans to assets may be ill-equipped in the face of unforeseen crisis events. Additionally, such a bank is more susceptible to significant losses if urgent asset sales are necessary to meet liquidity needs. The recent financial crisis, marked by a liquidity crunch, exemplifies this perspective.

Contrastingly, other authors like Miller & Noulas (1997) and Naceur & Omran (2010) interpret the loan-to-assets ratio as a measure of credit risk. A higher ratio indicates a greater number of loans, heightening the risk of default (i.e., credit risk). To compensate for this elevated credit risk, banks may increase margins on interest, thereby boosting the Net Interest Margin (NIM) and overall performance.

It's noteworthy that the choice of the ratio as a proxy for liquidity can be debated. Authors argue that the loan-to-assets ratio could be equally interpreted as a measure of liquidity risk rather than credit risk. In this regard, using different ratios, such as cash plus bank deposits or investments in more liquid assets to total assets, might provide a more accurate characterization of liquidity. Bourke (1989) and Molyneux & Thornton (1992) present conflicting findings on the impact of the liquidity ratio on Return on Equity (ROE), with Bourke suggesting that liquidity reserves, especially if imposed by law, act as a burden for banks.

4) Credit Quality

Credit quality, closely related to the concept of credit risk, is commonly evaluated using two ratios: the ratio of provisions for credit losses to total loans and the ratio of provisions for doubtful debts to total loans. These ratios essentially measure the quality of non-credit. As expected, deteriorating credit quality, as found in the study by Liu and Wilson (2010), tends to have negative effects on Return on Assets (ROA) and Return on Equity (ROE). However, the impact on Net Interest Margin (NIM) appears to be positive, as banks aim to increase margins to compensate for the risk of default and additional costs associated with monitoring these credits.

The study by Dietrich and Wanzenried (2011) on the performance of banks in Switzerland provides valuable insights, particularly as it examines the impact of various variables on performance both before and during the financial crisis. Notably, the authors observe changes in the impacts of variables with the onset of the crisis, including the impact of credit quality. Pre-crisis, credit quality did not have a statistically significant impact on bank performance. This lack of impact might be attributed to Swiss banks having few provisions for losses or bad debts at that time. However, the crisis altered the scenario, leading to a substantial increase in such provisions recorded by Swiss banks. Consequently, the authors note a strong positive impact of credit quality on bank performance during the crisis period.

5) Efficiency

Efficiency in banking is commonly measured using ratios such as the cost-to-income ratio or the ratio of overhead costs to total assets. Altunbas, Gardener, Molyneux, and Moore (2001) note significant variations in efficiency levels across Europe, both among different banks and within different banking sectors. Research on the impact of efficiency generally suggests that it positively influences the performance of banks. Studies, such as the one focusing on Greek banks from 1985 to 2001 by Altunbas et al., indicate a positive relationship. The argument is that efficient banks can utilize their resources more effectively, leading to cost reductions and improved overall performance.

This perspective is supported by Liu and Wilson (2010) in their analysis of Japanese banks from 2000 to 2007. Regardless of the performance variable considered (ROA, ROE, and NIM) and irrespective of the type of control (state or private), they find that the cost-to-income ratio has a negative impact on performance. Kunt and Huizinga (1999) also quantify efficiency, discovering that, on average, only 17% of overhead costs were incurred by depositors and other lenders, while the remainder affected performance negatively.

A study by Berger and Humphrey (1997) refines the understanding of the impact of efficiency by examining the relationship between efficiency and size. They find that, on average, larger banks tend to be more efficient than smaller ones. This finding adds nuance to the discussion about the relationship between bank size and performance discussed earlier.

6) Control

The efficiency of banks, particularly in relation to the type of ownership or control (public/nationalized vs. private), has been a subject of extensive research with varying findings. Generally, many authors, such as Iannota, Nocera, and Sironi (2007), Barth, Caprio, and Levine (2004), and Millon, Guo, Khaksari, and Tehranian (2010), tend to show that public or nationalized banks are less efficient than their private counterparts. Several reasons contribute to this perspective:

1. Riskier Loans and Poor Asset Quality: Nationalized banks are often found to grant riskier loans, leading to higher credit risk and poorer asset quality.
2. Weaker Solvency Ratios: Public banks are reported to have weaker solvency ratios compared to private banks.
3. Low Core Capital Ratio: Nationalized banks may have a lower "core capital" ratio, indicating potentially inadequate capitalization.

Cornett, McNutt, and Tehranian (2010) point out that differences in performance between private and public banks are more pronounced in countries where political interference in the banking system is high, coupled with political corruption. They attribute these results to the general inefficiency of nationalized banks and highlight potential conflicts of interest, where politicians may prioritize political interests over public welfare.

However, some studies provide nuanced perspectives. Micco, Panizza, and Yanez (2007) find that the impact of control on performance is more significant in developing countries, where nationalized banks exhibit lower performance, margins, and higher overhead. In developed countries, this relationship is less pronounced. Dietrich and Wanzenried (2011), studying Switzerland, confirm that nationalized banks are generally less efficient than private banks, except during a crisis. Interestingly, during the financial crisis, nationalized banks were considered safer and better managed than private institutions.

It's worth noting that not all studies find statistically significant impacts on the type of control over bank performance. Athanasoglou, Brissimis, and Delis (2008) and Molyneux and Thornton (1992) present findings that are not consistent with the broader trend, with Molyneux and Thornton even suggesting that, during the 1980s, nationalized banks were more efficient than private banks in eighteen European countries. The variations in findings may be attributed to factors such as the time period, country-specific conditions, and the methodology employed in each study.

7) Degree of Diversification

The degree of diversification in banks, often measured by the ratio of non-interest income related to loans on operating income, has been a topic of research with mixed findings. Most studies on this subject suggest a negative effect of diversification on bank performance, contrasting with the positive effect found by Dietrich and Wanzenried (2011). Here are some common trends in the literature:

1. Negative Impact on Performance: Many studies indicate that banks with a large share of their assets not earning interest tend to be less profitable. The negative impact on performance is often attributed to the reduced effectiveness of diversification in improving the risk-return trade-off.
2. Less Profitability: Banks with a higher proportion of non-interest income, which includes fees, trading income, and other sources unrelated to interest on loans, are found to be less profitable in several studies.
3. No Improvement in Stability: Barros, Ferreira, and Williams (2007) suggest that diversification within an institution does not necessarily improve the stability of the banking system. This contradicts the notion that diversification could enhance overall financial stability.

It's important to note that the positive effect found by Dietrich and Wanzenried (2011) might be an outlier or context-specific. Divergent findings across studies could be due to variations in time periods, regional economic conditions, and the methodologies used.

Overall, the general trend in the literature suggests caution regarding the assumption that diversification into non-interest income activities uniformly improves bank performance. The specific impact may depend on various factors, and the relationship between diversification and performance may not be straightforward.

8) Amount of Bank Deposits

The impact of the level of bank deposits on bank performance is a nuanced issue, and researchers have debated the potential effects. As you mentioned, two opposing arguments can be considered:

1. Stability and Cost-Effectiveness of Deposits: A high level of deposits can be seen as positive for bank performance because these deposits are generally considered more stable than borrowed funds. Stable deposits provide a reliable and consistent source of funding for the bank. Additionally, deposits are often less expensive compared to funds obtained through borrowing or other sources.
2. Operational Costs and Management: On the other hand, managing a large volume of deposits can incur significant operational costs. Maintaining branches, specialized teams, and other infrastructure for deposit management can be expensive. This could potentially offset the benefits of stable funding and lower costs associated with deposits.

The study by Kunt and Huizinga (1999), as you mentioned, supports the argument that the high costs associated with managing deposits can have a negative impact on the performance of banks. This suggests that while deposits offer stability, the operational and management expenses associated with them may counterbalance the advantages.

It's worth noting that the impact of deposit levels on bank performance can vary based on factors such as the overall economic environment, regulatory conditions, and the specific strategies and operations of individual banks. As with many aspects of banking research, the relationship between deposits and performance is complex and context-dependent.

9) Governance

Beltratti and Stulz (2009) have contributed to the discussion on the impact of corporate governance on bank performance, particularly during the financial crisis. The Corporate Governance Quotient (CGQ) they employed is a comprehensive measure considering various aspects of governance, including board composition, remuneration structures, and the presence of independent audit committees.

Their findings, as you mentioned, challenged the widespread belief that higher corporate governance ratings would lead to better bank performance during the crisis. The study indicated that banks with higher CGQ ratings did not necessarily perform better in weathering the crisis. This raised questions about the effectiveness of certain governance practices in preventing or mitigating financial crises.

The observation that banks with boards closer to shareholders experienced worse performance during the crisis adds complexity to the understanding of the relationship between governance and performance. It suggests that the dynamics of governance and performance are intricate and may vary based on the specific circumstances of each bank.

The issue of aligning executive compensation with long-term interests, often through stock options with extended vesting periods, is a common theme in discussions on corporate governance. However, Beltratti and Stulz's findings cast some doubt on the straightforward efficacy of such measures in preventing crises.

Identifying relevant variables to better cope with future crises is crucial. The intricate nature of the relationship between governance and performance suggests that a one-size-fits-all approach may not be effective. Instead, a nuanced understanding of each bank's specific circumstances and risks may be necessary to implement more targeted and effective risk management strategies.

In summary, the study by Beltratti and Stulz contributes to the ongoing dialogue about the role of corporate governance in banking, challenging some conventional wisdom and prompting a deeper exploration of the factors influencing bank performance, especially during times of crisis.

10) The Market Share

The impact of market share on bank performance, as studied by Liu and Wilson (2010), reveals an interesting dynamic that depends on the size and strategies of banks. The negative relationship between market share and performance, especially in terms of Net Interest Margin (NIM), seems to be influenced by the behavior of banks with low market share and those with significant market share.

1. Banks with Low Market Share:

These banks may adopt aggressive growth strategies to increase their market share. To compete with larger banks, they might be more inclined to offer loans to riskier individuals or engage in riskier activities that larger banks might avoid. The higher interest rates on these riskier loans could contribute to an increase in their Net Interest Margin (NIM), positively impacting short-term performance

2. Banks with Significant Market Share:

Larger banks may use their market dominance to suppress competition by reducing interest rate margins. This strategy, while potentially ensuring stability or dominance in the long term, might lead to a decrease in short-term NIM and overall performance.

These contrasting behaviors highlight the trade-offs and challenges associated with market share. Small banks, seeking growth, may take on higher risks for short-term gains, while larger banks, aiming to maintain or expand their dominance, might compromise short-term NIM for long-term stability.

It's important to note that these findings may vary across different banking environments and regulatory frameworks. Additionally, the impact of market share on performance is likely influenced by various factors such as market structure, competition levels, and the overall economic environment.

Understanding these dynamics can help policymakers and banking institutions make informed decisions about market strategies, risk management, and competition to achieve a balanced and sustainable performance over time.

2.1.2 The External Determinants

1) The Inflation

The exploration of inflation's impact on bank performance was pioneered by Revell (1979), revealing a nuanced relationship influenced by the growth rate in operating expenses. When operating expenses outpace inflation, a negative impact on performance occurs. Conversely, if the growth rate is lower, a positive impact ensues. Building upon this model, subsequent researchers like Molyneux & Thornton (1992) and Kunt & Huizinga (1999) supported the notion of a positive and statistically significant relationship.

Expanding the analysis, some scholars, such as Afanasieff, Lhacer, and Nakane (2002), asserted that inflation negatively affects interest margins. Naceur and Kandil (2009) provided an insightful explanation, highlighting those banks, primarily engaged in lending, operate within a credit market driven by both supply (banks) and demand (individuals and businesses). Inflation induces uncertainty about the future, diminishing the demand for credit. This reduction in lending, triggered by heightened uncertainty, leads to a decline in bank performance. The extent of this impact is further accentuated by the varying levels of risk aversion among individuals and businesses in the face of increased uncertainty (ambiguity-aversion).

2) GDP Growth

It might be tempting to assume that economic activity growth, as measured by GDP, invariably positively influences bank performance. The logic follows that during periods of high growth, increased investment and consumption lead to higher credit demand, ultimately enhancing banks' performance. This perspective aligns with the findings of several studies, including those by Arpa, Giulini, Ittner & Pauer (2001) and Schwaiger and Liebig (2008).

However, it's crucial to note that not all research reaches this consensus. For instance, Gaspar et al. (2002), examining the European context, concludes that while this relationship holds in Western Europe, it is essentially zero for banks in Eastern Europe. Moreover, Bernanke and Gertler (1989) propose an intriguing counterintuitive finding: an inverse relationship between GDP growth and bank performance. Their explanation revolves around the idea that during economic recessions, the risk of borrower default surges. In response, banks raise interest rates on loans to mitigate this heightened risk, thereby improving their performance.

3) The Tax

Only a limited number of authors have delved into measuring the impact of taxation on the performance of banks, presenting an area that warrants further research. The anticipated result, a negative impact, aligns with expectations. It is straightforward to comprehend why: taxes are subtracted from the earnings, directly influencing metrics such as ROA and ROE. However, a study conducted by Albertazzi and Gambacorta (2009) yields a surprising finding of a minimal impact of taxation on performance. The authors argue that banks can readily shift the burden of their taxes onto other stakeholders, including depositors, borrowers, and customers paying commissions. This nuanced perspective challenges the conventional assumption regarding the direct negative influence of taxation on bank performance.

4) Market Concentration

Without delving into intricate details, it is worth noting the conflicting perspectives of two theories regarding the impact of concentration on bank performance. The first theory, known as "Structure Conduct Performance" (SCP), posits that an increase in market share and concentration results in monopoly powers. On the other hand, the second theory, "Efficient-Structure" (ES), challenges this notion. The findings of Molyneux & Thornton (1992) indicate a positive and statistically significant impact of the bank concentration ratio on performance, aligning with the SCP theory. However, other studies, including those by Kunt & Huizinga (1999) and Staikouras & Wood (2004), yield precisely the opposite result, seemingly supporting the ES theory. This divergence underscores the complexity of the relationship between concentration and bank performance, leaving room for continued exploration and analysis.

5) The Maturity of the Banking Sector

Kunt & Huizinga (1999) stand out as a minority in exploring the link between bank performance and the maturity of the entire banking system, gauged by its size or developmental stage. In their 1999 study, the authors propose a negative correlation between the size of the banking sector and individual bank performance. They argue that in more saturated banking markets with numerous participants, heightened competition ensues, gradually diminishing the maximum performance achievable by each entity. This conclusion is further substantiated in a subsequent 2001 study where the authors, using data spanning various countries from 1990 to 1997, delve into the relationship

between bank performance and financial market development, emphasizing the impact of market complexity on competition and subsequently on performance. Their findings indicate a statistically significant trend: a developed banking system tends to curtail individual bank performance due to increased competition.

6) The Stock Market

Naceur and Omran (2010) focused not only on the direct relationship between the immediate market valuation of banks and their performance indicators such as ROE, ROA, and NIM, but also considered the broader context of stock market development. Their analysis revealed that banks operating in regions with well-developed stock markets tend to achieve higher profits compared to banks in areas where the stock market is less developed. This suggests a correlation between the level of stock market development in a region and the financial performance of banks operating within that market.

7) The Choice of a Country

Several studies, including those conducted by Albertazzi & Gambacorta (2009), Porta, Silanes, Shleifer & Vishny (1997), and Stulz, Williamson (2003), have consistently identified significant variations in performance among banks in different countries. These studies suggest that differences in legal systems, accounting rules, cultures, and religions play a crucial role in explaining the disparities in economic growth and business development across borders. In their examination of European banks spanning from 1993 to 2001, these researchers arrived at similar conclusions. Importantly, they introduced a nuanced perspective by emphasizing that variations in performance between countries during a specific period do not automatically imply that choosing a particular country inherently provides a performance advantage over its competitors.

2.2 Literature about the Impact of Credit Risk Management on Commercial Banks Performance:

Empirically, the impact of credit risk on banks' profitability exhibits considerable variation within the banking sector. Numerous studies have validated the inverse correlation between credit risk, measured through metrics like loan loss to gross loan, non-performing loan (NPL), loan loss to net loan, and impaired loan to gross loan, and bank profitability (Cucinelli, 2015; Ekinci and Poyraz, 2019; Islam and Nishiyama, 2016; Laryea et al., 2016). For instance, Noman et al. (2015), examining 18 banks in Bangladesh

from 2003 to 2013, underscore the significant negative impact of credit risk on banks' profitability. Similarly, Cucinelli (2015) and Laryea et al. (2016) corroborate the detrimental influence of credit risk, as measured by NPLs and loan loss provision ratio, on bank performance across Italian and Ghanaian banks, respectively. Bitar et al. (2016) delve into the effect of capital requirements and regulatory capital ratio on bank performance in the MENA region, revealing that adherence to Basel capital requirements enhances banks' resilience to risk and augments performance. Conversely, Islam and Nishiyama (2016) find a negative yet statistically insignificant impact of credit risk on the profitability of South Asian commercial banks, as indicated by net interest margin.

In the African context, Ozili (2017) highlights how elevated NPLs stemming from substandard lending practices can ultimately dampen bank profitability. Paroush and Schreiber (2019) conclude from their study spanning 1995 to 2015 that credit risk, as indicated by loan loss provision to gross loans, is inversely related to profitability measured by return on average (ROA), whereas capital adequacy ratio demonstrates a positive correlation with profitability in US banks. Serwadda (2018) scrutinizes the effect of credit risk management on commercial banks in Dhaka, revealing that while NPLs and loan loss provision to total loans are negatively associated with return on equity (ROE) and ROA, capital adequacy ratio and loan to deposit ratio positively impact performance.

Ekinci and Poyraz (2019) analyze the impact of credit risk on 26 commercial banks in Turkey between 2005 and 2017, observing a negative relationship between credit risk, proxied by NPLs, and performance measured by ROA and ROE. Abbas et al. (2019) explore the influence of credit risk, specifically loan loss provision ratio, on the profitability of 174 commercial banks in Asian developed economies post-crisis (2011–2017), finding a significant negative impact on large and medium-sized commercial banks, but not on smaller banks.

Recently, Saleh and Abu Afifa (2020) investigate the impact of credit risk on 13 Jordanian commercial banks post-financial crisis (2010–2018), revealing a negative impact on ROA and net interest margins (NIM), though not on ROE. Abdelaziz et al. (2020) examine the relationship in 38 commercial banks in the MENA region from 2004 to 2015, employing seemingly unrelated regression to reveal a significant negative impact of credit risk (NPLs) on bank profitability (ROA and ROE).

However, a few studies suggest a positive correlation between credit risk and performance (Abdelaziz et al., 2011; Flamini et al., 2009), possibly attributed to their measure of credit risk. These studies utilize the loan to asset ratio as a proxy for credit risk. Banks with higher loan to asset ratios often accrue more interest revenues, thereby enhancing profitability. While Flamini et al. (2009) studied a sample of nine Tunisian banks spanning 1980 to 2009, Hakimi Abdelaziz et al. (2011) examined 389 banks across 41 sub-Saharan African countries from 1998 to 2006.

2.3 Literature about the Impact of Liquidity Risk Management on Commercial Banks Performance:

The empirical literature examining the relationship between liquidity or liquidity risk and financial performance (FP) remains limited, yielding inconclusive findings. On one hand, higher liquidity (indicating lower liquidity risk) suggests a bank's resilience to liquidity crises and runs, correlating with better performance (Ferrouhi, 2014). Conversely, a surplus of liquidity might entail a downside of holding excessive assets in liquid form rather than in income-generating assets, implying a negative association between liquidity levels and FP (Molyneux and Thornton, 1992).

Numerous studies affirm the adverse relationship between liquidity risk and bank performance (Arif and Nauman Anees, 2012; Ly, 2015; Tabari et al., 2013). Hakimi et al. (2017) examine this relationship in a sample of 10 Tunisian banks from 1990 to 2013, confirming the negative impact on FP using random effects. Adelopo et al. (2018) analyze a sample of 123 banks from 1999 to 2013, revealing that liquidity risk diminishes bank profitability across all study sub-periods (pre, during, and post-financial crisis).

Chen et al. (2018) investigates this relationship in an unbalanced dataset of commercial banks across 12 developed economies from 1994 to 2006, finding that liquidity risk discounts return on average assets (ROAA) and return on average equity (ROAE), while inversely affecting net interest margin (NIM).

Abbas et al. (2019) demonstrate that irrespective of bank size, the ratio of liquid assets to total assets positively impacts the performance of commercial banks in Asian developed economies, reinforcing the negative correlation between liquidity risk and performance.

Recent research by Hamdi and Hakimi (2019) using a large sample spanning 127 countries from 2005 to 2015 unveils a nonlinear relationship between liquidity risk and bank profitability, contingent upon an optimal threshold. Furthermore, their panel smooth transition regression model, split into high-income and low- to middle-income countries, reveals varying effects and optimal thresholds based on country classification.

Saleh and Abu Afifa (2020) corroborate the negative relationship between liquidity risk and bank performance, measured by ROAA and ROAE, albeit finding no significant link with NIM in a sample of 13 Jordanian commercial banks. Similar findings were observed in MENA from 2004 to 2015 (Abdelaziz et al., 2020).

Conversely, Islam and Nishiyama (2016) find a positive yet insignificant impact of liquidity risk on profitability concerning net interest margin. Cucinelli (2015) in Europe and Sahyouni and Wang (2018) across various countries find insignificant associations between liquidity and the probability of default in the long run, while the amount of liquidity creation negatively affects bank profitability in Brazil, Russia, India, China, South Africa, and G7 countries (excluding the USA) from 2011 to 2015.

While some studies emphasize the critical importance of liquidity risk management, others advocate a contrary view, supporting a negative relationship between liquidity and performance in developed economies (Europe and the USA). Additionally, some studies uncover a negative relationship between liquidity and risk-taking behavior (Hunjra et al., 2021).

2.4 Literature about Joint impact of credit risk and liquidity risk on bank performance:

According to Mishkin and Eakins (2018), banks possess the capability to mitigate impediments to financial intermediation, particularly the challenges of moral hazard and adverse selection. These obstacles stem from the theory of information asymmetry, wherein one party suffers a disadvantage due to the behavior of another party. Effective risk management practices are therefore essential for banks to address this dual information asymmetry, thereby promoting financial stability and bolstering the economy.

In the aftermath of the financial crisis, there has been heightened attention towards understanding the sources of risk. This has underscored the importance of banks implementing robust risk management frameworks and evaluating the interconnectedness of various risks they encounter. Our study contributes to this discourse by examining the combined impact of credit and liquidity risk management on bank performance, particularly within the MENA region.

Previous research primarily focused on assessing the causal relationship between credit and liquidity risks or their joint impact on bank stability (Djebali and Zaghdoudi, 2020). This body of literature presents two main perspectives. The first, rooted in financial intermediation theory, suggests that credit risk and liquidity risk are intertwined. Empirical evidence by Diamond and Rajan (2005) and He and Xiong (2012) supports a positive relationship between credit risk management and liquidity risk management. Ghenimi et al. (2017) demonstrate that both risks individually impact bank stability in the MENA region, with their interaction exacerbating instability.

Alternatively, a less prevalent view suggests a negative or negligible relationship between liquidity and credit risks (Cai and Thakor, 2008; Wagner, 2007). For instance, Imbierowicz and Rauch (2014) find no significant economic relationship between these risks in US commercial banks. However, many of these studies rely on traditional liquidity ratios, which may not accurately capture liquidity exposure (Saunders and Cornett, 2017).

Abdelaziz et al. (2020) investigate the interaction between credit risk (measured by non-performing loans to gross loans) and liquidity risk (measured by loans to deposits) on MENA bank performance (return on assets and return on equity), revealing a negative sensitivity of bank profitability to the interaction between these risks. This highlights the complexity and significance of understanding the interplay between credit and liquidity risks in shaping bank performance and stability.

The primary objective of this study is to empirically examine the impact of credit risk management on bank performance. Credit risk management plays a vital role for all firms, as neglecting it may significantly affect firm performance and viability. The researcher added another independent variable, which is liquidity risk management. Finally, he moderates (interacts) the multiplication of the two independent variables—credit risk management and liquidity risk management—to get more robust results. Therefore, the 3 hypotheses of this study can be formulated as follows:

H1: There is a significant impact of credit risk management on bank performance.

H2: There is a significant impact of liquidity risk management on bank performance.

H3: Liquidity risk management moderates the impact of credit risk management on bank performance.

3. METHODOLOGY

3.1 Data and Sample Selection

Egyptian national banks have historically played a crucial role in the country's economy, particularly during times of crisis. In addition to their commercial functions, public banks in Egypt also serve developmental purposes, a role that has been further emphasized by recent government initiatives towards sustainable development and finance. The Central Bank of Egypt (CBE) has spearheaded efforts to promote sustainable finance by subsidizing loans to various sectors such as SMEs, industry, agriculture, housing, and environmental projects aimed at reducing carbon emissions. The CBE's principles on sustainable finance provide guidelines for Egyptian banks to align with sustainable development goals (SDGs) through six key principles focusing on environmental protection, social considerations, governance, and reporting (CBE, 2021).

Furthermore, public banks, under the CBE's oversight, engage in corporate social responsibility (CSR) activities addressing critical community needs such as education, healthcare, housing, and empowerment programs for women and people with disabilities. While these activities are primarily humanitarian, they indirectly contribute to development. The major national banks in Egypt, including the National Bank of Egypt, Banque Misr, and Banque du Caire, adhere to the Central Bank's directives regarding lending rates and national strategies. Financial inclusion and support for entrepreneurship are key priorities, with a significant portion of lending directed towards SMEs, particularly in response to the COVID-19 pandemic, which has accelerated the adoption of digital banking services.

Apart from commercial banks, Egypt also has public development banks, albeit with limited roles compared to commercial banks. These include institutions like the National Investment Bank, Egyptian Agricultural Bank, Nasser Social Bank, Housing and Development Bank, Industrial Development Bank, and Export Development Bank of Egypt. However, commercial banks, especially government-owned ones, are primarily responsible for implementing development-related activities. This analysis focuses on the three largest commercial banks dominating the Egyptian market.

The National Bank of Egypt (NBE), founded in 1898, holds a pivotal position in Egypt's financial landscape. It actively participates in economic reforms, offering various financial services and contributing significantly to Egypt's economic development through its lending activities. NBE emphasizes sustainability in its business strategy, aligning with UN SDGs and Egypt Vision 2030, with priorities including financial inclusion, SME support, green financing, and community investment. The bank's lending portfolio covers diverse sectors, including mining, construction, real estate, and food and beverage, reflecting its commitment to industrial growth and economic diversification (https://www.nbe.com.eg/).

Banque Misr (BM), with its extensive branch network and diverse banking services, plays a crucial role in supporting different industries and promoting inclusive development. BM prioritizes financial inclusion, particularly for marginalized communities, and supports SMEs through various financing programs and initiatives. Its partnerships with international organizations like the International Finance Corporation (IFC) highlight its commitment to empowering women entrepreneurs. Moreover, BM actively engages in corporate social responsibility, investing in community welfare projects and infrastructure development (https://www.banquemisr.com/).

Banque du Caire (BdC), another major player in Egypt's banking sector, focuses on financial inclusion and sustainable development, particularly through microfinance and SME support. The bank offers a range of financing services and non-financial support to SMEs, including capacity building and educational programs. BdC's involvement in community development extends to initiatives aimed at youth empowerment, healthcare, and social welfare, reflecting its commitment to broader societal goals beyond financial profitability (https://www.bdc.com.eg/).

The research examines the performance of commercial banks by utilizing Return on Assets (ROA), which is calculated as the ratio of net income to total assets (Chen et al., 2018; Serwadda, 2018). The study encompasses a period from 2012 to 2022, capturing the post-financial crisis of 2008 and the January 25th revolution in 2011, drawing yearly data from the financial statements of three aforementioned commercial banks (source: Thomson Reuters). Independent variables utilized in the analysis span the same timeframe and are derived from nationwide data sources pertaining to Egypt's financial landscape (sources: CEIC Data, Statista, World Bank). These variables include Egypt's Capital Adequacy Ratio (CAR), which gauges the

credit risk management of Egypt, and Egypt's Liquid Assets Ratio (LAR), evaluating the country's liquidity risk management. Additionally, an interactive variable (CAR x LAR) is introduced to delve deeper into the interaction between Egyptian credit risk management and liquidity risk management. CAR signifies the adequacy of capital held by deposit-taking institutions, computed as the ratio of total regulatory capital to weighted assets. On the other hand, LAR measures the ratio of liquid assets, such as cash and easily convertible assets, to short-term funding and total deposits. The interaction variable (CAR x LAR) elucidates the dynamic interplay between CAR and LAR, as observed in previous literature (Imbierowicz and Rauch, 2014; Harb et al., 2022).

A bank is deemed insolvent when its net worth turns negative, defined as the variance between the market value of its assets and liabilities (refer to Vino et al., 1977, for a detailed discussion on capital adequacy). Capital plays multifaceted roles within banking operations. Initially, any newcomer to the banking sector must adhere to minimum capital requirements. Moreover, capital furnishes a bank with the necessary resources to facilitate asset expansion and pursue growth objectives. Profit carried forward denotes earnings from banking activities that management intends to reinvest in the institution. Reserves represent a segregated account where profits are allocated for reinvestment. Capital stands as the initial cost of entry for a bank into the banking system. Holding all else constant, a higher capital ratio (i.e., the equity of a bank) enhances the institution's capacity to withstand external shocks or unforeseen losses. Capital adequacy serves as a gauge of a bank's financial robustness and is pivotal in fostering depositors' confidence in the banking system, thereby contributing to financial stability at large. It's imperative for banks to maintain a substantial amount of owner's capital relative to the loans extended and their associated risks. Recent proposals by the Basel Committee on Banking Supervision (BCBS) have expanded the framework for capital adequacy. Basel capital accords introduced capital ratios as indicators of risk management strength. The Capital Adequacy Ratio (CAR) functions as a cushion against losses in the event of loan defaults. A higher CAR is correlated with lower credit risk and improved performance (Hakim & Neaime, 2001; Suka et al., 2019). The Liquid Assets Ratio reflects a bank's overall liquidity position and its ability to withstand liquidity shocks (Ab-Rahim and Chiang, 2016). Recognizing the pivotal roles of these two ratios, the researcher employs indicators to gauge the strength of credit risk management and liquidity risk management, particularly at the national level, laying the groundwork for their research.

3.2 Analytical framework

This study involves an empirical inquiry utilizing yearly time-series data spanning from 2012 to 2022. It employs four statistical procedures: factor analysis (specifically the first principal component analysis), descriptive analyses, the KPSS unit root test for time-series adjustments, and both simple and multiple linear regression analyses.

3.2.1 Factor (1st. principal component) analysis

1) Constructing index

Principal component analysis (PCA) is utilized to extract common elements from the variables of return on assets (ROA) and return on equity (ROE). The researchers opt for the first principal component analysis method to construct indexes for both variables. Essentially, the first principal component of a set of time series dataset variables is a linear combination of variables and constants chosen to capture the maximum joint variation of the entire time-series data. In simpler terms, PCA serves as a means of reducing variables.

When working with multiple variables in a dataset, if there is redundancy among these variables—meaning that they are related to each other, possibly because they measure the same underlying structure—PCA can be highly beneficial. By isolating the principal components, which are artificial variables derived from the original dataset, PCA aims to explain most of the variation in the observed variables. These principal components can then be utilized for prediction or standardization purposes in the analysis of results.

Technically, a principal component is a linear combination of the observation variables weighted optimally. The number of components extracted through PCA corresponds to the number of observed variables examined. It's important to note that PCA does not assume any underlying causal model. Instead, it is solely a method of variable reduction, typically resulting in a small number of components that effectively explain the majority of the variation in the observed dataset variables.

2) Assessment of the suitability of the data for factor analysis

Principal component analysis typically requires a sizable sample size to yield reliable and appropriate results. To ensure usability, it is recommended that the minimum number of subjects providing data for analysis be at least one hundred subjects or five times the number of variables being analyzed, whichever is greater. The factors derived from a small dataset may differ from those obtained using a larger sample. However, some authors argue that the focus should not solely be on the overall sample size.

Two additional statistical measures aid in assessing the data decomposition: the Bartlett sphericity test and the Kaiser-Meyer-Olkin (KMO) measurement of sampling adequacy. The Bartlett sphericity test, as suggested by Singh et al. (2022), should yield a significant result (with a p-value less than 0.10) to indicate a well-constructed factor analysis. On the other hand, the KMO index, introduced by Kaiser (1960, 1970, 1981) and Kaiser & Rice (1974), ranges from 0 to 1. A value of at least 0.5 is recommended as the minimum threshold for a satisfactory principal component analysis. These guidelines are commonly referenced in the literature (Tabachnick & Fidell, 2007; Pallant, 2005).

3.2.2 Descriptive Analysis

Descriptive analysis is a method used to reveal the characteristics or distribution of sample or population data. It achieves this by examining observed data through various means such as tables, frequency distributions, graphs, diagrams, pictograms, medians, means, and variations among groups using standard ranges and deviations (Anggraeni et al., 2021). This approach provides a comprehensive overview of the data, allowing researchers to understand its structure and key features without making inferences or predictions about underlying relationships.

3.2.3 KPSS Unit Root Test for Time-Series Adjustments

In the realm of time-series analysis, the presence of trends or non-stationary behavior is a common occurrence, particularly in financial series like stock price indices. Non-stationary series, unless co-integrated with other non-stationary series, can result in spurious regressions, especially when investigating relationships over extended sample periods. Given the 11-year duration covered in this study, changes in market structure, competition, technology, and financial market activities may contribute to non-stationarities in the data series.

To tackle the issue of stationarity in time series data, various unit root tests can be employed. In this study, the researcher selects the Augmented Dickey-Fuller (ADF) test and the Kwiatkowski, Phillips, Schmidt, and Shin (KPSS) test, opting out of the Phillips-Perron (PP) test due to its tendency to yield similar conclusions to the ADF test. While the ADF test is critiqued for its low power when the process is nearly non-stationary, the researcher primarily relies on the KPSS test proposed by Kwiatkowski et al. (1992), where the null hypothesis asserts that the series is stationary.

During the KPSS test, the researcher computes the T-statistic and compares it to critical values at various significance levels. If the test statistic falls below the critical values, the null hypothesis of stationarity is retained. Conversely, rejection of the null hypothesis indicates the presence of a unit root in the series. The researcher must specify whether to include a constant, a constant and a linear trend, or neither in the test regression. In this study, both a constant and a linear trend are included, representing a general specification applicable to growing macro-economic time series.

The standard KPSS test may exhibit size distortion for highly autoregressive processes due to semiparametric heteroskedasticity and autocorrelation consistent covariance estimator (HAC) with a positive finite sample bias. To address this, the researcher proposes an automatic version of the KPSS test that reduces size distortion without sacrificing consistency, thereby mitigating concerns related to both overestimation and underestimation (Hobijn, Franses, & Ooms, 2004).

3.2.4 Simple and Multiple Linear Regression Analyses

To assess how credit risk management influences the performance of commercial banks in Egypt, this study conducts simple and multiple linear regression models. The description of the estimated models is detailed below:
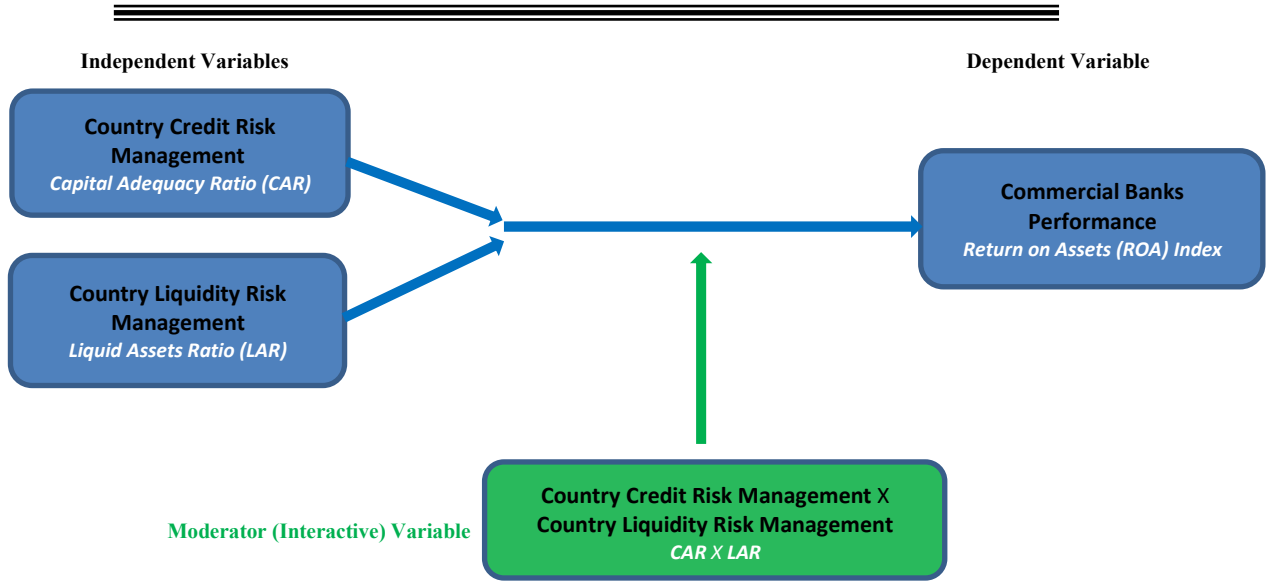
$$\text{ROA Index}_{t+1} = \alpha + \beta_1 CAR_t + \varepsilon_{t+1} \tag{1}$$

$$\text{ROA Index}_{t+1} = \alpha + \beta_1 CAR_t + \beta_2 LAR_t + \varepsilon_{t+1} \tag{2}$$

$$\text{ROA Index}_{t+1} = \alpha + \beta_1 CAR_t + \beta_2 LAR_t + \beta_3 CAR*LAR_t + \varepsilon_{t+1} \tag{3}$$

In this context, α represents a constant value, while β_1 through β_3 stand for the coefficients assigned to various study variables.

Figure 1 illustrates the main empirical model employed for analysing the hypotheses in this study, presented as follows:

Source: prepared by the researcher

(**Figure 1**: The General Empirical Model)

4. RESULTS AND DISCUSSION

4.1 Factor (1st. Principal Component) Analysis

The empirical results of this paper indicate that both the Bartlett test and the Kaiser-Meyer-Olkin (KMO) measure are deemed valid for the Return on Assets (ROA) Index across the three banks, as demonstrated in Table 1 below:

Table 1: KMO and Bartlett's Test to Assess the Factorability of the Data

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.519
Bartlett's Test of Sphericity	Approx. Chi-Square	30.627
	df	3
	Sig.	.000

The table above indicates that Bartlett's test of sphericity yields a significant result with a value of .000, which is below the 1% significance level. Additionally, the first principal component accounts for 51.9% of the sample variation from the orthogonalized variables.

Furthermore, Table 2 presents the resulting matrix of the first principal component for the derived index, which has been automatically calculated:

Table 2: First Principal Component Matrix

ROA_NBE	.910
ROA_BM	.991
ROA_BDC	.919

Therefore, the ROA Index can be constructed using the first principal component matrix provided in Table 2, according to the following equation:

ROA Index = .910 ROA_NBE

+ .991 ROA_BM

+ .919 ROA_BDC

4.2 Descriptive Analysis

In Panel A of Table 2, the summary statistics reveal key insights into the ROA Index, along with associated variables. Specifically, the ROA Index ranges from 3.32% to 4.67%, with a mean and median of 4.37% and 4.67% respectively, and a standard deviation of 0.54%. The capital adequacy ratio spans from 13.04% to 22.50%, with a mean of 16.19%, a median of 15.60%, and a standard deviation of 3.12%. As for the liquid assets ratio, it varies from 13.45% to 52.02%, with a mean of 37.90%, a median of 39.25%, and a standard deviation of 11.88%. The moderator variable CAR*LAR fluctuates between -211.17 and 1055.86, with a mean of 2620.53, a median of 627.93, and a standard deviation of 246.51.

In Panel B of Table 2, the concurrent bivariate correlations among the analyzed variables are outlined. Initially, the correlations between each independent variable and the dependent variable are all below 0.80, indicating no significant multicollinearity (Gujarat, 2003). These correlations exhibit diverse signs, potentially aligning or deviating from expected directions based on existing theories and literature. However, it's crucial to note that correlation implies a linear relationship and does not establish causation (Ratner, 2009). Therefore, the researcher turns attention to the regression coefficients within the regression model to precisely ascertain directional effects.

Table 2: Describing Research Variables

Panel A: Descriptive Statistics

	Capital Adequacy Ratio	Liquid Assets Ratio	CAR x LAR	ROA Index
Mean	16.19	37.90	620.53	4.37
Median	15.60	39.25	627.93	4.67
Standard Deviation	3.12	11.88	246.51	0.54
Minimum	13.04	13.45	211.17	3.32
Maximum	22.50	52.02	1055.86	4.67

Panel B: Correlations Matrix

	Capital Adequacy Ratio	Liquid Assets Ratio	CAR x LAR	ROA Index
Capital Adequacy Ratio	1			
Liquid Assets Ratio	0.21	1		
CAR x LAR	0.66	0.76	1	
ROA Index	0.38	0.73	0.79	1

4.3 KPSS Unit Root Test for Time-Series Adjustments

The results depicted in Table 3 demonstrate that the null hypothesis of stationarity is confirmed for all time-series examined. Put differently, the KPSS test statistics for all variables analyzed in the paper fall below the critical value at the 1% significance level (0.739000).

Table 3: Unit Root (KPSS) Test

Series to be Tested	1% Critical Value	KPSS Statistic
Before Differencing		
Capital Adequacy Ratio		0.367604
Liquid Assets Ratio		0.320834
CAR X LAR	0.739000	0.449014
ROA		0.368913

4.4 Simple and Multiple Linear Regression Analyses

Table 4 illustrates the findings of Model 1, indicating that the primary driver of the ROA Index, specifically the Capital Adequacy Ratio, consistently shows a positive and noteworthy impact. The model demonstrates adequacy with an adjusted R-squared value of 4.6%, and the F-statistic is significant at a level lower than 1%.

In Table 5, which presents Model 2, both the Capital Adequacy Ratio and the Liquid Assets Ratio display a positive and significant correlation at a significance level of 0%. The independent variables in this model contribute to an adjusted R-squared value of 0.4%. Furthermore, the F-statistic is significant at a level lower than 1%, indicating a strong fit for the model.

Table 6 exhibits Model 3, where both the Capital Adequacy Ratio and the Liquid Assets Ratio show a positive and significant relationship at a significance level of 0%. Additionally, the interaction variable (CAR*LAR) reveals a negative and significant association at the same significance level. Together, the independent variables account for an adjusted R-squared value of 75.5%, suggesting a thorough explanation of the firm performance variable. The F-statistic remains significant at a level lower than 1%, indicating a robust fit for the model.

Table 4: Simple Regression Analysis (Model 1)

Variable	Coefficient	T	Sig. T
Capital Adequacy Ratio	0.263162	17.85386	0.0000
R^2	.094		
Adjusted R^2	.046		
F	1.477		
Sig. F	0.000		

(Source: EViews 13 Depending upon Equations (1))

Table 5: Multiple Regression Analysis (Model 2)

Variables	Coefficient	T	Sig. T
Capital Adequacy Ratio	0.149787	4.585283	0.0013
Liquid Assets Ratio	0.049484	3.641124	0.0054
R^2	0.103		
Adjusted R^2	0.004		
F	10.632		
Sig. F	0.0056		

(Source: EViews 13 Depending upon Equations (2))

Table 6: Multiple Regression Analysis (Model 3)

Variables	Coefficient	T	Sig. T
Capital Adequacy Ratio	0.193819	10.71061	0.0000
Liquid Assets Ratio	0.099028	8.684411	0.0000
CAR X LAR	-0.004061	-5.374858	0.0007
R^2	0.806		
Adjusted R^2	0.757		
F	11.154		
Sig. F	0.0047		

(Source: EViews 13 Depending upon Equations (3))

5. DISCUSSION, CONCLUSION & SUGGESTIONS

1. Discussion

The present study delves into the interplay between Egyptian credit risk management and its impact on the performance of Egyptian commercial banks, while also considering the moderating role of liquidity risk management. Findings indicate a notably positive correlation between credit risk management and commercial banks' performance, underscoring the significance of adept credit risk management in achieving financial objectives, such as enhancing the return on assets of these banks. This outcome resonates with prior research (Abdelaziz et al., 2011; Flamini et al., 2009), suggesting that proficient credit risk management can lead to sustained improvements in commercial banks' return on assets over the long term. Empirical analysis spanning from 2012 to 2022 corroborates these enduring effects, reinforcing the significance of credit risk management in bolstering commercial banks' performance.

Moreover, the study uncovers a predominantly positive and statistically significant relationship between liquidity risk management and commercial banks' performance. This observation aligns with the notion that excessive reliance on long-term debt may elevate debt costs, thereby dampening a firm's profitability. These findings underscore the importance of liquidity risk management in gauging a bank's overall liquidity position and its capacity to withstand liquidity shocks (Ab-Rahim and Chiang, 2016).

Furthermore, the moderation effect of liquidity risk management on the relationship between credit risk management and performance yields an intriguing finding—a negative and significant impact. This negative influence could stem from the expectation that effective credit risk management should enhance commercial banks' performance. However, the introduction of liquidity risk management into this dynamic introduces potential adverse consequences. Maintaining elevated levels of liquidity within the bank may inadvertently heighten credit risk due to less prudent risk management. This arises from a reduction in the utilization of bank resources for profit generation in favor of holding more liquidity. Consequently, the initially positive impact of credit risk management on commercial performance may be reversed, transforming it into a negative influence when considering liquidity risk management. These moderation findings resonate with prior research by Abdelaziz et al. (2020), highlighting a U-shaped relationship between credit risk management and performance.

2. Conclusions

Based on the analysis and discussion of the results, the conclusions drawn from this study can be summarized as follows:

1. **Significant Positive Impact of Credit Risk Management on Commercial Bank Performance**: The study highlights a notable positive correlation between credit risk management and commercial bank performance. This indicates that effective management of credit risk is closely associated with overall improvements in bank performance.

2. **Significant Positive Impact of Liquidity Risk Management on Commercial Bank Performance**: Another key finding is the positive impact of liquidity risk management on commercial bank performance. This suggests that employing liquidity risk management strategies, particularly involving liquid assets, tends to enhance a bank's overall profitability.

3. **Liquidity Risk Management Moderates a U-Shaped Impact of Credit Risk Management on Commercial Bank Performance**: The study unveils the moderating role of liquidity risk management in the relationship between credit risk management and bank performance, resulting in a U-shaped impact. This implies that the interaction between credit risk management and liquidity risk management is not straightforward but rather follows a U-shaped pattern concerning its influence on commercial banks' performance.

3. Suggestions

In future studies, researchers could explore several avenues to build upon the findings of this study:

1. **Exploring Various Performance Determinants**: Future research could delve into additional determinants of bank performance, as different variables may yield varied results. Incorporating different time periods and a wider array of commercial banks in the sample could enhance the representativeness of research outcomes.

2. **Analyzing CAMELS Components:** Conduct a detailed analysis of the credit and liquidity risk components within the CAMELS framework (Asset Quality and Liquidity) to understand how these factors influence overall bank performance and financial stability.

3. **Diversifying Industry Focus**: Researchers might expand this study beyond the commercial banking sector to encompass other banking sectors. Analyzing diverse sectors could provide a comprehensive understanding of how credit risk management influences bank performance across different banking sectors.

4. **Considering External Factors**: Future empirical research could take into account global health, political events, and other socio-economic developments in the MENA region. Incorporating events such as the COVID-19 pandemic crisis and ongoing geopolitical conflicts might shed light on how such occurrences influence the relationship between credit risk management, liquidity risk management, and bank performance.

5. **Bidirectional Effects Investigation**: Investigating bidirectional effects between each pair of variables separately using Granger causality tests could offer insights into the causal relationships between credit risk management, liquidity risk management, and bank performance.

6. **Practical Implications and Target Audience**: The findings of the current study could provide valuable insights for banking sector practitioners and academia. Future research could examine how credit risk management's impact on bank performance changes when moderated by other macroeconomic variables, offering practical insights for decision-makers.

By exploring these avenues in future research, scholars can deepen their understanding of how credit risk management and liquidity risk management interact to influence firm performance across different contexts and time frames, thereby offering valuable insights for banks and policymakers alike.

REFERENCES

- ✓ Ab-Rahim, R. and Chiang, S.N. (2016), "Market structure and performance of Malaysian banking industry", Journal of Financial Reporting and Accounting, Vol. 14 No. 2, pp. 158-177.
- ✓ Abbas, F., Iqbal, S. and Aziz, B. (2019), "The impact of bank capital, bank liquidity and credit risk on profitability in postcrisis period: a comparative study of US and Asia", Cogent Economics and Finance, Vol. 7 No. 1, p. 1605683.
- ✓ Abdelaziz, H., Mouldi, D. and Helmi, H. (2011), "Financial liberalization and banking profitability: a panel data analysis for Tunisian banks", International Journal of Economics and Financial Issues, Vol. 1 No. 2, pp. 19-32.
- ✓ Abdelaziz, H., Rim, B. and Helmi, H. (2020), "The interactional relationships between credit risk, liquidity risk and bank profitability in MENA region", Global Business Review,
  available at: https://doi.org/10.1177/0972150919879304
- ✓ Abreu, M., Mendes, V., (2002). Commercial Bank Interest Margins and Profitability: Evidence from E.U. Countries. Working Paper Series, Porto.
- ✓ Adelopo, I., Lloydking, R. and Tauringana, V. (2018), "Determinants of bank profitability before, during, and after the financial crisis", International Journal ofManagerial Finance, Vol. 14 No. 4, pp. 378-398.
- ✓ Afanasieff, T., Lhacer, P., Nakane, M., (2002). The determinants of bank interest spreads in Brazil. Working Paper. Banco Central di Brazil.
- ✓ Al-Jabri, Khalid Mohammed Ahmed, (2017), "Credit Risk Management in Yemeni Commercial Banks", Al-Qalam Journal - Al-Qalam University for Humanitiesand Applied Sciences, Yemen, Issue (7), pp. 262-282.
- ✓ Albertazzi, U., Gambacorta, L., (2009). Bank Profitability and the Business Cycle. Journal of Financial Stability 5 (4), 393–409.
- ✓ Altunbas, Y., Gardener, E.P.M., Molyneux, P., Moore, B., (2001). Efficiency in European banking. European Economic Review 45, 1931–1955.
- ✓ Anggraeni, G., Parlindungan, D., dan Kurniawati, R. (2021). Pengaruh Corporate Governance, Rasi Keuangan, dan Ukuran Perusahaan Terhadap Financial Distress (Studi Pada Perusahaan Pertambangan yang Terdaftar di Bursa Efek Indonesia Periode 2015-2018). Jurnal Ekonomi Bisnis (JEB), 26(2), 324–332.

✓ Arif, A. and Nauman Anees, A. (2012), "Liquidity risk and performance of banking system", Journal of Financial Regulation and Compliance, Vol. 20 No. 2, pp. 182-195.

✓ Arpa, M., Giulini, I., Ittner, A., Pauer, F., (2001). The influence of macroeconomic developments on Austrian banks: Implications for banking supervision. BIS Papers 1, 91–116.

✓ Athanasoglou, P., Delis, M., Staikouras, C., (2006). Determinants of Bank Profitability in the Southern Eastern European Region. Bank of Greece Working Paper No. 47.

✓ Barros, C., Ferreira, C., Williams, J., (2007). Analysing the determinants of performance of best and worst European banks: A mixed logit approach. Journal of Banking & Finance 31, 2189–2203.

✓ Barth, J., Caprio, G., Levine, R., (2004). Bank regulation and supervision: what works best? Journal of Financial Intermed. 13, 205–248.

✓ Beltratti, A., Stulz, R., (2009). Why Did Some Banks Perform Better During the Credit Crisis? A Cross Country Study of the Impact of Governance and Regulation. ECGI's Finance Working Paper No. 254/2009.

✓ Berger, A., Hanweck, D., Humphrey, D., (1987). Competitive viability in banking: scale, scope, and product mix economies. Journal of Monetary Economics 20 (3), 501–520.

✓ Berger, A., (1995). The profit–structure relationship in banking: tests of market-power and efficient structure hypotheses. Journal of Money, Credit and Banking 27 (2), 404–431.

✓ Berger, A., Humphrey, D., (1997). Efficiency of financial institutions: international survey and directions for future research. Board of Governors of the Federal Reserve System (U.S.), Finance and Economics Discussion Series, 11.

✓ Berger, A., Bouwman, C., (2009). Bank Capital, Survival, and Performance around Financial Crises. Working Papers–Financial Institutions Center at The Wharton School, 1–42.

✓ Bernanke, B.S., Gertler, M., (1989). Agency costs, net worth, and business fluctuations. The American Economic Review 79, 14–31.

✓ Bikker, J.A., Hu, H., (2002). Cyclical patterns in profits, provisioning and lending of banks and procyclicality of the new Basel capital requirements. BNL Quarterly Review 221, 143–175.

✓ Bitar, M., Saad, W. and Benlemlih, M. (2016), "Bank risk and performance in the MENA region: the importance of capital requirements", Economic Systems, Vol. 40 No. 3, pp. 398-421.

✓ Bourke, P., (1989). Concentration and other determinants of bank profitability in Europe, North America and Australia. Journal of Banking and Finance 13 (1), 65–79.

- ✓ Cai, J. and Thakor, A.V. (2008), "Liquidity risk, credit risk and interbank competition", Credit Risk and Interbank Competition (November 19, 2008).
- ✓ Cai, R. and Zhang, M. (2017), "How does credit risk influence liquidity risk? Evidence from Ukrainian banks", Visnyk of the National Bank of Ukraine, National Bank of Ukraine, No. 241, pp. 21-33.
- ✓ Chen, H.-J. and Lin, K.-T. (2016), "How do banks make the trade-offs among risks? The role of corporate governance", Journal of Banking and Finance, Vol. 72, pp. S39-S69.
- ✓ Chen, Y.-K., Shen, C.-H., Kao, L. and Yeh, C.-Y. (2018), "Bank liquidity risk and performance", Review of Pacific Basin Financial Markets and Policies, Vol. 21 No. 01.
- ✓ Cucinelli, D. (2015), "The impact of non-performing loans on bank lending behavior: evidence from the Italian banking sector", Eurasian Journal of Business and Economics, Vol. 8 No. 16, pp. 59-71.
- ✓ Diamond, D. and Dybvig, P. (1983), "Bank runs, deposit insurance, and liquidity", Journal of Political Economy, Vol. 91 No. 3, pp. 401-419.
- ✓ Diamond, D.W. and Rajan, R.G. (2005), "Liquidity shortages and banking crises", The Journal of Finance, Vol. 60 No. 2, pp. 615-647.
- ✓ Dietrich, A., Wanzenried, G., (2011). Determinants of bank profitability before and during the crisis: Evidence from Switzerland. J. Int. Finance. Markets Inst. Money, doi:10.1016.
- ✓ Djebali, N. and Zaghdoudi, K. (2020), "Threshold effects of liquidity risk and credit risk on bank stability in the MENA region", Journal of Policy Modeling, Vol. 42 No. 5, pp. 1049-1063.
- ✓ Ekinci, R. and Poyraz, G. (2019), "The effect of credit risk on financial performance of deposit banks in Turkey", Procedia Computer Science, Vol. 158, pp. 979-987.
- ✓ Farid, Boulhabbal, (2020), "Risk Management and its Role in Curbing and Reducing Bank Credit Risk in Algeria, A Case Study of Gulf Bank-Annaba", Journal of Human Sciences, Larbi Ben M'hidi University - Oum El Bouaghi, Vol. (7), No. (3), pp. 333-1350.
- ✓ Ferrouhi, E.M. (2014), "Bank liquidity and financial performance: evidence from Moroccan banking industry", Business: Theory and Practice, Vol. 15 No. 4, pp. 351-361.
- ✓ Flamini, V. Schumacher, L. and McDonald, C. (2009), The Determinants of Commercial Bank Profitability in Sub-Saharan Africa, International Monetary Fund, available at: www.elibrary.imf.org/view/IMF001/09822-9781451871623/09822-9781451871623/09822-9781451871623.xml

- ✓ Gaspar, V., K. Masuch and H. Pill (2002), 'The ECB's monetary policy strategy: Responding to the challenges of the early years of EMU', in Buti M. and A. Sapir (eds.), EMU and economic policy in Europe. The challenge of the early years, Cheltenham, Edward Elgar Publishing.
- ✓ Ghenimi, A., Chaibi, H. and Omri, M.A.B. (2017), "The effects of liquidity risk and credit risk on bank stability: evidence from the MENA region", Borsa Istanbul Review, Vol. 17 No. 4, pp. 238-248.
- ✓ Goddard, J., Molyneux, P. and Wilson, J.O.S., (2004). The profitability of European banks: a cross sectional and dynamic panel analysis. The Manchester School, 72, 363–81.
- ✓ Gujarati, D.N. (2003). Basic Econometrics. New York: McGraw Hill Book Co.
- ✓ Hakim, S. & Simon Neaime, (2001). "Performance and Credit Rating in Banking: A Comparative Study for Egypt and Lebanon," Working Papers 0137, Economic Research Forum, revised 12 Jun 2001.
- ✓ Hakimi, A., Zaghdoudi, K. and Others, (2017), "Liquidity risk and bank performance: an empirical test for Tunisian banks", Business and Economic Research, Vol. 7 No. 1, pp. 46-57.
- ✓ Hamdi, H. and Hakimi, A. (2019), "Does liquidity matter on bank profitability? Evidence from a nonlinear framework for a large sample", Business and Economics Research Journal, Vol. 10 No. 1, pp. 13-26.
- ✓ Harb, Etienne & El Khoury, Rim & Mansour, Nadia & Daou, Rima. (2022). Risk management and bank performance: evidence from the MENA region. Journal of Financial Reporting and Accounting. 21. 10.1108/JFRA-07-2021-0189.
- ✓ He, Z. and Xiong, W.E.I. (2012), "Rollover risk and credit risk", The Journal of Finance, Vol. 67 No. 2, pp. 391-430.
- ✓ Hobijn, B., Franses, P., & M., Ooms (2004). Generalizations of the KPSS-test for stationarity. Statistica Neerlandica, Netherlands Society for Statistics and Operations Research, 58(4), 483-502.
- ✓ Hunjra, A.I., Hanif, M., Mehmood, R. and Nguyen, L.V. (2021), "Diversification, corporate governance, regulation and bank risk-taking", Journal of Financial Reporting and Accounting, Vol. 19 No. 1, pp. 92-108.
- ✓ Iannota, G., Nocera, G., Sironi A., (2007). Ownership Structure, Risk and Performance in the European Banking Industry. Journal of Banking and Finance, vol. 31, no 7, juillet, pp. 2127-2149.
- ✓ Imbierowicz, B. and Rauch, C. (2014), "The relationship between liquidity risk and credit risk in banks,"Journal of Banking and Finance, Vol. 40, pp. 242-256.

- ✓ Islam, M.S. and Nishiyama, S.-I. (2016), "The determinants of bank net interest margins: a panel evidence from South Asian countries", Research in International Business and Finance, Vol. 37, pp. 501-514.
- ✓ Jonghe, O., (2010). Back to the basics in banking? A micro-analysis of banking system stability. Journal of Financial. Intermediation 19, 387–417.
- ✓ Kaiser, H. F. (1960). The application of electronic computers to factor analysis. EducationalandPsychological Measurement, 20(1), 141-151.
- ✓ Kaiser, H. F. (1970). A second generation little jiffy. Psychometrika, 35(4), 401-415.
- ✓ Kaiser, H. F. (1981). A revised measure of sampling adequacy for factoranalytic data matrice. Educational and Psychological Measurement, 41(2), 379-381.
- ✓ Kaiser, H. F, & Rice, J. (1974). Little jiffy, mark IV. EducationalandPsychologicalMeasurement, 34, 111-117.
- ✓ Kamoush, Emian; and Maatouk, Majal, (2019), "The Impact of Financial Leverage on Commercial Profitability: Return onSales", Journal of Studies and Research, 11(4): 438-449.
- ✓ Kasman, A., (2010). Consolidation and Commercial bank net interest margins: evidence from the old and new European union members and candidate countries. Economic Modeling 27, 648–655.
- ✓ Kunt, A., Huizinga, H., (1999). Determinants of commercial bank Interest margins and profitability: some international evidence. World Bank Economic Review 13 (2), 379–408.
- ✓ Kwiatkowski, D., Phillips, p., C., B., Schmidt, p., & Y., Shin, (1992). Testing the null hypothesis of stationarity against the alternative of a unit root: How sure are we that economic time series have a unit root?, Journal of Econometrics, 54, 159–178.
- ✓ Laryea, E., Ntow-Gyamfi, M. and Alu, A.A. (2016), "Nonperforming loans and bank profitability: evidence from an emerging market", African Journal of Economic and Management Studies, Vol. 7 No. 4, pp. 462-481.
- ✓ Liu, H. Wilson, J.O.S., (2010). The profitability of banks in Japan. Applied Financial Economics, 20: 24, 1851–1866.
- ✓ Ly, K.C. (2015), "Liquidity risk, regulation and bank performance: evidence from European banks," Global Economy and Finance Journal, Vol. 8 No. 1, pp. 11-33.
- ✓ Mamatzakis, E., Remoundos, P., (2003). Determinants of Greek Commercial Banks Profitability, 1989– 2000.
- ✓ Marzouk, Abdel Aziz Ali, (2020), "The Impact of Liquidity and Credit Risk on the Financial Performance of Commercial Banks: A Comparative Study between Banks Listed on the Egyptian and Saudi Stock Exchanges", Journal of Contemporary Business Studies, Faculty of Commerce, Kafr El-Sheikh University.

✓ Micco, A., Panizza, U., Yanez, M., (2007). Bank ownership and performance. Does politics matter? Journal of Banking and Finance 31 (1), 219–241.

✓ Miller, S.M., Noulas, A.G., (1997). Portfolio mix and large-bank profitability in the USA. Applied Economics 29, 505–512.

✓ Millon Cornett M., Guo L., Khaksari S., Tehranian H., (2010). The impact of state ownership on performance differences in privately-owned versus state-owned banks: An international comparison. J. Finan. Intermediation 19, 74–94.

✓ Millon Cornett, M., McNutt, J.J., Tehranian, H., (2010). The financial crisis, internal corporate governance, and the performance of publicly-traded U.S. bank holding companies. Working Paper.

✓ Molyneux, P., Thornton, J., (1992). Determinants of European Bank Profitability: A Note. Journal of Banking and Finance 16 (6), 1173–1178.

✓ Mishkin, F.S. (2007), The Economics of Money, Banking, and Financial Markets, Pearson education. New york.

✓ Mishkin, F.S. and Eakins, S.G. (2018), "Financial markets and institutions".

✓ Naceur, S., Kandil, M., (2009). The impact of capital requirements on banks' cost of intermediation and performance: the case of Egypt. Journal of Economics and Business 61, 70–89.

✓ Naceur, S., Omran, M., (2010). The effects of bank regulations, competition, and financial reforms on banks' performance. Emerging Markets Review, doi:10.1016/j.ememar. 2010.08.002.

✓ Noman, A.H.M., Pervin, S., Chowdhury, N.J., Hossain, M.A. and Banna, H. (2015), "Comparative performance analysis between conventional and Islamic banks in Bangladesh – an application of binary logistic regression", Asian Social Science, Vol. 11 No. 21, p. 248.

✓ Othmania, Amina, (2021), "The Impact of Banking Merger on Improving the Profitability of Commercial Banks: A Case Study of Attijariwafa Bank", Journal of Financial, Accounting and Administrative Studies, Larbi Ben M'hidi University Oum El Bouaghi, Vol. 8, No. 1: 160-179.

✓ Pallant, Julie. (2005). SPSS survival manual: a step-by-step guide to data analysis using SPSS. Maidenhead: Open University Press/McGraw-Hill.

✓ Paroush, J. and Schreiber, B.Z. (2019), "Profitability, capital, and risk in US commercial and savings banks: re-examination of estimation methods", The Quarterly Review of Economics and Finance, Vol. 74, pp. 148-162.

✓ Pasiouras, F., Kosmidou, K., (2007). Factors influencing the profitability of domestic and foreign commercial banks in the European Union. Research in International Business and Finance 21 (2), 222–237.

✓ Porta, R., López-de-Silanes, F., Shleifer, A., Vishny, R., (1997. Legal determinants of external finance. Journal of Finance 52, 1131–1150.

✓ Qassem, Munir Wahid & Yamin, Ismail Younis & Yamin, Hayat Yahya, (2020), " The Impact of Credit Risk on the Profitability of Banks, An Analytical Study on Licensed Banks in Jordan", Ramah Journal for Research and Studies - Center for Research and Development of Human Resources - Ramah, Issue (49), pp . 23-42 .

✓ Ratner, B (2009). The correlation coefficient: Its values range between +1/−1, or do they? J Target Meas Anal Mark 17, 139–142. https://doi.org/10.1057/jt.2009.5

✓ Revell, J., (1979). Inflation and financial institutions. Financial Times, London.

✓ Sahyouni, A. and Wang, M. (2018), "The determinants of bank profitability: does liquidity creation matter?", Journal of Economics and Financial Analysis, Vol. 2, pp. 61-85.

✓ Saleh, I. and Abu Afifa, M. (2020), "The effect of credit risk, liquidity risk and bank capital on bank profitability: evidence from an emerging market", Cogent Economics and Finance, Vol. 8 No. 1, available at: https://doi.org/10.1080/23322039.2020.1814509

✓ Saunders, A. and Cornett, M.M. (2017), Financial Institutions Management: A Risk Management Approach, McGraw-Hill Education, New York, NY.

✓ Schwaiger, M.S., Liebig, D., (2008). Determinants of bank interest margins in Central and Eastern Europe. Financial Stability Report 14, 68–87 (Österreichische Nationalbank).

✓ Serwadda, I. (2018), "Impact of credit risk management systems on the financial performance of commercial banks in Uganda", Acta Universitatis Agriculturae et Silviculturae Mendelianae Brunensis, Vol. 66 No. 6, pp. 1627-1635.

✓ Short, B.K., (1979). The relation between commercial bank profit rates and banking concentration in Canada, Western Europe and Japan. Journal of Banking and Finance 3, 209–219.

✓ Singh, N., Chakraborty, A., Banik, B., Biswas, S. D., & Majumdar, M. (2022). Digital banking chatbots related MCDM problem by TODIM strategy in pentagonal neutrosophic arena. Journal of Neutrosophic and Fuzzy Systems, 4(2), 26–41. https://doi.org/10.54216/JNFS.040202

✓ Smirlock, M., (1985). Evidence on the (non) relationship between concentration and profitability in banking. Journal of Money, Credit, and Banking 17, 69–83.

✓ Staikouras, C., Wood, G., (2004). The determinants of European bank profitability. International Business and Economics Research Journal 3 (6), 57–68.

- ✓ Stiroh, K.J., Rumble, A., (2006). The dark side of diversification: The case of US financial holding companies. Journal of Banking and Finance 30, 2131–2161.
- ✓ Stulz, R., Williamson, R., (2003). Culture, openness, and finance. Journal of Financial Economics 70, 313–349.
- ✓ Suka, Adamgbo & Toby, Adolphus & Momodu, Austin & Imegi, Prof. (2019). The Effect of Capital Adequacy on Credit Risk Management among Commercial Banks in Nigeria; Within the Basel Capital Adequacy Framework. International Journal of Contemporary Research and Review. 10. 10.15520/ijcrr.v10i07.714.
- ✓ Tabachnick, B. G., & Fidell, L. S. (2001). Using Multivariate Statistics. Boston: Allyn and Bacon.
- ✓ Tabachnick, B. G., & Fidell, L. S. (2007). Using multivariate statistics (5th Edition). Boston, MA, Allyn and Bacon.
- ✓ Tabari, N.A.Y., Ahmadi, M. and Emami, M. (2013), "The effect of liquidity risk on the performance of commercial banks", International Research Journal of Applied and Basic Sciences, Vol. 4 No. 6, pp. 1624-1631.
- ✓ Traboulsi, Fatima Zahra, (2018), "Liquidity Risk Management and its Role in Improving the Profitability of Commercial Banks: A Case Study of a Sample of Commercial Banks in Algeria during the Period 2011-2016", Master's Thesis, Faculty of Economic, Commercial and Management Sciences - Kasdi Merbah University - Ouargla, Algeria, 1-74.
- ✓ Wagner, W. (2007), "Aggregate liquidity shortages, idiosyncratic liquidity smoothing and banking regulation", Journal of Financial Stability, Vol. 3 No. 1, pp. 18-32.

Sites:

- ✓ https://www.banquemisr.com/
- ✓ https://www.bdc.com.eg/
- ✓ https://www.cbe.org.eg/
- ✓ https://www.ceicdata.com/
- ✓ https://www.nbe.com.eg/
- ✓ https://www.statista.com/
- ✓ https://www.thomsonreuters.com/
- ✓ https://www.worldbank.org/

Dr. Ahmed Hassan Elgayar

أثر إدارة مخاطر الائتمان للدولة على أداء البنوك التجارية المصرية: الدور المعدل لإدارة مخاطر السيولة للدولة

أحمد حسن الجيار

مدرس بقسم إدارة الأعمال، كلية التجارة، جامعة طنطا

تجريدي:

إن الغرض من هذه الدراسة هو التحقيق في كيفية تأثير إدارة مخاطر السيولة للدولة على التأثير المحتمل لإدارة مخاطر الائتمان للدولة على أداء قطاع البنوك التجارية في مصر. استخدمت منهجية البحث منهجاً تطبيقياً، حيث تم تجميع بيانات ثانوية من القطاع المصرفي المصري امتدت لفترة زمنية من عام ٢٠١٢م إلى عام ٢٠٢٢م. يركز هذا التحليل على أكبر ثلاثة بنوك تجارية تهيمن على السوق المصرية، وهي البنك الأهلي المصري (NBE) وبنك مصر (BM) وبنك القاهرة (BdC). تمت صياغة ثلاث فرضيات، وتم استخدام نماذج الانحدار الخطي البسيط والمتعدد التطبيقية لاختبار هذه الفرضيات. تؤكد النتائج صحة جميع الفرضيات الثلاث وبذلك فهي توفر نظرة متعمقة للعلاقات بين المتغيرات الموضحة في هذه الفرضيات. والجدير بالذكر أن النتائج تتماشى مع الأثر النظري المتوقع.

بالنسبة للبحوث المستقبلية، تم اقتراح العديد من التوصيات. أولاً، يمكن أن يؤدي استكشاف المزيد من محددات الأداء المختلفة إلى إثراء فهم هذا الموضوع، حيث قد تؤدي المتغيرات المختلفة إلى نتائج متنوعة ومختلفة. بالإضافة إلى ذلك، سيكون إجراء تحليل مفصل لمكونات مخاطر الائتمان والسيولة ضمن إطار عمل CAMELS (جودة الأصول والسيولة) مفيداً جداً لفهم كيفية تأثير هذه العوامل على الأداء العام للبنك والاستقرار المالي. كما يمكن توسيع نطاق الدراسة لتتجاوز القطاع المصرفي التجاري لتشمل قطاعات مصرفية أخرى وسيوفر ذلك منظوراً أكثر شمولاً حول كيفية تأثير إدارة مخاطر الائتمان على أداء البنوك في مختلف القطاعات. بالإضافة إلى ذلك، يمكن أن تتضمن البحوث التطبيقية المستقبلية أوضاع الصحة العالمية، والأحداث السياسية، والتطورات الاجتماعية والاقتصادية في منطقة الشرق الأوسط وشمال أفريقيا، مثل أزمة جائحة كوفيد-١٩ والصراعات الجيوسياسية المستمرة، لفهم تأثيرها بشكل أفضل على العلاقة بين إدارة مخاطر الائتمان وإدارة مخاطر السيولة وأداء البنوك. علاوةً على ذلك، فإنه يمكن أن توفر دراسة التأثيرات ثنائية الاتجاه بين كل زوج من المتغيرات باستخدام اختبارات جرانجر السببية مزيداً من الأفكار حول العلاقات السببية بين إدارة مخاطر الائتمان وإدارة مخاطر السيولة وأداء البنك. وأخيراً، يمكن للدراسات المستقبلية استكشاف كيفية تغير تأثير إدارة مخاطر الائتمان على أداء البنوك عند تعديلها بمتغيرات الاقتصاد الكلي الأخرى، مما يوفر رؤى عملية لصناع القرار في القطاع المصرفي. ومن خلال استكشاف هذه السبل، يمكن للباحثين تعميق فهمهم لكيفية تفاعل إدارة مخاطر الائتمان وإدارة مخاطر السيولة لتشكيل أداء البنوك عبر سياقات وأطر زمنية مختلفة، وتقديم رؤى قيمة للبنوك وصانعي السياسات.

الكلمات المفتاحية: إدارة مخاطر الائتمان، أداء البنوك، إدارة مخاطر السيولة، المعدل، قطاع البنوك التجارية، البنك الأهلي المصري، بنك مصر، بنك القاهرة، السلاسل الزمنية، نماذج الانحدار الخطي البسيط والمتعدد.