

THE EFFECTIVENESS OF THE INTERNAL CAPITAL ADEQUACY ASSESSMENT PROCESS (ICAAP) IN ENHANCING BANKING STABILITY: AN APPLIED STUDY OF IRAQI BANKS IN LIGHT OF BASEL REQUIREMENTS (2012–2024)

Ali Nasif Abd, Haider Jawad Kadhim*

¹University of Kufa, College of Administration and Economics, Najaf, Iraq. E-mail: Haiderj.kadum@uokufa.edu.iq

²University of Kufa, College of Administration and Economics, Department of Financial and Banking Sciences, Najaf, Iraq.

E-mail: alin.fikhranee@student.uokufa.edu.iq

*Corresponding author E-mail: alin.fikhranee@student.uokufa.edu.iq

Abstract This study addresses the effectiveness of the Internal Capital Adequacy Assessment Process (ICAAP) and its role in enhancing banking stability. in a sample of Iraqi banks listed on the Iraq Stock Exchange. During the study period, the Iraqi banking sector operated under financial and economic conditions characterized by varying levels of risk regulatory .challenges, and ongoing efforts to align banking practices with Basel requirements. These conditions highlighted the importance of internal capital assessment as a mechanism for strengthening banks' ability to absorb risks and maintain financial stability.

The study seeks to examine ICAAP as a supervisory and managerial tool that reflects the adequacy of banks' capital in relation to their actual risk exposure and to clarify its role in explaining variations in banking stability. The study relied on annual financial data ,for the sample banks covering, the period ,2012–2024. ICAAP, effectiveness was measured using a composite index based on four, financial indicators, while banking stability was measured using the Z-Score indicator.

The study reached a set of results showing variation among the sample banks in both, ICAAP effectiveness and banking stability. The findings also, indicated a partially positive relationship between ICAAP ,effectiveness and banking stability, suggesting that banks, with relatively stronger ICAAP performance tended, in some cases to achieve better stability levels, although this relationship was not fully consistent across all banks. The study concluded with a number of conclusions and recommendations relevant to improving capital management and strengthening banking stability in Iraqi banks under Basel requirements.

Keywords: Internal Capital Adequacy Assessment Process (ICAAP), Banking Stability, Z-Score, Basel Requirements, Iraqi Banks.

1. INTRODUCTION

Banks are among the main pillars of the financial and economic system because they play an important role in mobilizing savings, directing them toward investment, supporting economic growth, and promoting financial stability. With the growing complexity of banking activities and the increasing diversity of risks faced by banks, capital adequacy has become a key issue for both regulatory and banking authorities due to its direct impact on strengthening the banking system and enhancing its ability to withstand financial shocks and crises.

In this context, the Internal Capital Adequacy Assessment Process (ICAAP) has emerged as one of the main tools under Pillar II of the Basel framework, as it enables banks to assess their capital adequacy internally and comprehensively in line with the level of risks they face. ICAAP is therefore considered an important component of the modern supervisory framework, as it helps banks identify, measure, and manage risks more effectively, while linking available capital to risk exposure in a forward-looking manner. In the Iraqi context, and with the efforts of the Central Bank of Iraq to align the banking sector with Basel requirements, it has become important to examine the effectiveness of ICAAP, implementation in Iraqi banks and its impact on banking stability. Accordingly, this study addresses the following question: To what extent does the effectiveness of ICAAP, contribute to enhancing banking stability in Iraqi banks under Basel requirements?

The study aims to evaluate the effectiveness of ICAAP, in Iraqi banks and to analyze its role in enhancing banking stability using relevant financial indicators. It also assumes that ICAAP, effectiveness has a statistically significant effect on banking stability. The importance of the study lies in its attempt to address a gap in the local and Arabic literature on ICAAP, and banking stability, while also providing practical implications for improving capital, management and supervisory practices in the Iraqi banking sector.

2. MATERIALS AND METHODS

2.1. THEORETICAL MATERIALS

2.1.1 *The problem of the study*

Given the growing exposure of banks to financial and economic risks, effective supervisory mechanisms have become essential for ensuring capital adequacy and strengthening banking stability. The Basel framework identifies the Internal, Capital Adequacy Assessment Process (ICAAP) as a central tool for assessing capital needs in line with banks' actual risk profiles. Although Iraqi banks have moved toward adopting ICAAP, under Basel requirements, its effectiveness in promoting banking stability remains insufficiently examined. Therefore, this study seeks to answer the following question:

To what extent does ICAAP, effectiveness enhance banking stability in Iraqi banks under Basel requirements?

2.1.2 Objectives of the study

In line with the research problem, this study seeks to examine the effectiveness of the Internal Capital Adequacy Assessment Process (ICAAP), in Iraqi banks and to clarify its role in enhancing banking stability under Basel requirements. Accordingly, the study aims to achieve the following objectives:

1. To assess the extent to which Iraqi banks implement ICAAP, in accordance with Basel requirements.
2. To examine the effect of ICAAP, effectiveness on banking stability indicators.
3. To propose a practical approach for linking ICAAP, outcomes with supervisory and regulatory policies.

2.1.3 The importance of the study

This study is significant because it examines the role of ICAAP, in enhancing banking stability within the Basel framework, with particular reference to Iraqi banks. It contributes to the literature by linking internal capital assessment to banking stability, provides a practical quantitative perspective on Basel implementation, and offers insights that may support supervisory practices and capital management ,in the Iraqi banking sector.

2.1.4 Study hypothesis

The effectiveness of the Internal Capital Adequacy Assessment Process (ICAAP), has a statisticallysignificant positive effect on banking stability in Iraqi banks under Basel requirements.

2.1.5 study Methodology:

This study adopts both deductive and inductive approaches. The deductive approach is used in the theoretical part to review the relevant literature, professional publications, and academic studies related to ICAAP, and banking stability. The inductive approach is applied in the empirical part through the analysis of banks listed on the Iraq Stock Exchange, which constitute the study sample, by collecting and using the required data to measure the study variables and derive scientifically grounded results.

2.1.6 study References:

To cover the theoretical aspect of the study, the researcher relied on a variety of Arabic and foreign academic sources, including books, scientific journals, theses, and dissertations related to the effectiveness of the Internal Capital Adequacy Assessment Process (ICAAP), banking stability, and Basel requirements. In addition, official reports, instructions, and publications issued by the Central Bank of Iraq, the Iraq Stock Exchange, and other relevant supervisory and regulatory authorities were utilized to support the applied aspect of the research.

The practical analysis was based on published annual financial statements and relevant banking data of the sampled banks, which provided the necessary data for measuring the study variables and examining the effect of ICAAP, effectiveness on banking stability indicators. These sources ensured the reliability and consistency of the data used in achievingthe objectives of the study.

2.1.7 Previous studies

1- Study [1]

Study Details	Details	Seq.
[Mhamed, 2018]	Researcher and Year	-1
Evaluating the Relationship Between the Banking System Stability and the Internal Capital Adequacy Assessment Process: from the Egyptian Banking Sector.	Study Title	
An applied analytical study based on published data, case study Analysis, and econometric analysis using EVIEWS.	Type of study	
The study population consisted of commercial banks in Egypt, totaling 39 banks.	Study sample	
The study aimed to evaluate the relationship between banking system stability and the Internal Capital Adequacy Assessment Process (ICAAP), as well as to clarify the role of ICAAP in capital planning, risk management, and supporting the financial stability of Egyptian banks.	Study Objective	
The results showed a significant positive relationship between ICAAP and banking system stability. ICAAP was found to contribute to improving capital adequacy ratios and preventing them from falling below regulatory limits. It also supported strategic planning and sustainable bank growth, while enhancing banks' ability to withstand crises such as the flotation of the Egyptian pound. In addition, the statistical analysis demonstrated that capital variables and risk-weighted assets explained more than 99% of the variation in the Capital Adequacy Ratio (CAR).	Key Findings	
Both the previous study and the current study focus on the Internal Capital Adequacy Assessment Process (ICAAP) and its role in enhancing banking stability within the framework of banking regulation.	Similarities	
The previous study examined the relationship between ICAAP and banking system stability in the Egyptian banking sector, whereas the current study investigates the effect of ICAAP effectiveness on banking stability in Iraqi banks under	Difference	

Basel requirements.

2- Study: [2]

Study Details	Details	Seq.
[Bermpei et al., 2020]	Researcher and Year	-2
Does Institutional Quality Condition the Effect of Bank Regulations and Supervision on Bank Stability? Evidence from Emerging and Developing Economies	Study Title	
An empirical quantitative study using panel data and dynamic GMM models	Type of study	
The study sample consisted of approximately 1,050 commercial banks from 69 emerging and developing countries during the period 2004–2013.	Study sample	
The study aimed to examine whether institutional quality plays a moderating role in the relationship between bank regulations, supervision, and bank stability in emerging and developing economies, and to determine whether institutions strengthen or weaken the effect of these regulations.	Study Objective	
The results showed that institutional quality affects the strength of the relationship between bank regulations and bank stability, although the effect varies depending on the type of institution and regulation. Bank stability increases when political stability and control of corruption are accompanied by restrictions on activities and capital. In the presence of strong institutions that support loan repayment, such as creditor rights and the rule of law, the influence of some regulations, including capital regulation and private monitoring, becomes weaker. The main conclusion is that institutional quality may either reinforce or substitute for the role of bank regulations in achieving bank stability.	Key Findings	
Both the previous study and the current study focus on factors that enhance bank stability within the framework of banking regulation and supervisory requirements.	Similarities	
The previous study examined the role of institutional quality in shaping the relationship between bank regulations, supervision, and	Difference	

stability across emerging and developing countries, whereas the current study focuses specifically on the effectiveness of ICAAP in enhancing banking stability in Iraqi banks under requirements.	
---	--

2.2. METHODS

2.2.1 Concept of (ICAAP)

The rapid expansion of financial institutions and the continuous growth in banking products have increased the complexity and diversity of risks faced by banks. This development has made it increasingly necessary for banks to adopt effective supervisory measures and sound internal systems to maintain adequate capital levels capable of absorbing potential losses arising from different types of risk. Within this context, capital regulation has received considerable attention as a core element in preserving the soundness of individual banks and promoting the stability of the banking system as a whole. As a result, the Internal Capital Adequacy Assessment Process (ICAAP) has emerged as an essential framework through which banks evaluate whether their internal capital is sufficient in relation to their actual risk profile [1].

ICAAP is closely associated with the broader concept of capital adequacy, which refers to the level of capital that a bank is required to maintain in order to withstand key banking risks, particularly credit risk, market risk, and operational risk. In this sense, capital adequacy is not only a prudential requirement, but also an important determinant of a bank's financial strength and its decisions regarding capital structure and risk absorption capacity[2]. Because of its importance, the capital adequacy ratio has long been regarded as one of the main indicators of bank solvency and resilience. The regulatory foundations of capital adequacy were initially established under Basel I, which set a minimum capital adequacy ratio for banks. However, with the increasing sophistication of banking risks and the limitations of the earlier framework, the Basel Committee introduced a more comprehensive regulatory structure under Basel II. This framework was built on three pillars: minimum capital requirements, supervisory review, and market discipline. Within this structure, Pillar II gave special importance to the Internal Capital Adequacy Assessment Process (ICAAP), together with the supervisory review function, as a more advanced mechanism for evaluating banks' capital adequacy from an internal and forward-looking perspective [3].

The introduction of ICAAP under Pillar II of Basel II represented an important shift in regulatory thinking, as it moved beyond the narrow focus on regulatory minimum capital ratios toward a broader assessment of whether banks hold sufficient capital in light of all material risks. In other words, ICAAP was designed to address the shortcomings of earlier capital adequacy approaches and to ensure that banks do not rely solely on standardized regulatory measures, but also conduct their own internal assessment of capital needs according to their risk exposure and strategic environment [4].

Accordingly, ICAAP extends the scope of capital assessment beyond the risks explicitly covered under Pillar I. While Pillar I mainly focuses on credit, market, and operational risks ICAAP requires banks to consider additional risks that may have a significant impact on their financial position and long-term viability, such as liquidity risk, strategic risk, concentration risk, and reputational risk. This broader perspective makes ICAAP an important instrument for linking risk

management, capital planning, and strategic decision-making within banks. Furthermore, ICAAP is not merely an internal exercise conducted in isolation. Its effectiveness is also evaluated by supervisory authorities through the Supervisory Review and Evaluation Process (SREP), which assesses the consistency between a bank's risk profile, internal capital planning, and capital management practices. Through this supervisory process, regulators can determine whether a bank's internal capital assessment is sufficiently robust and whether additional capital or corrective actions may be required. Therefore, ICAAP, together with SREP, plays a central role in strengthening prudential oversight and enhancing banking stability at both the individual bank level and the broader financial system level [5].

2.2.2 Basic principles of (ICAAP)

The Internal Capital Adequacy Assessment Process (ICAAP) is founded on the following core principles[6] [7]:

1. Distinction between economic capital and regulatory capital:

ICAAP distinguishes between economic capital, which is determined internally by the bank according to its own risk profile, and regulatory capital, which is the minimum capital required by supervisory authorities. Both forms of capital aim to absorb losses, protect depositors, and strengthen confidence in the bank.

2. Capital should reflect the bank's risk exposure:

The bank should determine the amount of capital needed according to the risks associated with its activities and transactions, including credit, market, operational liquidity and other material risks.

3. Each bank must have its own internal capital assessment process:

Every bank should establish an internal process to assess its capital needs in line with its specific risk profile and operating conditions.

4. ICAAP is the responsibility of the bank:

The process should be designed according to the bank's own circumstances, needs, and internal practices, rather than being treated as a purely external regulatory requirement.

5. ICAAP must be fully documented and approved by management:

The design, policies, methods, and objectives of ICAAP should be clearly documented, while the bank's management body or supervisory board remains responsible for approving and overseeing the process.

6. ICAAP should be integrated into decision-making and risk management:

The internal capital assessment should form a core part of the bank's risk management framework and support decisions related to capital allocation, lending, budgeting, and strategic planning.

7. ICAAP should be reviewed regularly:

Banks should review ICAAP periodically, at least once a year, and update it whenever there are significant changes in strategy, business conditions, or risk exposure.

8. ICAAP should be risk-based:

Capital targets must be aligned with the bank's risk profile and operating environment, while also considering strategic objectives, market reputation, and external ratings where relevant.

9. ICAAP should be comprehensive:

The process should cover all material risks facing the bank, including those not explicitly included under minimum regulatory capital requirements.

10. ICAAP should be forward-looking:

The assessment should not focus only on current risks, but also take into account the bank's future strategy and broader macroeconomic conditions.

11. ICAAP should rely on adequate measurement and evaluation processes:

Banks should use appropriate and documented methods to assess risks and capital needs, and the results should inform both strategic planning and risk management.

12. ICAAP should produce a reasonable and explainable outcome:

The process should result in a sound internal assessment of capital adequacy that can be clearly explained and justified to supervisory authorities.

2.2.3 Objectives of (ICAAP)

There are several objectives associated with the Internal Capital Adequacy Assessment Process (ICAAP). The main objectives of ICAAP can be explained as follows[8] :

1. To aggregate, monitor, and measure the risks faced by the bank, in order to ensure that the bank has a comprehensive view of the various risks to which it may be exposed.
2. To ensure that the bank holds adequate capital that is proportionate to the level of risks it faces, so as to confirm that the bank maintains a sufficient amount of capital.
3. To use a sound framework for risk management, as this process emphasizes the need for the bank to adopt organized, reliable systems, policies, and procedures.
4. To emphasize the importance of capital planning, since ICAAP requires forward-looking capital planning in order to ensure stability and resilience.
5. To ensure that the bank's activities and the risks it faces remain within its capacity and investment activity, thereby supporting financial stability.
6. To make bank management more aware of and responsible for the various risks faced by their banks, while ensuring that business activities are conducted within acceptable limits.

2.2.4 Indicators of (ICAAP)

1. ICAAP Measurement Indicators

The effectiveness of the Internal Capital Adequacy Assessment Process (ICAAP) can be measured by a composite index reported in the financial and accounting literature. The independent variable, namely ICAAP effectiveness, is measured through a composite indicator based on four key financial ratios that reflect the bank's capital strength and its ability to absorb banking risks. The ICAAP index is calculated as follows[9]:

$$ICAAP = \frac{X1 + X2 + X3 + X4}{4}$$

Where:

X1 = Capital Adequacy Ratio

X2 = Tier 1 Capital + Risk-Weighted Assets

X3 = Equity to Total Assets Ratio

X4 = Leverage Ratio

The four components are explained below:

2. Capital Adequacy Ratio (X1)

This ratio is calculated by dividing the sum of Tier 1 and Tier 2 capital by total risk-weighted assets. Under Basel III requirements, this ratio should be no less than 8% of risk-weighted assets[10][11]:

$$X1 = \frac{Tier1 + Tier2}{RWA}$$

Where:

Tier 1 = Core capital

Tier 2 = Supplementary capital

RWA = Risk-weighted assets

3. Sum of Tier 1 Capital and Risk-Weighted Assets (X2)

This indicator represents the total of Tier 1 capital and risk-weighted assets and is calculated as follows[12]:

$$X2 = Tier1 + RWA$$

Where:

Tier 1 = Core capital

RWA = Risk-weighted assets

4. Equity to Total Assets Ratio (X3)

This indicator measures the extent to which equity contributes to financing total assets. A higher ratio generally reflects a stronger financial position for the bank[13][14]:

$$X3 = \frac{Equity}{Total Assets}$$

Where:

Equity = Shareholders' equity

Total Assets = Total assets

5. Leverage Ratio (X4)

Banks are required to maintain a leverage ratio of at least 3%, particularly after the global financial crisis, which revealed that leverage at some banks had risen to excessively high levels relative to capital. The leverage ratio is calculated as follows[15][16]:

$$x4 = \frac{Tier1}{Total Assets}$$

2.3.1 Concept of the Banking stability

Banking stability has received growing attention from researchers because of the vital role of the banking sector in the economy. Any disruption in the banking system may negatively affect economic activity as a whole, while banking stability reflects the ability of banks to absorb adverse shocks arising from financial crises and continue performing their functions efficiently. Banking

stability is commonly viewed as part of the broader concept of financial stability. Financial stability refers to a condition in which the financial system, including financial institutions, markets, and infrastructure, is able to withstand shocks and correct imbalances without causing serious disruption to financial intermediation or the efficient allocation of savings to productive investment opportunities [17].

To better understand banking stability, it is also important to clarify the meaning of stability itself. Stability refers to a situation in which financial institutions and market participants have confidence in the ability of the financial sector to continue performing its functions without external support, while market prices continue to reflect the true value of financial products under normal conditions of supply and demand [18].

The concept of banking stability can also be explained by contrasting it with banking instability. In this regard, Davis describes systemic risk as disturbances in financial markets caused by unexpected changes in prices or credit and asset market conditions, leading to financial institution failures, disruption of payment systems, and a reduced ability of the financial system to allocate capital efficiently. Schwartz links banking instability to the transmission of shocks through financial contagion, which may spread from one part of the financial system to another and ultimately affect the real economy unless monetary authorities intervene. Similarly, Mishkin defines banking instability as a condition in which shocks to the banking sector, combined with uncertainty about its ability to perform its role, weaken the capacity of financial institutions to allocate savings efficiently toward investment activities. Because banking stability is regarded as a strategic objective, central banks and supervisory authorities have established regulatory frameworks to monitor systemic risks and impose capital and liquidity requirements, in addition to conducting stress testing and internal review processes. These measures aim to support early warning, preventive intervention, and policies that strengthen the resilience and sustainability of the banking system against both short-term shocks and long-term disturbances [19].

In general, the growing attention given to banking stability reflects the increasing importance of the banking system in modern economies. A stable banking system plays a key role in absorbing financial shocks and preventing them from spreading to the wider economy, thereby supporting economic continuity and confidence in the financial system [20].

2.3.2 Basel III: Main Regulatory Requirements

1. Capital Requirements : Basel III strengthens the quality and quantity of regulatory capital, with a greater focus on Common Equity Tier 1 (CET1) capital.
2. Capital Conservation Buffer : The capital conservation buffer is designed to ensure that banks build up capital buffers outside periods of stress which can be drawn down as losses are incurred.
3. Countercyclical Capital Buffer : The countercyclical capital buffer aims to ensure that banking system capital requirements take account of the macro-financial environment in which banks operate.
4. Leverage Ratio : The leverage ratio is intended to restrict the build-up of leverage in the banking sector and reinforce risk-based capital requirements with a simple, non-risk-based measure.
5. Liquidity Coverage Ratio (LCR) : The Liquidity Coverage Ratio promotes the short-term resilience of a bank's liquidity risk profile.

6. Net Stable Funding Ratio (NSFR) : The net stable funding ratio requires banks to maintain a stable funding profile in relation to the composition of their assets and off-balance-sheet activities.
7. Credit Risk Requirements : Basel III enhances the capture of credit risk and strengthens the framework for calculating risk-weighted assets and associated capital requirements.
8. Market Risk Requirements : Basel III revises the market risk framework and strengthens the treatment of counterparty credit risk, including credit valuation adjustment risk.
9. Operational Risk Requirements : The Basel Framework establishes requirements for calculating regulatory capital for operational risk.
10. Large Exposures : The large exposures framework requires banks to measure their exposures to a single counterparty or a group of connected counterparties and limit the size of large exposures in relation to their capital.
11. Supervisory Review Process (Pillar 2) : The supervisory review process ensures that banks have adequate capital and liquidity to support all the risks in their business and encourages better risk management.
12. Disclosure Requirements and Market Discipline (Pillar 3) : The disclosure requirements aim to encourage market discipline by promoting transparency regarding banks' risk exposures, capital positions and prudential measures.

2.3.3 Importance of Banking stability

Banking stability is essential because the components of the financial system must remain sound, efficient, and stable, free from tensions and disturbances. Financial stability depends on the stability of financial institutions, financial markets, and related activities, and it plays a major role in preventing crises. The importance of financial stability can be understood more clearly through the wide-ranging effects of financial crises and the damage they cause to the economy [21].

The banking system plays a vital role in the economy through financial intermediation and by facilitating the flow of funds between savers and borrowers, which improves the efficient allocation of financial resources and supports economic growth. In this regard, the importance of banking stability can be summarized as follows[22][23]:

1. It facilitates the transfer of funds from surplus units to deficit units through deposit-taking and lending activities, with a large share of credit directed toward investment purposes.
2. It supports economic development by providing essential financial inputs and services to different industries and businesses.
3. It improves the allocation of resources and reduces risks, including information asymmetry, asset price distortions, and payment-related disruptions.
4. It strengthens public and investor confidence in the banking system, which helps mobilize savings and expand financial services for individuals and firms of different sizes.
5. It helps prevent tensions, disturbances, and crises by supporting the stability of the broader financial system and related market activities.
6. It reflects the soundness, strength, and smooth functioning of the banking sector, which is necessary for maintaining normal economic activity.
7. It contributes significantly to economic growth and stability, whereas instability in the banking system may lead to financial fragility and economic contraction, as shown in major historical crises such as the Great Depression, the Japanese crisis of the early 1990s, the Asian financial crisis of 1997, and the global financial crisis of 2008.

2.3.4 Objectives of Banking Stability

The main objectives of banking stability can be summarized as follows [24][25]:

1. Low and stable inflation:

Maintaining low and stable inflation is essential because high inflation weakens purchasing power, distorts economic activity, and may negatively affect deposits, investment, and overall banking and financial stability.

2. Stable financial institutions and markets:

Banking stability requires sound and transparent financial institutions and markets that can mobilize savings, support investment, and strengthen public confidence, thereby contributing to economic and financial stability.

3. Stable interest rates:

Interest rates are a key driver of economic activity and an important indicator of overall market conditions. Their stability helps support balanced financial and banking performance.

4. Stable exchange rate:

Exchange rate stability is important because fluctuations in interest rates and capital flows can directly influence the value of the domestic currency, which in turn affects financial and banking stability.

5. Stable real economic growth:

Sustainable economic growth supports banking stability by improving income, employment, investment, and consumption, all of which strengthen the financial system and the banking sector.

2.3.5 Indicators of Banking Stability

There is no universal agreement across countries regarding the indicators used to measure the composite index of banking stability. The choice of such indicators depends on the efficiency and relevance of each indicator to the banking sector in a specific country, in line with the vision of the central bank and the level of development of the banking sector [26]. Based on this, the main indicators of banking stability in Iraq can be summarized as follows:

1. Z-score Indicator

The Z-score is one of the most widely used indicators for measuring banking stability and predicting bank failure or financial distress. It received considerable empirical attention, especially after the global financial crisis of 2007–2009, when various methodological approaches were developed in the literature to assess bank stability. The Z-score approach was originally introduced by Edward Altman in 1968 as a tool for bankruptcy prediction based on available financial data [27].

In banking studies, the Z-score is commonly used as a measure of bank resilience because it reflects the extent to which a bank's capital and profitability can absorb losses arising from fluctuations in returns without leading to insolvency. A higher Z-score indicates greater banking stability, while a lower score reflects a higher probability of distress or failure [28]. It is therefore regarded as one of the most important indicators of banking stability in empirical research. The Z-

score is calculated based on three main elements: return on assets, the ratio of equity to total assets, and the standard deviation of return on assets[29].

$$Z - score = \frac{ROA + (Equity/Asset)}{\sigma(ROA)}$$

Where:

ROA = Net Income / Total Assets

Equity/Assets = Equity / Total Assets

σ ROA = Standard deviation of return on assets

2. Capital Adequacy Ratio

Capital adequacy is another important indicator of banking stability, as it reflects the bank's commitment to minimum regulatory capital requirements and its ability to absorb potential losses. In Iraq, the standard set by the Central Bank of Iraq is 12% [30].

$$CAR = \frac{Tier1 + Tier2}{RWA}$$

3. Asset Quality Indicator

Asset quality reflects the reliability of a bank's assets and their exposure to credit risk. It is considered an important supporting indicator of banking stability because the credibility of capital adequacy depends partly on the quality of the underlying assets [31]. Under Basel III, the relevant benchmark is 10.5%.

$$Asset\ Quality = \frac{Net\ Non - Performing\ Loans}{Total\ Loans\ and\ Advances} * 100$$

4. Liquidity Indicator

Liquidity measures the bank's ability to meet its current and future cash flow obligations without incurring significant losses or disrupting its daily operations. It is especially important during periods of crisis, as it acts as a safeguard against financial shocks. The standard liquidity ratio adopted by the monetary authority is 30% [32].

$$Bank\ Liquidity = \frac{Current\ Assets}{Total\ Assets}$$

3. Applied study

3.1 Overview of the research sample

The research sample was selected from a group of Iraqi banks listed on the Iraq Stock Exchange. The sample consisted of (8) banks selected on the basis of the availability of complete and continuous financial data throughout the study period from 2012 to 2024. These banks represent a suitable sample for the study in a way that ensures consistency and comparability of financial information.

The applied analysis relied on the annual published financial statements of the sampled banks, including the statement of financial position and income statement, which provided the necessary data for measuring the study variables. In addition, relevant banking and financial indicators were used to assess the effectiveness of the Internal Capital Adequacy Assessment Process (ICAAP) and its impact on banking stability in accordance with the adopted analytical framework.

Table (1): **Study Expenses.**

Capital	Code	Date of establishment	Bank Name	T
Billion dinars 264	BTRI	2006	Across Iraq Investment Bank	1
Billion dinars 400	BBOB	1992	Bank of Baghdad	2
Billion dinars 300	BGUC	2004	Commercial Bank of the Gulf	3
Billion dinars 250	BIBI	1993	Iraqi Investment Bank	4
Billion dinars 400	BNOI	1995	National Bank of Iraq	5
Billion dinars 250	BIME	1993	Iraqi Middle East Investment Bank	6
Billion dinars 250	BEFI	1999	Al-Iktisad Bank for Investment and Finance	7
Billion dinars 346	BROI	1998	Iraqi Credit Bank	8

Source: Prepared by the researcher based on Iraq Stock Exchange reports.

3.2. Measurement of (ICAAP)

A set of financial indicators representing the study variables was adopted. The independent variable, namely the effectiveness of the Internal Capital Adequacy Assessment Process (ICAAP), was measured using a composite index based on four main financial indicators that reflect the strength of a bank's capital and its ability to absorb banking risks. This index was calculated using the following formula:

$$ICAAP = \frac{X1 + X2 + X3 + X4}{4}$$

Where:

X1 = Capital Adequacy Ratio

X2 = Tier 1 Capital + Risk-Weighted Assets

X3 = Equity to Total Assets Ratio

X4 = Leverage Ratio

Where each of these sub-indicators will be explained:

1. Analysis of the Capital Adequacy Ratio under ICAAP

In the ICAAP equation, X1 represents the Capital Adequacy Ratio (CAR), which is one of the main regulatory indicators used to assess a bank's ability to absorb risks through adequate regulatory capital. It is a key benchmark under the Basel framework to strengthen banking stability and reduce financial risk. The minimum required ratio is 8% under Basel standards, while the Central Bank of Iraq has set it at 12% to support the stability of the Iraqi banking sector.

$$X1 = \frac{\textit{Tier1} + \textit{Tier 2}}{\textit{RWA}}$$

2. Analysis of the Sum of Tier 1 Capital and Risk-Weighted Assets under ICAAP

In the ICAAP equation, X2 represents the sum of Tier 1 capital and risk-weighted assets, as shown below:

$$X2 = \textit{Tier1} + \textit{RWA}$$

3. Analysis of the Sum of Tier 1 Capital and Risk-Weighted Assets under ICAAP

In the ICAAP equation, X2 represents the sum of Tier 1 capital and risk-weighted assets, as shown below:

$$X3 = \frac{\textit{Equity}}{\textit{Total Assets}}$$

4. Analysis of the Leverage Ratio under ICAAP

In the ICAAP equation, X4 represents the leverage ratio, which is measured by Tier 1 capital to total assets, as shown in the following formula:

$$x4 = \frac{\textit{Tier1}}{\textit{Assets}}$$

3.3. Measurement of the Banking Stability

The Z-Score measures the extent to which a bank's capital level can absorb losses arising from fluctuations in returns without leading to bankruptcy. A higher Z-Score indicates greater banking stability, while a lower score reflects lower stability. Therefore, the Z-Score is widely used as an indicator of banking stability. The Z-Score indicator, extracted from the financial statements of the commercial banks included in the study sample and listed on the Iraq Stock Exchange, was used to analyze and measure the dependent variable, namely banking stability. This indicator can be measured using the following equation:

$$Z - score = \frac{ROA + (Equity/Asset)}{\sigma(ROA)}$$

3.4. Analysis of Results

3.4.1. Analysis of (ICAAP) of the Sampled Iraqi Banks (2012–2024)

The study analyzed the effectiveness of the Internal Capital Adequacy Assessment Process (ICAAP) and its role in enhancing banking stability for each bank included in the research sample, based on annual financial data for the period 2012–2024.

ICAAP effectiveness was measured using a composite index derived from four financial indicators, while banking stability was measured using the Z-Score indicator, with the aim of identifying the relationship between ICAAP effectiveness and banking stability in Iraqi banks under Basel requirements.

Accordingly, tables are presented and the results are analyzed for each Bank individually, in a manner consistent with the objectives of the study.

Table (2): (ICAAP) of the Sampled Bank

BROI	BEFI	BIME	BNOI	BIBI	BGUC	BBOB	BTRI	Year
57954931	523984473	135558297	67738170	75951006	112614161	146195370	32161786	2012
65006782	414098287	119245827	84566084	120540220	180832734	196272004	17966951	2013
97966152	388368003	147228246	126766422	147213996	196989946	199152061	70246054	2014
112877189	359262205	131135919	121846815	117387944	189060192	172390046	108486108	2015
97281684	324865643	137038402	130601642	127924859	169854611	153117255	125874390	2016
98669435	272802785	121372300	137786248	123637018	148197583	129498851	89938840	2017
96093216	260753059	130433370	146352634	135103431	138938934	117935859	87425082	2018
96094070	265996442	134176197	297366234	138807848	132185551	173882949	86511054	2019
100439513	269350814	139123716	318333796	141676975	145563029	248253451	94616433	2020
98944438	247468828	154187994	369668154	142048914	320048250	259263014	100665550	2021
159895992	211414864	133333922	475467375	160187441	275864816	238263016	100335097	2022
144926614	225980359	122804184	625493738	216271557	474936510	278374179	100099951	2023
204225136	236512759	135278863	728415347	233997622	460415381	600931265	101708902	2024

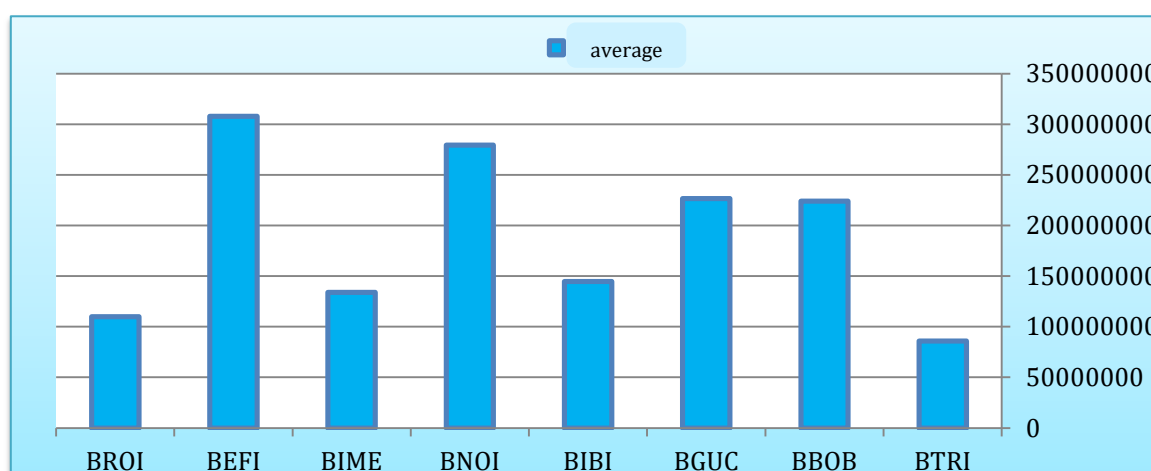
110028858	307758348	133916711	279261743	144672987	226577054	224117640	85848938	Average
204225136	523984473	154187994	728415347	233997622	474936510	600931265	125874390	MAX
57954931	211414864	119245827	67738170	75951006	112614161	117935859	17966951	MIN

Source: Prepared by the researcher based on computer-generated outputs for data analysis.

Table (1) shows the results of the overall Internal Capital Adequacy Assessment Process (ICAAP) index for the banks included in the research sample over the period (2012–2024), together with the average, maximum, and minimum values for each bank during the study period.

Table (1) indicates clear variation in the values of the ICAAP index across the sample banks during the period 2012–2024, reflecting differences in their ability to build a capital base capable of absorbing risks and supporting financial stability. The highest value of the index was recorded by the Iraqi National Bank in 2024, reaching 728,415,346, which was the highest value in the entire table. This result reflects a strong improvement in the bank's capital adequacy components and a clear upward trend compared with 67,738,170 in 2012. In contrast, the lowest value was recorded by Trans Iraq Bank in 2013, amounting to 17,966,950, indicating limited ICAAP effectiveness at the beginning of the study period.

At the bank level, Economy Bank recorded a very high performance, with a maximum value of 523,984,472 and an average of 307,758,348, making it one of the strongest banks in terms of ICAAP effectiveness. Baghdad Bank and Gulf Bank also showed high values, reaching 600,931,265 and 474,936,510 respectively. By contrast, Trans Iraq Bank remained at relatively lower levels compared with other banks. Middle East Bank showed relatively stable values within a moderate range, while Investment Bank recorded gradual improvement without reaching the levels of the best-performing banks. Overall, the results suggest that ICAAP effectiveness was not uniform across banks or over time, but generally showed an upward trend by the end of the study period, which indicates an overall improvement in ICAAP effectiveness among the sample banks.



Source: Prepared by the researcher based on computer-generated outputs for data analysis.

Figure (1): Averages (ICAAP) for the study sample for the period (2012-2024)

Figure (1) illustrates the average values of the overall ICAAP index for the banks included in the research sample over the study period (2012–2024). The figure clearly shows noticeable variation in the average ICAAP values across the sample banks.

The bank averages show clear variation in the mean ICAAP index across the sample banks. Economy Bank ranked first with an average of 307,758,347, followed by the National Bank of Iraq with 279,261,743, then Gulf Bank with 226,577,053, and Baghdad Bank with 224,117,640. These values indicate that these banks were relatively the most effective in the composite index during the study period.

In contrast, Trans Iraq Bank recorded the lowest average among the sample banks at 85,848,938, followed by Credit Bank with 110,028,857, and Middle East Bank with 133,916,710. This variation reflects differences in the banks' ability to support ICAAP requirements through its main components. It also suggests that the effectiveness of this index was not associated with a single bank or a uniform pattern, but rather varied according to the financial structure of each bank and the level of development of the components included in the construction of the index.

3.4.2. Analysis of the Banking Stability of Shares of the Sampled Bank

This section aims to analyze banking stability for the banks included in the research sample, based on annual financial data for the period (2012–2024) and by applying the Z-Score indicator as one of the most widely used measures of bank stability. This analysis helps identify the time trends in banking stability and diagnose the differences in stability levels among the sample banks, reflecting their ability to absorb risks and maintain financial soundness.

Accordingly, the results of estimating banking stability for each bank are presented in tables and illustrative figures, followed by a detailed analysis, as a basis for linking these results with the findings of ICAAP effectiveness in the subsequent section.

Table (3): Z-Score value for the study sample for the period (2012-2024)

BROI	BEFI	BIME	BNOI	BIBI	BGUC	BBOB	BTRI	Year
18.61	20.51	15.79	25.17	6.38	13.85	7.81	50.54	2012
18.20	21.03	17.55	16.76	9.83	14.61	8.02	52.48	2013
25.27	19.99	27.25	21.71	11.70	15.10	7.63	38.13	2014
26.37	24.67	25.11	24.25	10.96	13.12	7.80	42.18	2015
31.96	28.11	27.22	26.37	10.01	12.80	10.82	39.30	2016
35.17	29.44	20.21	23.47	9.46	17.04	11.13	45.86	2017
33.37	33.31	19.80	23.34	8.71	17.28	32.76	47.92	2018
29.08	34.41	24.35	20.64	9.17	17.65	34.15	4.34	2019
28.66	35.10	24.25	17.98	8.98	19.07	9.02	44.45	2020
31.65	34.16	24.77	9.22	7.60	17.63	9.44	39.15	2021
39.70	35.44	19.95	7.24	7.54	17.41	10.02	33.63	2022

31.22	58.54	21.38	8.51	8.10	18.11	9.82	36.30	2023
38.00	35.51	23.68	9.01	8.58	18.74	12.51	34.95	2024
29.79	31.55	22.41	17.98	9.00	16.34	13.15	39.17	Average
39.70	58.54	27.25	26.37	11.70	19.07	34.15	52.48	MAX
18.20	19.99	15.79	7.24	6.38	12.80	7.63	4.34	MIN

Source: Prepared by the researcher based on computer-generated outputs for data analysis.

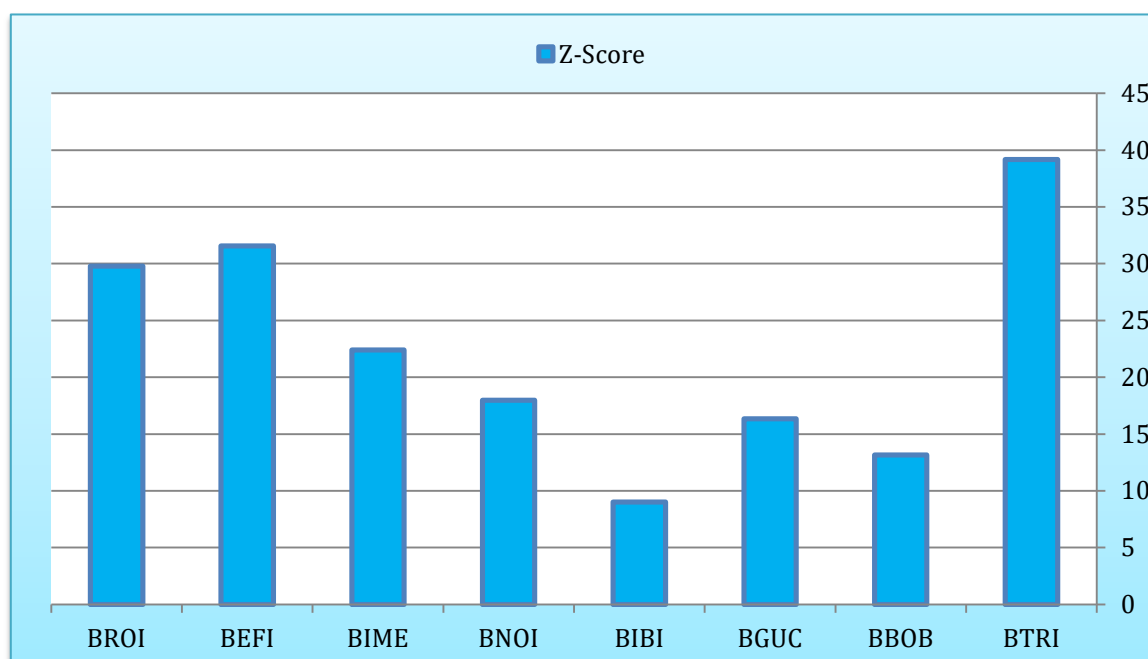
Table (2) presents the results of estimating banking stability for the banks included in the research sample over the study period (2012–2024), based on the Z-Score indicator. The table reveals a clear variation in the levels of banking stability and their time trends across the sample banks.

The results in Table (2) show a clear disparity in banking stability among the sample banks during the period 2012–2024, as measured by the Z-Score. This variation reflects differences in the banks' ability to generate stable returns, maintain adequate capital buffers, and reduce earnings volatility. In general, the table suggests that banking stability was not uniform across the sample, but rather fluctuated according to the financial strength and risk-bearing capacity of each bank over time.

At the overall level, Economy Bank recorded the highest Z-Score in the entire table, reaching 58.54 in 2023, which indicates a very strong level of banking stability. It was followed by Trans Iraq Bank, which recorded 52.48 in 2013, and Credit Bank, which reached 39.70 in 2022. These high values suggest that these banks achieved stronger financial safety margins in certain years. By contrast, the lowest Z-Score in the table was 4.34 for Trans Iraq Bank in 2019, indicating the weakest stability level during the study period. Other relatively low values were also recorded by Investment Bank (6.38 in 2012), National Bank of Iraq (7.24 in 2022), and Baghdad Bank (7.63 in 2014), reflecting weaker stability positions in those years.

With respect to average performance over the whole study period, Trans Iraq Bank ranked first with an average of 39.17, followed by Economy Bank with 31.55, and Credit Bank with 29.79. These averages indicate that these banks generally maintained stronger stability levels than the rest of the sample. On the other hand, Investment Bank recorded the lowest average, at only 9.00, followed by Baghdad Bank with 13.15 and Gulf Bank with 16.34, suggesting a relatively weaker ability to sustain high banking stability over time.

Overall, the table confirms that banks such as Economy Bank, Trans Iraq Bank, and Credit Bank showed relatively stronger stability positions, whereas Investment Bank appeared to be the weakest in terms of average stability. The results also reveal that some banks experienced substantial fluctuations between their highest and lowest values, which indicates that banking stability was influenced not only by structural financial strength but also by year-to-year changes in profitability, capitalization, and return volatility.



Source: Prepared by the researcher based on computer-generated outputs for data analysis

Figure (2):Averages(Z-Score)for the study sample for the period (2012-2024)

Figure (2) illustrates the average levels of banking stability for the sample banks, as measured by the Z-Score. The figure clearly shows noticeable variation in the stability levels across the sample banks, with some banks recording higher average Z-Score values than others.

The chart showing the average bank scores reveals a clear variation in Z-Score values among the sample banks. Trans Iraq Bank ranked first with an average of 39.17, indicating the highest level of banking stability compared with the other banks in the sample. It was followed by Economy Bank with an average of 31.55, and then Credit Bank with 29.79, which also reflect relatively high levels of banking stability. Middle East Bank recorded an average of 22.41, while the National Bank of Iraq averaged 17.98, Gulf Bank 16.34, and Baghdad Bank 13.15. In contrast, Investment Bank ranked last with an average of only 9.00, indicating that it was relatively the least stable bank in the sample.

This chart also shows that the differences among the banks were not limited, but rather quite large, which reflects considerable variation in their ability to achieve banking stability. It further suggests that banks with higher average scores were better able to combine profitability, capital strength, and stable performance, whereas banks with lower averages were more exposed to volatility and had a weaker financial safety margin.

3.4.3. Analysis of the Relationship between (ICAAP) and Banking Stability of Shares

This section aims to identify the nature of the relationship between the effectiveness of the Internal Capital Adequacy Assessment Process (ICAAP) and banking stability for the banks included in the

research sample during the study period (2012–2024). The analysis is based on comparative financial analysis, without relying on statistical methods, in a manner consistent with the nature and objectives of the study.

Accordingly, the relationship between ICAAP effectiveness and banking stability is presented and analyzed for the sampled banks, as shown in Table (3).

Table (4): The Relationship between ICAAP Effectiveness and Banking Stability of the Sampled Banks

BROI	BEFI	BIME	BNOI	BIBI	BGUC	BBOB	BTRI	Banks
110028858	307758348	133916711	279261743	144672987	226577054	224117640	85848938	ICAAP
29.79	31.55	22.41	17.98	9	16.34	13.15	39.17	Z-Score

Source: Prepared by the researcher based on computer-generated outputs for data analysis.

The average values of the sample banks indicate that the relationship between the effectiveness of the Internal Capital Adequacy Assessment Process (ICAAP) and banking stability as measured by the Z-Score appears to be partially positive, but not fully consistent across all banks. On the one hand, Economy Bank shows a relatively clear alignment between the two variables, as it recorded the highest average ICAAP value of 307,758,348, while also achieving a high average Z-Score of 31.55. This suggests that stronger ICAAP effectiveness was associated with a relatively high level of banking stability. A similar pattern, though to a lesser extent, can be observed in the National Bank of Iraq, which recorded an average ICAAP value of 279,261,743 and an average Z-Score of 17.98, indicating a moderate contribution of ICAAP effectiveness to banking stability.

On the other hand, the relationship was not perfectly linear across all banks. Trans Iraq Bank recorded the highest average Z-Score of 39.17, despite having a relatively low average ICAAP value of 85,848,938 compared with several other banks. Likewise, Credit Bank achieved a relatively high average Z-Score of 29.79, although its average ICAAP value was only 110,028,858. In contrast, Baghdad Bank and Gulf Bank recorded relatively high average ICAAP values of 224,117,640 and 226,577,054 respectively, while their average Z-Score values remained lower at 13.15 and 16.34. Meanwhile, Investment Bank showed a clearer consistency with the general trend, as it recorded an average ICAAP value of 144,672,987 and the lowest average Z-Score of 9.00, reflecting relatively weak performance in both ICAAP effectiveness and banking stability.

Based on these average values, it can be concluded that there is a partial explanatory relationship between ICAAP effectiveness and banking stability. Banks with higher ICAAP averages tended in some cases to achieve better stability levels, but this pattern was not uniformly observed across the entire sample. This suggests that banking stability is influenced not only by ICAAP effectiveness, but also by other factors such as profitability, return volatility, capital structure, and managerial efficiency. Therefore, the average values provide a general indication of the relationship between the two variables, but they do not by themselves confirm a strong and fully consistent relationship across all banks.

5. Conclusions and Recommendations

5.1 Conclusions

1. The study showed that the effectiveness of the Internal Capital Adequacy Assessment Process (ICAAP) represents an important tool for supporting banking stability, as it links actual capital adequacy with the level of risks faced by banks within a prudential framework consistent with Basel requirements.
2. The results revealed clear variation among the sampled Iraqi banks in the levels of ICAAP effectiveness, reflecting differences in capital strength, financing structure, and risk management efficiency from one bank to another.
3. The findings on banking stability, measured by the Z-Score, showed that the sample banks were not homogeneous in their ability to achieve stability, as some banks recorded relatively high stability levels while others remained at lower levels, reflecting differences in profitability, capital adequacy, and return volatility.
4. The comparison between the average ICAAP values and the average Z-Score values indicated a partially positive explanatory relationship between the two variables. Some banks with high ICAAP averages also showed good banking stability, but this pattern was not fully consistent across all banks.
5. The study concluded that banking stability is not determined by ICAAP effectiveness alone, but is also influenced by other factors such as profitability, return on assets volatility, capital structure, and managerial efficiency, which explains why the relationship between the two variables was not perfectly regular in all cases.

5.2 Recommendations

1. Iraqi banks should strengthen the implementation of ICAAP as a comprehensive internal supervisory framework rather than treating it as a formal compliance requirement, in order to ensure a closer link between available capital and actual risk exposure.
2. Bank management should improve risk measurement systems and regularly update ICAAP methodologies, while ensuring that their results are integrated into capital planning and risk management decisions.
3. The Central Bank of Iraq should make greater use of ICAAP outcomes in supervisory review and regulatory follow-up, in order to identify capital weaknesses at an early stage and enhance banking stability across the sector.
4. Greater attention should be given to banks that recorded relatively low levels in either ICAAP or Z-Score by improving capital adequacy, asset quality, profitability, and the management of return volatility.
5. Banks and supervisory authorities should not rely on a single indicator when assessing banking stability. Instead, they should adopt a broader set of financial and supervisory indicators alongside ICAAP, since banking stability is influenced by several interrelated factors rather than one variable alone.

REFERENCES

- [1] Central Bank of Kenya. (2016). Guidance note on internal capital adequacy assessment process (ICAAP).
- [2] Al Badarin, Ahmad Mahmoud, Khries, NidalSaleh, & Al-Jarrah, Mohammad Fayez. (2024). Capital Adequacy and its Determinants in Jordanian Islamic and Conventional Banks. *Economic Journal of Jordan Sciences*.
- [3] Obeid, Ahmad. (2023). Bank capital adequacy and its impact on financial stability: A conceptual review. *International Journal of Economics and Finance*, 15(1), 60–74.
- [4] Nguyen, Thao, Tran, Phuong, & Le, Huong. (2021). Implementation of internal capital adequacy assessment process in Vietnamese commercial banks. *International Review of Financial Analysis*, 77, 872–884.
- [5] Cerrone, Roberto. (2015). Internal Capital Adequacy Assessment Process (ICAAP) and bank stability: A regulatory perspective. *Journal of Banking Regulation*, 16(1), 45–60.
- [6] Negrila, A. (2023). The Internal Capital Adequacy Assessment Process ICAAP – a New Challenge for the Romanian Banking System. *The Bucharest Academy of Economic Studies*.
- [7] Central Bank of The Bahamas. (2016). Supervisory and regulatory guidelines: Guidelines for the internal capital adequacy assessment process for licensees.
- [8] Mohamed, K. F. F. (2018). Evaluating the relationship between the banking system stability and the Internal Capital Adequacy Assessment Process: Evidence from the Egyptian banking sector.
- [9] Mohamed, K. F. F. (2018). Evaluating the relationship between the banking system stability and the Internal Capital Adequacy Assessment Process: Evidence from the Egyptian banking sector.
- [10] Khalaf, AmmarHamad, and Dawood, Muhammad Khairi. (2020). Risk Mapping for Assessing the Health of the Iraqi Banking Sector (An Applied Study). *Journal of Monetary and Financial Studies*, Issue 8, 1–23. Central Bank of Iraq.
- [11] Pedroso, AfonsoAmaralPenaforte. (2021). The relation between capital ratios and banks' financial performance (Master's dissertation, UniversidadeCatólicaPortuguesa).
- [12] Mohamed, K. F. F. (2018). Evaluating the relationship between the banking system stability and the Internal Capital Adequacy Assessment Process: Evidence from the Egyptian banking sector.
- [13] Al-Mousawi, HaiderYounis, and Jawad, Muhammad Majeed. (2014). Measuring the impact of electronic banking on the financial performance indicators of banks: An applied study in a sample

of Jordanian banks for the period (2000–2011). *Iraqi Journal of Administrative Sciences*, 10(39), 168–196.

[14] Khudair, Rana Ismail, and Al-Hadidi, Wafaa Hussein Salman. (2023). The impact of financing structure on bank profits: An applied study on a sample of commercial banks listed on the Iraq Stock Exchange for the period (2011–2020). *Journal of Accounting and Financial Studies*, 18(63), 291–305.

[15] Abdel Shafi, Ahmed Abdel Wahab, and Ibrahim, NourHisham. (2020). Analyzing the impact of compliance with liquidity requirements according to Basel III standards on the profitability of a sample of Iraqi banks. *Journal of Monetary and Financial Studies*, Issue 8, 64–96.

[16] Islamic Financial Services Board. (2013). Revised capital adequacy standard for institutions offering Islamic financial services [excluding Islamic insurance (takāful) institutions and Islamic collective investment schemes] (IFSB-15).

[17] Ahmed KarimJumaa Al-Jawaani, & Dr. Haitham Abdul-Khaliq Ismail. (2022). Financial assistance from the Central Bank of Iraq to the government and its impact on banking stability indicators / an applied study. *Journal of Financial Studies (JAFS)*, 17(59), 53-76.

[18] Al-Shalmani, SirajIssa&FakherMuftahBoufouna. (2021). The impact of fiscal policy on banking stability in Libya. *Studies in Economics and Business*.

[19] AdghimEidAdghim Al-Maghwari, Fathi, Saleh El-Din Saleh, Ashraf, & Mohamed Saqr. (2022). An analytical study of the reciprocal relationship between banking stability and competitiveness in Egyptian commercial banks for the period from 2012 to 2019, through measuring banking stability using the NPL ratio and competitiveness using the Lerner Index. *Scientific Journal of Commercial and Environmental Studies*, 13(1), 148-169.

[20] HamamiRaedEmad El-Din. (2025). The role of the college's prudential supervision in achieving banking stability - stress tests as a model (Doctoral dissertation, University of Ghardaia - Faculty of Economic, Commercial and Management Sciences).

[21] QusayJassim Muhammad. (2023). A field study in the Iraqi banking system in light of the initiatives of the Central Bank of Iraq and their role in achieving banking stability for the period 2017-2022. *Gulf Economics Journal*, (58), 117.

[22] Ahmed KarimJumaa Al-Jawani, & Dr. Haitham Abdul-Khaliq Ismail. (2022). Financial assistance from the Central Bank of Iraq to the government and its impact on banking stability indicators / an applied study. *Journal of Financial Studies (JAFS)*, 17(59), 53-76.

[23] Al-A'raji, Sabyan Tariq Saeed. (2020). Financial Inclusion in Iraq and its Impact on Supporting Banking Stability under the Early Warning System for Banking Crises, Master's Thesis in Economic Sciences, College of Administration and Economics - University of Baghdad, Iraq.



- [24] QusayJassim Mohammed. (2023). A field study in the Iraqi banking system in light of the initiatives of the Central Bank of Iraq and its role in achieving banking stability for the period 2017-2022. *Gulf Economic Journal*, (58), 117.
- [25] Al-Fatlawi, RiyamFadhil Shaker. (2019). Analyzing the relationship between financial inclusion and banking stability: Iraq as a case study (Master's thesis, University of Karbala, College of Administration and Economics, Department of Financial and Banking Sciences).
- [26] Al-Shammari, Kamal KadhimJawad, and RiyamFadhil Shaker Al-Fatlawi. (2021). Analyzing the relationship between financial inclusion and banking stability: An applied study in Iraq for the period (2010-2016). *Iraqi Journal of Administrative Sciences*, 16(63), 80-95.
- [27] Ihab Ahmed Fadel, and Haitham Abdul Khaliq Ismail. (2019). The role of monetary policy in the composite index of banking stability in Iraq: An applied study at the Central Bank of Iraq for the period (2010–2017). *Journal of Accounting and Financial Studies (JAFS)*, 14(49), 77-89.
- [28]Mugo, C. (2021). Banking sector consolidation and stability in Kenya. *Journal of Applied Finance and Banking*, 11(3), 129-159.
- [29] Nuria, S.,&Hidayati, C. (2023). Altman Z-ScoreUntukMemprediksi Financial Distress PadaPerusahaan KosmetikDan KeperluanRumahTangga Yang Terdaftar Di Bursa Efek IndonesiaPeriode 2018-2021. *JurnalEkonomi Dan Manajemen*, 3(1), 191-206.
- [30] Chakroun, M. A., &Gallali, M. I. (2015). Islamic banks and financial stability: An empirical analysis of the Gulf countries. *International Journal of Business and Commerce*, 5(3), 64-87.
- [31] Soana, M. G., Barbieri, L., Lippi, A., & Rossi, S. (2021). The Effect of Multiple Large Shareholders on Banks' Profitability and Risk. *Sustainability*, 13(4).
- Ghosh, D., &Kohli, R. (2013). BASEL TO BASEL2 TO BASEL3: *AIMA journal of management& research*, 7(2/4).
- [32]Ratnovski, L., (2013), Liquidity and transparency in Bank risk management", *Journal of Financial Intermediation*, 22(3).