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Financial Inclusion and Its Impact on Enhancing the Stability of the Banking Sector in Iraq for the Period 2015-2022

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Abstract : To build a strong banking sector, it is essential to adopt effective and robust strategies that are well coordinated with each other, with the ultimate goal of elevating the banking sector. This research aims to shed light on the impact of financial inclusion in enhancing the stability of the banking sector in Iraq for the period 2015-2022 and to understand the significance of the interaction and coordination between them.

To achieve this goal, the research encompasses two main aspects. The first aspect provides a theoretical foundation on financial inclusion, its challenges, and banking stability, along with its challenges, followed by an analytical review of the reality of financial inclusion indicators and banking sector stability indicators in Iraq during the studied period.

The second aspect involves a quantitative econometric analysis of the relationship between financial inclusion and banking sector stability in Iraq. This analysis employs a series of tests and econometric models, including unit root tests, cointegration tests, the ARDL model, and the generalized error correction model (VECM). The estimates yielded several findings, among which the impact of financial inclusion on banking sector stability indicators was varied. Some parameters were found to be insignificant, while others were significant. These mixed results were attributed to weak oversight by monetary policy on the banking sector, as both are managed by the same authority, the Central Bank. Consequently, their operations are parallel and complementary rather than intersecting. Therefore, it has become necessary for the Central Bank to draw a roadmap for the operation of both policies, ensuring that each complements the work of the other.

Keywords: Financial Inclusion, Banking Stability.

Introduction:

Financial inclusion and banking stability are crucial topics pursued by international financial institutions, such as the International Monetary Fund (IMF) and the World Bank. Central banks also emphasize the necessity of implementing financial inclusion at the local level. Financial inclusion has become a priority for many countries, including Iraq, which has struggled to achieve adequate levels of financial inclusion due to the low rates of implementation within the banking sector. This shortfall is attributed to the challenging circumstances the country has faced, leading to the depreciation of the national currency against the dollar, high inflation rates, and a loss of confidence in financial and banking institutions.

To raise financial inclusion rates and mobilize funds anew, Iraq must develop plans and strategies to attract a larger number of financially excluded individuals. This will help attract capital, stimulate savings in banks, and increase investment rates. Additionally, efforts should be made to involve low-income groups in the economic process and to stimulate economic activity to achieve financial stability in the banking sector through high levels of financial inclusion. Consequently, the Central Bank of Iraq has mandated that Iraqi banks meet the desired levels of banking sector stability indicators, contributing to a robust banking system capable of facing financial crises or mitigating their effects on the banking sector and the economy in general. This is to be achieved, at a minimum, by adhering to financial inclusion practices.

Importance of the Research

The importance of this research stems from the role financial inclusion plays in enhancing the stability of the banking sector in Iraq. This enhancement can, in turn, bolster economic stability and prevent potential financial crises within

the banking system. Consequently, an efficient banking system can have positive effects on the national economy. Therefore, this research focuses on the impact of financial inclusion and its relationship with banking sector stability, while also highlighting related variables.

Research Problem

The research problem revolves around shortcomings in some monetary procedures due to the lack of clear vision regarding the indicators used to measure banking sector stability. This leads to the following questions:

Can financial inclusion achieve banking sector stability during the period 2015-2022?

Are there a set of challenges related to the economic conditions in Iraq that have negatively affected financial inclusion in achieving banking sector stability?

Research Objective

The research aims to:

Determine the extent of the impact of financial inclusion in Iraq.

Analyze the relationship between financial inclusion and banking sector stability indicators.

Identify obstacles to achieving financial inclusion.

Research Hypothesis

The research is based on the hypothesis that financial inclusion plays an active and significant role in achieving financial stability in the banking sector in Iraq during the period 2015-2022.

Research Methodology

The research adopts a descriptive approach to study financial inclusion and banking sector stability. It also employs quantitative (econometric) methods to estimate and measure the impact of financial inclusion on achieving banking sector stability during the period 2015-2022.

Section One: The Impact of Financial Inclusion on Enhancing Banking Sector Stability: A Theoretical and Conceptual Framework

First: Concept of Financial Inclusion

Financial inclusion refers to the state where all individuals can access a full range of quality financial services at affordable prices in a flexible manner that preserves customer dignity. The Organization for Economic Co-operation and Development (OECD) defines financial inclusion as the process by which access to a wide range of formal, regulated financial services and products is enhanced at reasonable times and prices, adequately meeting the needs of different segments of society(Arab Monetary Fund, 2015). This is achieved through innovative approaches that include financial awareness and education, with the goal of promoting financial well-being and socio-economic inclusion. Financial inclusion is also described as a relative index ranging between one and zero, indicating the potential to deliver services to all customers.

The G20 and the Alliance for Financial Inclusion (AFI) define financial inclusion as the measures taken by regulatory bodies to enhance access and use of financial services and products by all segments of society, including the marginalized and well-off groups, in a manner that meets their needs fairly, transparently, and affordably (Sameer Naima and Mohannad Al-Shallal (2019), p.

The researcher views financial inclusion as encompassing several key dimensions:

•Usage of financial services

•Access to financial services

•Quality of financial services (Bernadette Operana, 2016, p5)

•Availability of financial services to various segments of society, whether institutions or individuals

•Empowerment of societal segments to use these services

•Provision of financial services with appropriate quality and reasonable prices through formal financial channels

Second: Financial Inclusion Indicators

1.Access to financial services

2.Usage of financial services

3.Quality of financial services
Third: Financial Inclusion Challenges in Iraq
1.Low level of banking awareness among citizens
2.Difficulty in obtaining credit or acquiring it from informal sources at high costs
3.Overall decline in investment and savings
4.High inflation and unemployment rates
5.Decline in private sector projects, which are the main drivers of economic growth
1) Spread of corruption, poverty, and crime, with increasing rates
2) Weak financial and banking systems and their inability to keep up with significant technological advancements(Nagham H. Naima & Ahmed N. Hassan 2020 P58)

Fourth: Concept and Importance of Banking Sector Stability

1- **The Concept of Financial Stability** Financial stability refers to a state where the financial system of a bank is strong enough to withstand economic fluctuations. It relates to the system's ability to function as an intermediary in financing, manage payment operations, and distribute risks acceptably(B. Jhonston, J. Chai. & L. Scumacher 2000, P10) The European Central Bank defines financial stability as the condition where financial institutions can absorb shocks and financial imbalances that would negatively affect the efficiency and distribution of savings into profitable investment opportunities. This requires continuous monitoring and evaluation of several related macroeconomic indicators. The central bank believes there is a strong link between monetary stability and financial stability with each enhancing the chances of achieving the other (P. Schioppa 2002). Similarly, the Bank of Canada defines stability as the absence of threats affecting the overall performance of the economy, the financial sector, and other sectors (J. Ottawa 2003, P3). Financial stability in the banking sector also involves avoiding crises, as a financial crisis signifies a loss of control and trust in a country's currency or other financial assets, leading foreign investors to withdraw their capital from the country (**M. Al-Sabawi and Others 2012)**.

After reviewing various definitions, the researcher defines financial stability as the ability of the financial system, with all its institutions, to continue performing its essential functions and achieving its goals appropriately. This is achieved by its capability to correct recurrent imbalances and withstand shocks that affect its various functions effectively while avoiding risks.

2- **Importance of Banking Sector Stability**

a. Contributes to the application of best banking practices
b. Essential for the development of the financial system
c. Enhances financial inclusion and achieves economic development
d. Involves creating a roadmap by zqa1`\ the International Monetary Fund (IMF) to predict

e. The International Monetary Fund (IMF) now issues a biannual report that attempts to monitor financial tensions, contain them, and limit their spread **(Khalid H. Hamza 2020, P54).**

Fifth: Challenges to Achieving Banking Sector Stability

- Decline in Transparency
- Increased Expansion and Complexity in the Financial Banking System
- Rising Levels of Market Dynamism
- Moral Hazards
- Technological and Knowledge Gaps **(A. Abdul Hamid, 2009)**

Section Two: Analysis of Financial Inclusion Indicators and Banking Sector Stability Indicators for the Period 2015-2022

First: Analysis of Financial Inclusion Indicators for the Period 2004-2022

- **Indicator of Access to Financial Services**

3) **a. Banking Density Ratio:** The level of banking density in Iraq is weak compared to global and regional standards. Improving its availability to the largest segment of society will positively reflect on financial and banking awareness and education(**Nagham H. Naima & Ahmed N. Hassan 2020 P14)**

Banking Density = Population 1,000 / Number of Bank Branches

Table (1) shows that the banking density reached 42.62% in 2015, meaning there was one bank branch for every 42.62 thousand people. This is very high compared to international standards, which indicate one bank branch for every 10,000 people. This was due to the decrease in the number of banks to 854 in 2015, down from 1,002 in 2013.

In 2018, the banking density remained below the desired level despite the opening of new banks and the conversion of some financial transfer companies into Islamic banks. The banking density rose slightly to 44.07 in 2018, up from 44.06 in 2017. This slight change was due to the increase in population, which reached 38.124 million in 2018, up from 37.139 million in 2017. The increase in banking density figures indicates a decline in the level of access to financial services, which is a key indicator of financial inclusion. The banking density continued to increase, reaching 48.23 in 2022, down from 45.57 in 2021. This decline is attributed to the decrease in the number of banks to 876 from 904 in 2021.

The analysis reveals that despite efforts to improve financial inclusion by increasing the number of bank branches, the rapid population growth has kept the banking density ratio high, indicating limited access to financial services. This emphasizes the need for more strategic efforts to enhance financial inclusion and ensure broader access to banking services across the country.

B- Banking Spread Ratio

The results of calculating the banking spread ratio according to the following equation:

Banking Spread Ratio = Number of Bank Branches / Population (10,000)

If the banking spread ratio equals one, it represents the ideal number for distribution. If the banking spread ratio is greater than one, it indicates a significant spread of banks, imposing a substantial cost burden on banks and consequently reducing bank profitability. If the banking spread ratio is less than one, it means that the spread of banks is insufficient according to this model, and therefore banking services do not reach a specific segment of people in need of these services (**S. Abdullah & H. Jabarin 2016, P21)**. Table (1) shows that throughout the research period, the banking spread ratio in Iraq ranged from 2.31 to 2.1, indicating little change. This is primarily attributed to a higher population growth rate compared to the growth in the number of bank branches in Iraq, resulting in a decline in access to financial services, which is one of the indicators of financial inclusion.

C- Banking Spread Ratio for ATM Machines

The banking spread ratio for ATM machines in Iraq is very low compared to the global banking system. This indicator is measured by the number of ATM machines per 100,000 adults (over 15 years). We notice a significant decrease in this indicator in Iraq from 2015 to 2016, where the number of ATMs increased from 580 to 983, which is very low when divided by the adult population of 2.63 million in 2015. By 2018, it reached 4.27. This is due to the lack of appropriate technological infrastructure in banking markets and the deterioration of security conditions in Iraq, resulting in a decrease in electronic payment transactions in banking markets. Additionally, most ATM machines belong to private banks and are located in some bank branches, commercial markets, and centers(**Central Bank of Iraq, 2018, P100)**. Later, the number of ATM machines increased to 2223 in 2022, with a ratio of 8.86 per 100,000 adults over 15 years old. Although there is an increase in the number of ATM machines, it does not meet the desired goal due to security challenges. However, with improved security and the Central Bank's efforts to encourage banks to open more ATM machines, this ratio is expected to increase in the coming period due to the strategy set by the Central Bank By introducing modern communication and internet technologies and working on supporting them, it facilitates the establishment of economic and banking relationships with international institutions. to localize the salaries of state employees and pay them electronically. Additionally, there is encouragement from the Central Bank to allow banks to open more ATM machines.

2015-2022 Table Indicators of access to financial services for the period(1)

ATM adults / %	ATM	No. of Adults	Spread of Banking	Every 1000 of Population	Banking Density	No. of Branches	Year
2.63	580	**22082**	2.31	36.399	42.62	854	**2015**
2.91	660	**22654**	2.29	37.883	43.74	866	**2016**
3.34	746	22322	2.27	37.139	44.06	843	**2017**
4.27	983	23015	2.26	38.124	44.07	865	**2018**
4.35	1014	23294	2.25	39.127	44.06	888	**2019**
5.61	1340	23902	2.21	40.15	45.06	891	**2020**
6.39	1566	24522	2.2	41.191	45.57	904	**2021**
8.86	2223	25100	2.1	42.248	48.23	876	**2022**

Source: Central Bank of Iraq, Financial Stability Reports for Various Years

- **Indicators of the Level of Usage and Financial Services:**

The banking depth index illustrates the level of development of banking intermediation through the ease of access to banking services, the reduction of their costs, and the expansion of various banking institutions and instruments, which contribute to supporting investment and economic development. Banking depth is measured by the ratio of private sector loans to GDP and the ratio of private sector deposits to GDP(**Arab Banks Union, 2017,P5)**.

Banking depth for deposits = Total private sector deposits / Total GDP * 100

Through Table (2), we notice an increase in the ratio of private sector loans to GDP from 9.63 in 2015 to 13.28 in 2020, as well as an increase in the volume of private sector deposits to GDP from 11.84 in 2015 to 16.65% in 2020. It is worth noting that these ratios are still low, indicating the weak contribution of the banking sector to GDP and the weak demand for banking services, whether credit services or deposit services. Estimates by the World Bank indicate that the ratio of cash credit reaches more than 100% (**Central Bank of Iraq**, **Financial Stability Report, 2016, P 98) in** advanced banking systems around the world.

Subsequently, the ratio of private sector loans to GDP fluctuated until it reached 8.18% in 2022, attributed to the increase in GDP at rates exceeding the growth rates of loans. The ratio of private sector deposits to GDP decreased, attributed to the increase the volume of deposits decreased due to the contraction of the local GDP as a result of the spread of the coronavirus pandemic. Subsequently, it declined to 14.35%. This indicates that financial inclusion in Iraq is still below the required level when compared to the global banking system.

Table (2)**Indicators of the level of usage of financial services for the period 2015-2022.**

Financial depth of deposits	Financial depth of loan indicator	GDP	Private sector deposits	Loans to private sector	year
11.84	9.63	199,715,699.9	23,636,904	19,226,300	**2015**
11.62	9.73	203,869,832.2	23,697,049	19,843,400	**2016**
11.56	9.38	225,722,375.5	26,093,354	21,168,700	**2017**
10.89	9.19	251,064,479.9	27,364,385	23,073,300	**2018**
11.11	8.81	276,157,867.6	30,708,684	24,326,600	**2019**
16.65	13.28	215,661,516.5	35,920,533	28,655,000	**2020**
14.35	9.67	301,152,818.8	43,243,055	29,124,851	**2021**

Source: Central Bank of Iraq, Financial Stability
Reports for various years.

Section Three: Analysis of Iraqi Banking Sector Stability Indicators for the Period 2004-2022

First: Capital Adequacy Ratio

The Capital Adequacy Ratio (CAR) is one of the most crucial indicators used to assess a bank's ability to withstand potential losses or insolvency. The higher the capital, the lower the probability of financial distress, thereby increasing the bank's financial soundness, and vice versa. One of the primary concerns of the Central Bank of Iraq is to strengthen the financial positions of banks by increasing their capital, as it serves as the first line of defense, making them more capable of overcoming potential risk(D. Al-Saadi, 2018, P287) .

Given the importance of the CAR in safeguarding banks from bankruptcy and ensuring their continued investment operations, Article 16 of the Iraqi Banking Law No. 94 of 2004 sets the minimum CAR at 12% to mitigate credit risk. Notably, the standard set by the Basel Accord is 8%, but due to the high-risk environment of the Iraqi banking sector (K. Abdullah, 2019, P67) a higher ratio is mandated.

According to Table 3, the CAR of banks was 20% in 2015. This high ratio indicates the banking sector's robust ability to absorb potential losses, thus demonstrating its capacity to face unexpected risks and problems. This ratio significantly exceeds the requirement set by the Central Bank. The ratio then fluctuated, with varying increases and decreases, reaching 64% in 2018, the highest during the study period from 2015 to 2022. This high ratio reflects the banking sector's efficiency in managing risks. Subsequently, it continued to fluctuate until it stood at 34% in 2022.

Table (3) Evolution of Capital Adequacy in Iraq for the Period 2015-2022

Year	Capital Adequacy Ratio (%)
2015	20
2016	51
2017	46
2018	64
2019	54
2020	47
2021	52
2022	34

Source: Central Bank of Iraq, Financial Stability Reports, various years.

Second: Profitability Indicator

Profits are among the most crucial elements for ensuring the stable performance of banks, as they are directly influenced by the quality of assets. To analyze the profitability ratio of the Iraqi banking sector for the period 2015-2022, the researcher relied on using profitability ratios through available data according to the indicators of the rate of return on assets, the rate of return on equity, and total non-interest expenses to total income, as follows:

a. Rate of Return on Assets (ROA):

This indicator measures the success of a bank in investing its assets and its ability to direct them towards profitable investment opportunities (H. Al-Rubaie & H. Radi, 2013, P205) . It shows how much income is generated from one dinar invested in the bank's assets. The higher this ratio, the higher the efficiency of the bank's investment and operational activities (D. Al-Shibib 2012, P108). The benchmark profit ratio set by the Central Bank of Iraq is 0.5%. According to Table (4), the rate of return on assets during the research period remained stable at 1%. This stability is primarily due to the banks' investment policies in dealing with assets, which were good and resulted in high investments. This indicates high investment and operational efficiency of the banks. We conclude that the banks' investment policies were relatively close to the benchmark set by the Central Bank of Iraq and did not involve significant risks in the assets, as they were safe investments in treasury transfers and currency windows**(A. Al-Amidi, 2008, P17).**

b. Rate of Return on Equity (ROE):

This indicator shows the ability of banks to achieve returns by using shareholders' funds to maximize their wealth. The higher this ratio, the more efficiently the bank is using shareholders' funds for profitable investments (**D. Al-Saadi, 2018, P65**). The benchmark profit ratio set by the Central Bank of Iraq is 0.5% (**Ministry of Planning, 2010)**. According to Table (4), the rate of return on equity was 7% in 2015, which is high. After that, it fluctuated, reaching 8% in 2017, indicating high efficiency in the banks' investment and operational decision-making. This efficiency surpasses the benchmark set by the Central Bank of Iraq (**K. Abdullah, 2019, P70)** (0.5%). However, the rate of return on equity decreased to 4% in 2018, the lowest during the research period from 2015 to 2022, although still above the Central Bank's benchmark. This decrease is due to the increase in the number of banks and the rise in capital required by the Central Bank of Iraq's regulations. The return on equity for banks in Iraq significantly declined from 2015 to 2022 due to the increased capital in the banking sector and the decrease in net income. Despite this, the return on equity remained above the Central Bank's benchmark, indicating the banking sector's ability to make investment and operational decisions using shareholders' funds. However, it also highlights the high risk due to increased financial leverage. The return on equity rose to 10% in 2022, reflecting the rate of return for investors and the banking sector's success in generating profits, primarily due to increased net profits and assets.

c. Total Non-Interest Expenses to Total Income:

This indicator measures the proportion of administrative expenses to total income, reflecting the efficiency of the bank's management in using its resources. A higher ratio negatively impacts bank profitability and continuity, indicating poor operational efficiency (CIR above 55%). Conversely, a lower ratio suggests positive operational efficiency. According to the table, non-interest expenses to total income were negative from -45% in 2015 to -59% in 2018, indicating positive operational efficiency in the banking sector. However, in 2020 and 2021, the ratio rose to 60% and 61%, respectively, due to increased non-interest expenses resulting from the COVID-19 pandemic's impact and the sharp decline in oil prices at the end of 2019.

Table (4) Profitability Indicators (2015-2022)

Year	ROA (%)	ROE (%)	Total Non-Interest Expenses to Total Income (%)	Interest Margin to Total Income (%)
2015	1	7	-45	45
2016	1	7	-41	48
2017	1	8	-43	56
2018	1	4	-59	57
2019	1	6	51	59
2020	1	8	62	39
2021	1	5	60	49
2022	1	10	38	48

Source: Central Bank of Iraq, Financial Stability Reports for Various Years

Third: Asset Quality

The quality and type of assets are fundamental to the credibility of capital ratios, as most financial insolvency risks in institutions often stem from the quality of assets or difficulties in converting them to liquidity when needed.

a. Non-performing Loans to Total Loans Ratio

This ratio is one of the most important indicators of asset quality, reflecting the risk level in the credit portfolio. Banks in Iraq face both internal and external challenges, with the most significant being the deteriorating security situation and borrowers' inability to repay loans. These challenges negatively impact overall banking performance and contribute to high levels of non-performing loans, which burden banks and adversely affect financial stability in Iraq. Conversely, a lower ratio reduces credit risk, and it is preferable for this ratio to be low, as it indicates efficient bank policies in granting loans and advances (**A. Lutfah Saeed & B. Saeed, 2016, P115**). The benchmark ratio for non-performing loans set by the Central Bank of Iraq is between 2% and 5% (**Central Bank of Iraq, 2015, P36).**

As shown in Table (5), the ratio of non-performing loans to total loans was 10.16% in 2015, which is considered high compared to the benchmark set by the Central Bank of Iraq. This increase is due to improper loan policies adopted by the banks, leading to higher credit risks. Subsequently, this ratio began to decline gradually, reaching 8.39% in 2022. Although it decreased, it still exceeds the Central Bank's specified limit of 5%. This indicates that the overdue debts in both the public and private sectors have a larger share in the private sector. This situation necessitates more attention from monetary authorities regarding credit provided to the private sector, and banks must conduct thorough creditworthiness assessments of their clients.

b. Non-performing Loans to Total Capital Ratio

Table (5) shows that the ratio of non-performing loans to total capital was 30.35% in 2015. This indicates significant risk levels within banking institutions, negatively impacting financial stability in Iraq. As a result, monetary authorities must prioritize addressing this issue to avoid potential future defaults.

The ratio increased to 32.52% in 2018, a very high level, due to the decrease in capital among both government and private banks, as many did not meet the requirement to increase their capital to 250 billion dinars. This situation poses a risk to the banking sector, indicating significant instability within these institutions and subsequently affecting the financial stability index in Iraq. This issue was particularly evident in government banks due to their large loan portfolios and relatively small capital. The exacerbation of this ratio in bank balance sheets clearly signifies financial risk, necessitating urgent attention from regulatory authorities to prevent potential defaults.

By 2022, the ratio of non-performing loans to total capital decreased to 24.36%, attributed to an increase in banking sector capital and a decrease in non-performing loans. From 2018 to 2022, the ratio declined from 32.52% to 24.36%, reflecting improvements in capital adequacy and asset quality within the banking sector.

Table (5) Development of Asset Quality Indicators for the Period 2015-2022

Year	Non-Performing Debt	Total Debt	Total Equity	Ratio of Non-Performing Debt to Total Debt (%)	Ratio of Non-Performing Debt to Total Equity (%)
2015	3,079,653	30,297,202	10,147,898	10.16	30.35
2016	3,346,490	30,612,337	11,739,281	10.93	28.51
2017	4,340,568	30,967,053	14,341,320	14.01	30.27
2018	4,880,628	31,128,596	15,001,306	15.68	32.53
2019	4,147,527	35,410,267	15,351,276	11.71	27.02
2020	4,450,990	43,033,485	16,778,264	10.34	26.53
2021	4,668,546	46,122,945	17,696,513	10.12	26.38
2022	4,355,587	51,861,452	17,879,543	8.39	24.36

Source: Central Bank of Iraq, General Directorate of Statistics and Research, Annual Statistical Bulletin, Various Years

Fourthly: Liquidity Quality

The banking sector enjoys high liquidity levels that exceed those stipulated by the Central Bank of Iraq. Having an appropriate level of liquidity poses a significant challenge for bank management, as it involves a trade-off between profitability and liquidity. A decrease in liquidity levels exposes banks to significant financial risks, potentially leading to bankruptcy. Liquidity, in general, indicates the availability of cash assets or assets easily convertible into cash at low cost to meet the bank's obligations. The liquidity ratio of a bank is measured using four indicators: liquid assets to short-term liabilities, liquid assets to total deposits, liquid assets to total assets, and cash credit to deposits.

Comparing the calculated ratios to the central bank's specified ratio of 30%, the banking sector possesses a high liquidity ratio, providing it with a shield against crises resulting from withdrawals. Consequently, the risk level is minimized, and banks can avoid it by maintaining ample liquid balances, even though it may affect profitability goals. Moreover, banks have the ability to expand their lending operations.

1. **Liquid Assets to Short-term Liabilities:** The table shows that the ratio of liquid assets to short-term liabilities was 314% in 2015, indicating a high financial robustness for both government and private banks. However, this ratio gradually decreased to 87% by 2022, which suggests a decreasing trend over the years. Despite this decline, the ratio remains high and provides substantial financial strength for banks.

2. Liquid Assets to Total Deposits: This indicator reflects the bank's ability to meet its obligations. It was 226% in 2015, significantly high, indicating the unlikelihood of the banking system facing short-term liquidity risks. However, it gradually decreased to 66% by 2022 due to an increase in deposit volume, which exceeded the growth rate of liquid assets.

3. **Liquid Assets to Total Assets:** Liquid assets, characterized by low returns and low risks, are essential for banks to counter sudden deposit withdrawals and serve as a tool for central bank supervision to maintain bank liquidity. This ratio was 65% in 2015, reflecting a cautious approach by the banking system amidst increased country risk. It fluctuated over the years, reaching 66% in 2022.

4. **Cash Credit to Deposits:** The Central Bank of Iraq specified a ratio between 30% and 70% for cash credit to total deposits. The table shows that this ratio was 57% in 2015, gradually declining to 47% by 2022, remaining within the central bank's specified range and reflecting the banks' ability to deploy available funds to meet credit demand.

These indicators collectively demonstrate the robust liquidity position of the banking sector, ensuring stability and resilience against financial crises.

Table (6) Development of Banking Liquidity Indicators for the Period 2015-2022

Year	Liquid Assets to Short-term Liabilities (%)	Liquid Assets to Total Deposits (%)	Cash Credit to Total Deposits (%)
2015	65	314	226
2016	64	312	228
2017	68	120	85
2018	65	102	74
2019	58	96	70
2020	57	83	62
2021	59	92	67
2022	66	87	66

Source: Central Bank of Iraq, Financial Stability Reports for Various Years.

Section Four: Analysis of the Composite Index of Banking Sector Stability in Iraq for the Period 2015-2022

The increasing interest in measuring the composite index of banking stability by many central banks worldwide stems from its ability to provide a better picture of the health and performance of the banking system, as opposed to relying on individual indicators. The composite index of banking sector stability reflects the condition of a country's financial system. Therefore, it is not possible to measure and assess banking sector stability based on a single indicator without considering other indicators that reflect the performance of the banking system.

The composite index of banking stability in Iraq was built on the best international practices in this field, relying on a set of financial ratios suitable for the nature of the Iraqi banking system. These ratios include capital adequacy, banking liquidity, profitability, and asset quality. These indicators reflect the health of the Iraqi banking system and analyze the level of risks it faces in general.

Some indicators are expected to have a positive relationship with the composite index (such as capital adequacy, profitability, and banking liquidity), while others will have an inverse relationship with the financial stability index (such as asset quality).

As noted in Table (7), the composite index of banking sector stability had low levels due to shocks the country faced, including the external shock of falling crude oil prices and the internal shock of terrorist groups controlling certain areas in 2016. The banking sector stability index remained low throughout the study period from 2015 to 2022, recording 0.25. Subsequently, the banking sector stability showed a fluctuating increase, reaching 0.65 in 2022.

Despite the risks the country faced, the banking system reflected an improvement in the level of financial stability in Iraq.

Table (7)
The standardized composite index of banking sector stability in Iraq 2015-2022

لمؤشر جميعي لتقرار لقطاع لصرفي	القيمة عيارية لتمان لتنقدي الى جمالي لودائع	الوزن	The anda rd value of iquid ssets total posit atio.	weig	The ndar value of iquid ssets short term iquid bilitie es atio.	Wei t	The standa rd value of liquid assets to liquid liabilit ies ratio.	weig	The non-perfor ng loa to total capital ratio	weig	The no perfor ng loa to tota loans ratio	Weig	The anda rd lue of terest argin total come atio	الوزن	The ndar value for Total non-terest xpens es to Total come ratio.	Weig	ndar value for eturn on Asset ratio	weig	The ndar value for eturn on quity ratio	wei t	Standar ed value capital adequac	ye
0.25	0.00	**0.25**	0.00	**0.25**	0.00	**0.25**	0.41	**0.5**	0.00	**0.5**	0.00	**0.25**	0.60	**0.25**	0.00	**0.25**	0.00	**0.25**	0.00	**1**	0.001	**2015**
0.41	0.03	**0.25**	0.00	**0.25**	1.00	**0.25**	1.00	**0.5**	0.00	**0.5**	0.00	**0.25**	0.00	**0.25**	0.00	**0.25**	1.00	**0.25**	0.00	**1**	0.001	**2016**
0.51	1.00	**0.25**	0.60	**0.25**	1.00	**0.25**	1.00	**0.5**	1.00	**0.5**	1.00	**0.25**	0.00	**0.25**	1.00	**0.25**	0.00	**0.25**	0.00	**1**	-0.048	**2017**
0.76	4.89	**0.25**	0.00	**0.25**	0.00	**0.25**	0.00	**0.5**	1.00	**0.5**	1.00	**0.25**	0.00	**0.25**	0.04	**0.25**	-0.75	**0.25**	0.00	**1**	0.001	**2018**
0.85	1.00	**0.25**	0.06	**0.25**	1.00	**0.25**	0.65	**0.5**	0.90	**0.5**	1.00	**0.25**	0.00	**0.25**	0.00	**0.25**	1.00	**0.25**	0.67	**1**	-0.100	**2019**
0.83	0.00	**0.25**	0.00	**0.25**	1.00	**0.25**	0.92	**0.5**	0.10	**0.5**	1.00	**0.25**	0.00	**0.25**	0.00	**0.25**	1.00	**0.25**	1.00	**1**	-0.165	**2020**
0.83	0.19	**0.25**	0.02	**0.25**	0.29	**0.25**	0.18	**0.5**	0.50	**0.5**	0.97	**0.25**	0.04	**0.25**	0.25	**0.25**	1.00	**0.25**	1.00	**1**	-0.109	**2021**
0.65	0.14	**0.25**	0.23	**0.25**	1.00	**0.25**	1.00	**0.5**	1.00	**0.5**	0.98	**0.25**	0.36	**0.25**	0.82	**0.25**	1.00	**0.25**	0.00	**1**	-0.290	**2022**

Source: Prepared by the researcher based on data from the following tables (5, 6, 7, 8, 9)
Assigning weights to indicators based on equal weights.
The formula used to convert data into standard values: Z = (A - Min) / S.D.

Section Five: Testing the Stability of Time Series

The objective of conducting the time series stability test is to ensure that the studied time series are free from the unit root problem. The presence of a unit root can lead to misleading and inaccurate results. To detect the absence of a unit root in these series, several tests are used, including the Augmented Dickey-Fuller (ADF) test and the Phillips-Perron (PP) test. Table (8) shows the stability tests for the studied variables.

***Table* Stationary PP Test (8)**

Variables	PP				
	Level	*Prob*	*1st difference*	*Prob*	
BANKING__SECTOR__STABILITY has a unit root	---	----	-3.936121	*0.0886*	*None*
BANKING_ DEPTH_ OF LOANS	---	---	-1.6783121	0.0017	*None*
BANKING _DEPTH_ OF DEPOSITS	---	----	-1.951725	0.0633	*None*
BANKING_ DENSITY	----	---	-3.1627	0.0048	*None*
ATM-AP	-4.064340	*0.0889*			*None*
BANKING _SPREAD	-1.768211	0.0739			*None*

Source: Prepared by the researchers based on the results from EViews 13.

Section Six: Estimating the Model According to the ARDL Methodology

1- Measuring the Impact of Financial Inclusion on Enhancing Banking Sector Stability in Iraq for the Period 2015-2022 Using the ARDL Model

From Table (8) and according to the Phillips-Perron test, we observe differences in the orders of variable stationarity, meaning the variables are not stationary at the same level. The dependent variable, Banking Sector Stability (BANKING__SECTOR__STABILITY), is stationary only at the first difference, whereas the independent variables (ATM-AP) and (Banking_spread) are stationary at the level, indicating they are I(0). The variables (BANKING_DEPTH_OF_LOANS, BANKING_DEPTH_OF_DEPOSITS, and BANKING_DENSITY) are stationary at the first difference, indicating they are I(1).

Table (9)Measuring the Impact of Financial Inclusion on Enhancing Banking Sector Stability in Iraq for the Period 2015-2022 Using the ARDL Model

Dependent Variable: BANKING__SECTOR__STABILITY
Method: ARDL
Date: 03/26/24 Time: 23:57
Sample (adjusted): 2015Q4 2022Q4
Included observations: 29 after adjustments
Maximum dependent lags: 3 (Automatic selection)
Model selection method: Akaike info criterion (AIC)
Dynamic regressors (0 lag, automatic): BANKING__DENSITY ATM_AP BANKING__SPREAD BANKING__DEPTH__OF_DEPOSITS BANKING__DEPTH__OF_LOANS
Fixed regressors: C
Number of models evalulated: 3
Selected Model: ARDL(3, 0, 0, 0, 0, 0)

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
BANKING__SECTOR__STABILITY(-1)	0.743221	0.264698	2.807808	0.0109
BANKING__SECTOR__STABILITY(-2)	-0.410816	0.301060	-1.364563	0.1875
BANKING__SECTOR__STABILITY(-3)	0.537344	0.251365	2.137708	0.0451
BANKING__DENSITY	0.007750	0.037395	0.207248	0.8379
ATM_AP	0.107389	0.031843	3.372451	0.0030
BANKING__SPREAD	2.950364	1.281180	2.302849	0.0322
BANKING__DEPTH__OF_DEPOSITS	-0.053168	0.015423	-3.447187	0.0025
BANKING__DEPTH__OF_LOANS	0.051925	0.015330	3.387102	0.0029
C	-7.174944	4.357626	-1.646526	0.1153

R-squared	0.931245	Mean dependent var	0.678599
Adjusted R-squared	0.921885	S.D. dependent var	0.180486
S.E. of regression	0.018081	Akaike info criterion	-4.938762
Sum squared resid	0.006539	Schwarz criterion	-4.514429
Log likelihood	80.61205	Hannan-Quinn criter.	-4.805866
F-statistic	346.2397	Durbin-Watson stat	1.296232
Prob(F-statistic)	0.000000		

*Note: p-values and any subsequent tests do not account for model selection.

Source: Prepared by the researchers based on the results from EViews 13.

Analysis of the ARDL Model Results

Table (9) presents the results of the model estimation. We find that most of the estimated parameters are significant, indicating the explanatory power of the model. The coefficient of determination (R^2) value is 0.93, which is very high. This means that 93% of the variation in banking sector stability can be explained by the independent variables related to financial inclusion, namely, the banking depth of loans, banking depth of deposits, banking spread, and banking density. The remaining 7% can be attributed to other factors not included in the model. This suggests that financial inclusion significantly enhances banking sector stability.

The Durbin-Watson (DW) statistic is 1.297, indicating no autocorrelation problem between the financial inclusion variables and the composite banking sector stability index. Furthermore, the overall significance of the model is demonstrated by the computed F-value of 346.2397 with a p-value of 0.00000, which is greater than the critical F-

value at the 1% significance level. This indicates the model's robustness in expressing the relationship between financial inclusion and banking sector stability for the period 2015-2022.

Bound Test for Cointegration: Estimating Short-Term and Long-Term Relationships

After estimating the model using the ARDL methodology, we conduct the bound test to verify the existence or absence of cointegration among the studied variables. The results of this test will elucidate whether a long-term equilibrium relationship exists between financial inclusion and banking sector stability.

TableShort and long term Estimations(10)

ARDL Error Correction Regression
Dependent Variable: D(BANKING__SECTOR__STABILITY)
Selected Model: ARDL(1, 1, 1, 1, 1, 1)
Case 2: Restricted Constant and No Trend
Date: 03/30/24 Time: 14:33
Sample: 2015Q1 2022Q4
Included observations: 31

ECM Regression
Case 2: Restricted Constant and No Trend

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(BANKING__DENSITY)	-0.023582	3.22E-05	-731.4560	0.0000
D(ATM_AP)	0.013785	2.84E-05	486.1768	0.0000
D(BANKING__DEPTH...	-0.145732	1.86E-05	-7821.734	0.0000
D(BANKING__DEPTH...	0.146269	1.78E-05	8224.109	0.0000
D(BANKING__SPREAD)	1.515829	0.001194	1269.442	0.0000
CointEq(-1)*	0.012114	1.24E-06	9773.090	0.0000

R-squared	0.890001	Mean dependent var	0.011815
Adjusted R-squared	0.881589	S.D. dependent var	0.041259
S.E. of regression	1.69E-05	Akaike info criterion	-18.96205
Sum squared resid	7.17E-09	Schwarz criterion	-18.68451
Log likelihood	299.9118	Hannan-Quinn criter.	-18.87158
Durbin-Watson stat	1.984840		

* p-value incompatible with t-Bounds distribution.

F-Bounds Test — Null Hypothesis: No levels relationship

Test Statistic	Value	Signif.	I(0)	I(1)
F-statistic	6.370015	10%	2.08	3
k	5	5%	2.39	3.38
		2.5%	2.7	3.73
		1%	3.06	4.15

Source: Prepared by the researchers based on the results from EViews 13.

Analysis of Long-Term Cointegration Relationship

Table (10) reveals the presence of a cointegration relationship between financial inclusion variables and the composite banking sector stability index. This indicates a long-term equilibrium relationship between the independent and dependent variables. The F-statistic value of 6.370015 exceeds the critical bounds values of 4.15 at the 1% significance level, thus we accept the alternative hypothesis of cointegration. This confirms the existence of long-term linear relationships between financial inclusion and the composite banking sector stability index.

When estimating the error correction term, we observe a negative and significant value of -0.012114 at the 1% significance level. This further affirms the presence of a cointegration relationship between the independent variables (financial inclusion) and the dependent variable (banking sector stability). The error correction term (CointEq (-1)) indicates the speed at which the banking sector stability variable returns to its equilibrium value in the long run. The error correction rate of -0.012 means that 12% of the short-term deviation from equilibrium in the previous period (t-1) is corrected in the current period towards a long-term equilibrium. This implies that financial inclusion can correct 12% of the disturbances occurring in banking sector stability, meaning that financial inclusion would take approximately 8.33 periods, or roughly two years, three months, and three days to restore its natural balance.

Diagnostic Tests for Model Validation

These tests ensure the model does not suffer from standard econometric issues:

1. **Breusch-Godfrey Serial Correlation LM Test**

Table (11) indicates that the model is free from autocorrelation issues. The Prob. Chi-Square value of 0.1492 is greater than the 5% significance level, leading us to accept the null hypothesis that the residuals are not serially correlated.

By conducting these tests, we confirm that the model is robust and adequately represents the relationship between financial inclusion and banking sector stability without suffering from econometric problems.

Diagnostic Tests for Model Validation

1. Breusch-Godfrey Serial Correlation LM Test

Table (11): Autocorrelation Problem LM Test

Source: Prepared by the researchers using EViews 13

The results in Table (11) indicate that the model does not suffer from the problem of autocorrelation. The Prob. Chi-Square value is 0.1492, which is greater than the 5% significance level. Therefore, we accept the null hypothesis that the residuals are not serially correlated.

2. Heteroscedasticity Test

To ensure that the residuals do not suffer from the problem of heteroscedasticity, we find that the Prob. Chi-Square value is 0.4734, which is greater than the 5% significance level. Therefore, we accept the null hypothesis that the residuals do not exhibit heteroscedasticity and reject the alternative hypothesis that they do. This is illustrated in Table (12).

Table (12): Heteroscedasticity Problem

Heteroskedasticity Test: ARCH			
F-statistic	0.487125	Prob. F(1,27)	0.4912
Obs*R-squared	0.513936	Prob. Chi-Square(1)	0.4734

Source: Prepared by the researchers using EViews 13

These tests confirm that the estimated model is robust and does not suffer from autocorrelation or heteroscedasticity issues. This strengthens the reliability of the model in explaining the relationship between financial inclusion and the stability of the banking sector in Iraq for the period 2015-2022.

Conclusions

1. **Banking Spread and Density**: The spread and density of banking services in Iraq remain below the desired level despite the Central Bank's encouragement for banks to open branches across the country. The number of banks increased marginally during the study period.
2. **ATM Growth**: The number of ATMs increased from 580 in 2015 to 2,223 in 2022. However, this growth does not meet the desired goals, mainly due to security challenges that prevent the installation of ATMs in public areas.
3. **Basel III Compliance**: The banking sector can implement Basel III standards, especially concerning capital adequacy. Data indicates that the Iraqi banking sector has high capital adequacy ratios, reflecting its capacity to handle anticipated risks and challenges.
4. **Banking Sector Stability Index**: The composite index of banking sector stability improved throughout the study period, rising from 0.25 in 2015 to 0.65 in 2022, indicating acceptable stability levels.

Recommendations

1. **Financial Stability**: Achieving financial stability is crucial for the robustness and resilience of the banking sector, enabling it to avoid financial and monetary crises or mitigate their impacts.
2. **Financial Inclusion**: Enhance financial inclusion initiatives led by the Central Bank of Iraq, as these are vital for extending essential banking services to all societal segments, particularly those currently excluded.

3. **Learning from Global Experiences**: Leverage the experiences of advanced and emerging economies in addressing banking sector instability by forming agreements and cooperating in banking services, and promoting banking awareness and culture among individuals.
4. **Banking Infrastructure Expansion**: Expand the banking sector's infrastructure in Iraq to ensure easy access to banking services, especially in rural and village areas.
5. **Financial Literacy**: The Central Bank of Iraq and decision-makers should focus on increasing financial awareness and education across all societal segments through intensified seminars and awareness publications.

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