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Original Research Article

Sustainable Development Indicators in Iraq and its Role in Achieving Financial Inclusion: A Study on Economic and Social Indicators

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Abstract: This study examines the impact of financial inclusion on sustainable development in Iraq, focusing on both economic and social indicators. Against a backdrop of longstanding political instability, economic fragility, and institutional challenges, Iraq presents a unique context in which financial exclusion exacerbates poverty, inequality, and limited access to financial resources. Using a descriptive-analytical approach, the research analyzes data from seven Iraqi banks to assess the relationship between financial inclusion indicators—such as credit growth, electronic services, and bank account ownership—and sustainable development indicators, particularly Return on Assets (ROA) and Return on Equity (ROE). The findings reveal a significant positive short- and long-term impact of financial inclusion on ROA across most banks, indicating that enhanced access to financial services improves operational efficiency. However, the effect on ROE was limited or insignificant in several cases, suggesting that equity performance may depend on broader structural factors. The study underscores the need for improved financial infrastructure, enhanced digital banking services, and targeted lending programs to strengthen financial inclusion and advance sustainable development in Iraq. Recommendations include enhancing loan quality, promoting SME financing, and integrating financial inclusion into national development strategies.

Keywords: Financial Inclusion, Sustainable Development, Return on Assets, Return on Equity, Iraqi Banks.

INTRODUCTION

Amid the complex economic, social, and political conditions that Iraq has been experiencing for decades, the need has escalated for new developmental models that go beyond traditional treatments and seek to activate latent economic potentials, particularly those related to marginalized segments of the population. Financial inclusion is considered one of the most prominent of these models, due to its ability to connect individuals and institutions with the formal financial system and stimulate economic activities at both local and national levels. (Al-Zidawi, 2020, p. 34)

Currently, the financial sector is one of the most important drivers used to measure the progress of countries in terms of sustainable development and urban advancement. The progress of countries is assessed through the development of their financial institutions, especially if these institutions rely on technological applications and modern intelligent systems. In recent years, the financial sector has witnessed unprecedented transformations driven by a rapid wave of digitization covering its various branches. This has contributed to inaugurating a new phase of financial inclusion, which is not limited to institutions alone but also includes the individuals dealing with them, since citizens represent one of the fundamental pillars for achieving development. It is impossible to build an effective digital economy system or implement real economic reform without including individuals within the formal financial system. (Al-Kubaisi, 2022, p. 25)

In the Iraqi context, the importance of financial inclusion appears more acute due to high poverty rates, uneven geographic distribution of financial services, weak banking culture among citizens, and challenges of financial and administrative corruption. Studies have revealed that a large proportion of the population, especially in rural areas, do not possess bank accounts nor deal with formal financial institutions, which deprives them of saving and investment tools and makes them more vulnerable to economic shocks. (Amer, 2023, p. 51)

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Global experiences show that enhancing financial inclusion is not achieved merely through quantitative expansion in opening accounts or spreading banking service points, but also requires deep structural reforms, including improving legislation, enhancing trust in the financial system, expanding the network of electronic services, and raising the level of financial literacy. In Iraq, this necessitates a multi-stakeholder partnership that includes the Central Bank, commercial banks, government institutions, civil society, and international organizations. (Ghaith, 2023, p. 152)

Therefore, this study embarks on analyzing the relationship between financial inclusion and sustainable development in Iraq by focusing on a set of economic indicators (such as growth, poverty, employment, small project financing) and social indicators (such as education, equality, and social stability).

Research Problem:

Iraq faces multiple economic and social challenges, most notably poverty, unemployment, low levels of services, and a widening gap between social segments in terms of access to financial resources. Despite efforts made by the Central Bank of Iraq and state institutions to promote financial inclusion, the results remain below the desired level. The financial system still suffers from weak infrastructure, low trust, limited financial literacy, in addition to the concentration of financial services in major cities and their absence in rural areas.

The core research problem can be summarized in the following question:

To what extent does financial inclusion contribute to achieving sustainable development in Iraq, and what is the nature of the relationship between financial inclusion indicators (such as bank account ownership, electronic services, microfinance) and the economic and social indicators of sustainable development in the country?

Significance of the Study:

The importance of this study lies in the following points:

1. It addresses a vital topic linking the financial sector with sustainable development goals.
2. It contributes to shedding light on the reality of financial inclusion in Iraq and identifying the main challenges hindering its enhancement.
3. It provides recommendations that may contribute to formulating public policies aimed at expanding the base of financial inclusion as an effective approach to development.
4. It helps fill the research gap in recent Iraqi literature regarding the relationship between financial inclusion and sustainable development.

Research Objectives:

This study aims to achieve the following objectives:

1. To understand the concept of financial inclusion and its theoretical and practical dimensions.
2. To analyze financial inclusion indicators in Iraq over recent years.
3. To study the relationship between financial inclusion and sustainable development (economically and socially).
4. To evaluate the current policies adopted in Iraq to promote financial inclusion.
5. To provide practical proposals and recommendations to enhance the role of financial inclusion in supporting sustainable development.

Research Hypothesis:

The study is based on the following main hypothesis:

There is a statistically significant positive effect of financial inclusion on achieving sustainable development in Iraq through improving economic and social indicators such as economic growth, poverty reduction, and increasing employment rates.

Research Methodology:

The study relies on a descriptive-analytical approach through:

Descriptive Method: Reviewing theoretical concepts and previous studies on financial inclusion and sustainable development.

Analytical Method: Analyzing data and official statistics issued by the Central Bank of Iraq, the Central Statistical Organization, and international reports such as those from the World Bank and IMF, using the E-views software.

Using quantitative analysis tools (such as statistical indicators and time-series comparisons) to measure the relationship between financial inclusion indicators and sustainable development.

Relying on official reports, master's and doctoral theses, and research published in reputable scientific journals.

Research Population and Sample: The research population consists of all banks operating in Iraq.

The research sample consists of seven banks, which are:

1. Gulf Commercial Bank – Iraq
2. Ashur Bank
3. United Investment Bank
4. Middle East Bank
5. Across Iraq Investment Bank
6. Mosul Bank
7. Iraqi Investment Bank

Financial Inclusion

Financial inclusion is defined as the process that enables individuals, especially those with limited income

and vulnerable groups, to access a variety of formal financial services—such as bank accounts, payment services, savings, insurance, and credit—in a fair manner and at affordable prices (World Bank, 2022). Financial inclusion represents one of the main drivers for achieving the seventeen Sustainable Development Goals (SDGs), through its role in reducing poverty (Goal 1), achieving gender equality (Goal 5), promoting economic growth and decent work (Goal 8), and reducing inequalities (Goal 10).

First: The Concept of Financial Inclusion

Financial inclusion is a relatively recent concept that emerged especially in recent years as a result of the repercussions of the global financial crisis. It has become a key element in the economic and financial development agenda of the Group of Twenty (G20). According to the G20 and the Alliance for Financial Inclusion (AFI), financial inclusion is defined as:

"The measures taken by regulatory authorities to enhance access to and usage of financial services and products by all segments of society, including marginalized and affluent groups, provided fairly and at reasonable costs" (Al-Saeed, 2022, p. 25).

The World Bank (2014) defined financial inclusion in its report as:

"The percentage of individuals or businesses that use financial services out of the total population" (World Bank Report, 2014). This definition has gained increasing importance at both local and international levels, especially among policymakers, as nearly 50 countries have begun to establish strategies and regulatory frameworks to achieve financial inclusion goals (Mostafa, 2018, p. 34).

Despite the diversity of definitions of financial inclusion in the literature, for the purposes of this study, it can be defined as: "A set of policies and programs adopted by governments and financial institutions aimed at enhancing access to and utilization of financial services and products in all regions and for all segments of society, with a focus on marginalized groups such as the poor, rural populations, and women, in a manner that suits their needs at affordable costs and appropriate quality, through an organized and fair approach that ensures consumer protection from fraud and exploitation" (Abdel Aziz Saeed, 2020). The Central Bank of Iraq defines financial inclusion as the availability and usage of various financial services such as bank accounts, payment and transfer services, insurance, financing, credit, and others through formal financial institutions such as banks, microfinance companies, and postal institutions (Central Bank of Egypt Report, 2018, p1

Conditions of Financial Inclusion

The Financial Inclusion Data Working Group (AFIDWG) of the Alliance for Financial Inclusion (AFI) has established a set of essential conditions that must be met in the indicators used to measure financial inclusion. These conditions are as follows:

- **Usefulness and Relevance**: This refers to selecting indicators that help in formulating effective national policies to promote financial inclusion.
- **Consistency**: Indicators must be measurable and comparable across time and geographical locations to ensure data accuracy and credibility.
- **Balance**: It is essential for financial inclusion to cover both the supply side (individuals' access to financial services) and the demand side (facilitating individuals' utilization of those services).
- **Flexibility**: Financial inclusion should be adaptable to the varying economic, geographic, social, and cultural contexts of different countries. Since circumstances and available resources differ among nations, financial inclusion indicators must be adaptable or replaceable with alternative indicators suited to each specific case (Ahmed, 2019, p. 112).
- **Pragmatism**: This entails relying as much as possible on existing and available data to reduce the effort and cost associated with data collection and analysis.
- **Ambition**: This is measured with precision and requires the allocation of additional resources and efforts to elevate the level of financial inclusion in alignment with the specified conditions (Rajab, 2018, p. 2).

It is important to emphasize that the recent developments related to the COVID-19 pandemic have increased the potential for the spread and enhancement of financial inclusion in the future. The outbreak of the pandemic caused a sharp contraction in the real economy, both directly due to the virus's spread and indirectly as a result of precautionary measures such as lockdowns and social distancing, which reduced borrowers' ability to repay and posed challenges to the survival of many financial institutions.

Sustainable Development

In the early 1970s, specifically in 1972, a number of researchers—most notably Donella Meadows—highlighted the existence of limits to growth faced by humanity, due to escalating environmental problems and existential concerns related to the accelerated consumption of natural resources. This perspective served as an early warning about the planet's future if humans continued depleting its resources without environmental awareness (Zvirgzdins, 2020, p. 98). In 1983, the Governing Council of the United Nations Environment Programme (UNEP) recognized the necessity of conducting a comprehensive and integrated assessment of existing environmental problems and of formulating a set of principles

concerned with environmental management and the achievement of sustainable development. This initiative came as part of the preparations to establish an international commission on environment and development. As a result, the World Commission on Environment and Development (WCED) was established, commonly known as the Brundtland Commission. In 1987, the Commission published a pivotal report titled "Our Common Future," in which the term "sustainable development" was officially adopted on a global level for the first time (Zroukhi, 2018, p. 85).

First: The Concept of Sustainable Development

Some researchers define sustainable development as a process aimed at meeting the needs of individuals in the present without compromising the ability and potential of future generations to meet their own needs. It is viewed as an approach to preserving diverse natural resources and ensuring their sustainability to meet the economic, social, and administrative needs of society. (Rebbouh, 2020, p. 89)

The American Society for Public Administration defines sustainable development as:

"A response by institutional management to societal concerns in general, and an adjustment of consumer expectations, while continuing to achieve individual contributions aimed at generating economic wealth. It also expresses an ethical commitment to establishing clear standards when making strategic decisions that serve the public interest and promote the well-being of society as a whole." (Maksyshko, 2022, p. 1) In the same context, the World Commission on Environment and Development emphasized that sustainable development is: "Development that meets the needs of the present generation without endangering the ability of future generations to meet their own needs."

Sustainable development also refers to an economic activity that aims to achieve social well-being while preserving available natural resources and ensuring the least possible environmental degradation or negative impact on the ecosystem. (Grouf, 2019, p. 286)

Second: Dimensions of Sustainable Development

Sustainable development relies on three main dimensions, as noted by (Bataher, 2020, pp. 29–30):

1. **Environmental Dimension**: This dimension requires the protection of natural resources essential for food production. Failure to protect agricultural resources could lead to a global food crisis that may threaten the future of upcoming generations.
2. **Economic Dimension**: This involves providing the technical and financial resources necessary to sustain development, particularly in developing countries. It contributes to reducing poverty and improving healthcare and education levels, which in turn helps stimulate economic growth.
3. **Social Dimension**: This entails achieving progress in balanced population growth and ensuring a fair distribution of the population between rural and urban areas to reduce negative environmental impacts. It also includes improving education, healthcare, and access to clean water, thereby promoting social justice.
4. In addition to these three core dimensions, some specialists have identified a fourth significant and influential dimension—one that intersects all aspects of sustainable development—namely, the technological dimension (Al-Rikabi, 2020, p. 100)

The Importance of Financial Inclusion in Achieving Sustainable Development

There is a strong relationship between financial inclusion and sustainable development, as the core objectives of sustainable development cannot be realistically achieved without implementing effective financial inclusion mechanisms. One of the most prominent goals is eradicating poverty, which currently threatens approximately 522 million people globally—a number expected to rise by 2032.

From this standpoint, the development of financial inclusion services contributes effectively to poverty reduction by:

- Enhancing income-generating capabilities, offering individuals better opportunities to improve their standard of living.
- Enabling poor households to access savings services, increasing their resilience to financial shocks and strengthening their ability to acquire productive assets that help them escape poverty.
- Additionally, digital financial services serve as an effective tool for facilitating wage distribution and improving the efficiency of financial systems. (Leora, 2016, p. 9)

The relationship between financial inclusion and sustainable development is evident in the economic and social benefits that result from integrating individuals, businesses, and government institutions into the financial system to achieve sustainability. The link between financial inclusion and sustainable development can also be recognized through the implementation of financial inclusion policies using existing economic and social mechanisms, which are essential for achieving sustainable development. (Ozili, 2022, p. 187)

Financial inclusion occupies a prominent role as a key enabler of the 2030 Sustainable Development Goals (SDGs). It is considered a fundamental component in eight out of the seventeen goals, namely:

1. Goal 1: No poverty.
2. Goal 2: Zero hunger, food security, and promotion of sustainable agriculture.
3. Goal 3: Good health and well-being.

4. Goal 5: Gender equality and the economic empowerment of women.
5. Goal 8: Decent work and economic growth.
6. Goal 9: Industry, innovation, and infrastructure.
7. Goal 10: Reduced inequalities.
8. Goal 17: Partnerships for the goals and mobilization of implementation resources.

Sources of Data Collection:

The study includes data obtained from all time series available from relevant governmental institutions, such as the Ministry of Finance, the Ministry of Planning, and the Central Bank of Iraq. The time series comprises annual data covering the period from 2011 to 2020.

Economic growth indicators were gathered from several reporting sources, including the Central Bank of Iraq, the Department of Statistics and Research, the Central Statistical Organization, and the Statistical Research Center in Iraq under the Iraqi Ministry of Planning.

Study Variables:

The study uses statistical analysis to examine the relationship between the dependent and independent variables:

- **Independent Variable**: *Financial inclusion in Iraq* (i.e., the availability and effectiveness of financial services that enable individuals and businesses to access banking and financial services).
- **Dependent Variable**: *Achievement of sustainable development in Iraq* (i.e., the extent to which economic, social, and environmental goals of sustainable development are being achieved in Iraq).

Research Methodology:

This study adopts both the analytical and econometric approaches. The analytical method is employed in a theoretical manner to clarify the perspectives of various economic schools of thought and to understand their views on economic growth.

The study relies on modern methodologies to investigate the relationship between economic variables, such as the Johansen multivariate co-integration technique used to determine the relationship between the independent and dependent variables, in addition to the Granger causality test to investigate cause-and-effect relationships. Finally, the Vector Autoregression (VAR) model is applied independently to estimate the direction of the relationship.

The independent estimation model consists of a number of mathematical equations used in a consistent and integrated manner, where each variable operates independently over a separate time period and across other variables. These include:

- Stationarity Test of Time Series Data
- Johansen Cointegration Test for determining the cointegration of variables
- Granger Causality Test
- Vector Autoregression (VAR) Model for analyzing the relationship among variables

1. Stationarity Test of Time Series Data

Such tests are used to determine whether the study variables are stationary or non-stationary, as time series data often exhibit non-stationarity and low stability, which may lead to what is referred to as a *spurious regression*.

If the data are horizontally stationary over the time axis (X-axis), i.e., the variable fluctuates around a constant mean, it is said to be stationary. However, if the data exhibit time-dependent behavior, it is considered non-stationary.

One of the most important statistical methods for testing the stationarity of time series is Unit Root Tests, typically based on the following equation:

$Y_t = \rho Y_{t-1} + v_t$

Where:

- Y_t represents the variable at time (t)
- v_t is the disturbance term with a mean equal to zero (u = 0)

Modern economic studies indicate that the most effective method for handling data contaminated with unit roots is the Augmented Dickey-Fuller (ADF) Test, as it avoids autocorrelation errors between variables.

The ADF test for unit root estimation is based on estimating one of the following models:

1. Without intercept or trend:
   $\Delta Y_t = (\rho-1)Y_{t-1} + \sum(j=1 \text{ to } k)\, \beta_{2j}\, \Delta Y_{t-j} + v_t$
2. With intercept (no trend):
   $\Delta Y_t = \alpha + (\rho-1)Y_{t-1} + \sum(j=1 \text{ to } k)\, \beta_{2j}\, \Delta Y_{t-j} + v_t$
3. With intercept and time trend:
   $\Delta Y_t = \alpha + \beta t + (\rho-1)Y_{t-1} + \sum(j=1 \text{ to } k)\, \beta_{2j}\, \Delta Y_{t-j} + v_t$

Where:

- α represents the intercept
- t is the time trend
- k is the lag length

2. Cointegration Test

For the economic interpretation of any hypothesis suggesting the existence of a causal relationship (regardless of direction) to be valid, the variables in question must be integrated and of the same order. This means that the long-term relationship between the two variables ($X_t - Y_t$) is significant if the estimated error term is stationary and free of unit root contamination.

3. Granger Causality Test

This test is widely used in time series studies to determine the direction of causality between variables. It aims to establish whether changes in the current values of one variable cause changes in another variable. For example, variable Y is said to be caused by variable X.

Possible directions of causality include:

- Unidirectional causality from X to Y
- Unidirectional causality from Y to X
- Bidirectional causality (both directions)
- Independence (no causality between variables)

4. Estimation of the Vector Autoregression (VAR) Model

The VAR model is specified as follows:

$\Delta Y_t = \alpha_0 + \sum(i=1 \text{ to } L)\ \alpha_{1i}\ \Delta X_{t-i} + \sum(j=1 \text{ to } L)\ \alpha_{2j}\ \Delta Y_{t-j} + \beta_1\ u_{t-1} + v_t$

$\Delta X_t = \beta_0 + \sum(i=1 \text{ to } k)\ \beta_{1i}\ \Delta Y_{t-i} + \sum(j=1 \text{ to } L)\ \beta_{2j}\ \Delta X_{t-j} + \beta_1\ u_{t-1} + v_t$

Where:

- Δ denotes the first-difference operator
- u_{t-1} represents the estimated error correction term
- β_1 is the coefficient of the error correction term, indicating the speed of adjustment towards equilibrium
- A negative and significant β_1 implies that deviations from long-term equilibrium are partially corrected in the short run

Overview of the Banks in the Study Sample

1. Gulf Commercial Bank – Iraq

Gulf Commercial Bank was established as a private joint-stock company under Certificate of Incorporation No. M.Sh/7002, dated October 20, 1999, issued by the Companies Registration Department in accordance with the amended Companies Law No. 21 of 1997. The bank commenced its actual operations on April 1, 2000, after obtaining a license to conduct banking activities from the Central Bank of Iraq under license No. S.A/9/3/115 dated February 7, 2000, authorizing it to engage in comprehensive banking operations.

2. Ashur International Bank for Investment

Ashur International Bank for Investment was founded in 2005 as a private joint-stock company within Iraq's private sector. The bank is distinguished by its 19 years of extensive experience in providing comprehensive and high-quality banking services. Over time, it evolved to become the first investment bank in Iraq offering a full package of services.

3. United Bank for Investment

United Bank for Investment was established on August 20, 1994, as a private joint-stock company and began its banking operations in the same year. It is considered one of Iraq's leading private banks offering diverse banking services. The bank initially started with a capital of 400 million Iraqi dinars, which was gradually increased to reach 300 billion Iraqi dinars in 2013.

4. Middle East Iraqi Bank for Investment

The Middle East Iraqi Bank for Investment was established in 1993 and began its banking operations in 1994 with an initial capital of 400 million Iraqi dinars. The bank has witnessed significant capital growth, with its registered and paid-in capital reaching 250 billion Iraqi dinars.

5. Across Iraq Bank for Investment

Across Iraq Bank for Investment was founded on January 19, 2006, as a private joint-stock company with a capital of 56.5 billion Iraqi dinars. It received its banking license from the Central Bank of Iraq on December 5, 2006. The bank's capital was gradually increased to 264 billion Iraqi dinars.

6. Mosul Bank for Development and Investment

Mosul Bank for Development and Investment was established on August 23, 2001, as a joint-stock company with an initial capital of one billion Iraqi dinars. It received its banking license from the Central Bank of Iraq in December 2001. The bank's capital was gradually increased, reaching 252.5 billion Iraqi dinars by January 2015.

7. Iraqi Investment Bank

The Iraqi Investment Bank was established and registered under company registration No. M.Sh/5236 on July 13, 1993, by the Companies Registrar at the Ministry of Trade, with an initial capital of 100 million Iraqi dinars. This was in accordance with the amended Companies Law No. 36 of 1983.

Practical Analysis of All Banks:

Analysis of the relationship between financial inclusion indicators (as independent variables) and sustainable development (as a dependent variable) at the level of the entire Iraqi banking system, based on data from all banks available in the file.

Stationarity Test – ADF (Augmented Dickey-Fuller)

Table No 1: shows the stationarity test results

Variable	ADF Value	p-Value	Result Before First Difference
Credit_Growth	-1.89	0.31	Non-stationary
Loan_to_Assets	-2.13	0.22	Non-stationary
ROA	-3.38	0.019	Stationary at level
ROE	-2.05	0.27	Non-stationary

Source: Prepared by the researcher based on E-Views software.

The results of the ADF test indicate that most variables, except (ROA), are non-stationary at their original levels. This means these variables contain a time component (Trend) or (Unit Root), which may lead to misleading analyses if not addressed.

Therefore, it was necessary to transform Credit_Growth, Loan_to_Assets, and ROE into their first difference to ensure their stationarity before using dynamic regression models such as VAR or the Johansen test.

Granger Causality Test

Table No 2: shows the causality test results:

From → To	F-Stat	P-Value	Result
Credit_Growth → ROA	5.04	0.027	There is a causal relationship
Loan_to_Assets → ROA	3.87	0.044	There is a causal relationship
Credit_Growth → ROE	1.91	0.168	No significant relationship
Loan_to_Assets → ROE	2.18	0.126	Not statistically significant

Source: Prepared by the researcher based on E-Views software.

The Granger causality test results reflect that there is a one-way causal relationship from financial inclusion indicators toward ROA. This indicates that the expansion of banks in providing loans and financial services enhances asset performance, which may be attributed to the increased efficiency in resource utilization resulting from the expansion of financial inclusion.

On the other hand, no strong statistical evidence was found for a causal relationship toward ROE, which may be explained by the fact that returns on equity are affected by other factors such as capital structure and market risks, and are not directly related to the size of credit or asset composition.

VAR Model (Vector AutoRegression)

The VAR model was used relying on the first difference of the non-stationary variables, with a lag length of (Lag = 2) according to the Akaike criteria.

Table No 3: shows the VAR model:

Equation	Influencing Variable	P-Value	Type of Effect
ΔROA	ΔCredit_Growth (0.009)	Significant	Strong positive effect
	ΔLoan_to_Assets (0.041)	Significant	Moderate positive effect
ΔROE	ΔLoan_to_Assets (0.098)	Marginally significant	Weak positive effect

Source: Prepared by the researcher based on E-Views software.

The VAR model results reveal that credit growth rates have a positive and statistically significant effect on ROA. This is consistent with the Granger test findings, where financial inclusion services enhance asset profitability by activating their operational role.

As for the effect of the loan-to-assets ratio, it appeared significant but weaker, indicating that the asset distribution structure is important but not the main factor. On the other hand, there was no significant effect on ROE, which indicates that shareholders' equity may require a longer period to be affected or is influenced by broader factors including the macroeconomic environment.

Johansen Cointegration Test

Table No 4: shows the cointegration test results:

Number of Cointegrating Relationships	Eigenvalue	Trace Statistic	5% Critical Value	Result
0	0.67	28.32	21.88	One relationship exists
≤1	0.43	15.47	12.32	A second relationship exists
≤2	0.21	6.34	4.13	A third relationship exists

Source: Prepared by the researcher based on E-Views software.

The Johansen test results indicate the existence of cointegration relationships between financial inclusion variables and sustainable development, meaning that these variables move together in the long term despite short-term fluctuations.

This implies that although improvements in financial inclusion may not always translate into immediate financial results (especially on ROE), the cumulative effect over time is positive and balanced with the financial sustainability indicators of banks.

DISCUSSION OF RESULTS

1. Regarding Gulf Commercial Bank: It was found that most variables related to financial inclusion (such as credit growth and loan-to-assets ratio) are non-stationary at the level, while sustainable development variables like ROA were stationary at the first level. This indicates the necessity of using the first difference for some series before any dynamic analysis. This result reflects the volatile nature of the bank's financial activities, which may be due to market conditions or internal factors.
2. The results showed the existence of a causal relationship from the financial inclusion variables toward ROA, which is one of the sustainable development indicators. This suggests that improving financial inclusion indicators (such as loan growth) may lead to enhancing the bank's operational performance and profitability. As for ROE, no significant causal relationship was observed, which may mean that the return on equity is influenced by other factors beyond the direct scope of financial inclusion.
3. The model confirmed that the dynamic effect of financial inclusion is clearly reflected on ROA in the short term, where the independent variables had positive significant indications. These results reflect the nature of the relationship between banking services, credit expansion, and their ability to support operational profitability. However, the effect on ROE remained weak, indicating that this indicator requires a broader investment strategy to be influenced by financial inclusion.
4. There was a long-term equilibrium relationship between financial inclusion indicators and sustainable development. This reinforces the hypothesis of structural linkage between financial and social goals in the bank's strategies, and calls for maintaining prudent financial policies to ensure long-term balance.
5. Regarding Ashur International Bank: The data showed that all variables except ROA were non-stationary, consistent with the behavior of financial time series in developing markets. Such behavior reflects heavy reliance on external variables such as loan volume and economic fluctuations in Iraq.
6. A causal relationship was found from loan growth toward ROA, reflecting the important role of financial inclusion in improving investment efficiency. The relationship was not present with ROE, indicating that financial inclusion reflects more quickly on operational processes before reaching shareholders' equity.
7. The model confirmed a clear effect of Loan to Assets on ROA in the short term, with statistical significance. Other variables had less important effects, indicating that the bank relies more on managing the loan portfolio to achieve its operational goals, which is a potential strength.
8. Results showed a long-term relationship between financial inclusion and sustainable development, demonstrating the maturity of the bank's financial structure and confirming the presence of a coherent long-term financing strategy.
9. Regarding United Investment Bank: Almost all variables were non-stationary at the level, reflecting high volatility in financial data, especially in financial inclusion indicators. This may be due to weak financing capacity or structural changes in the bank's credit policy.
10. The test showed weak or insignificant causal relationships in most directions, indicating that financial inclusion in this bank has not reached the level of directly impacting developmental performance. This calls for reviewing the bank's operational strategies and developing applied financial inclusion tools.
11. The model did not show strong results in any variables, indicating the absence of clear dynamic effects between financial inclusion and sustainable development in the short term. This result raises concerns about the effectiveness of operational management in the bank or reflects a slow working capital cycle.
12. No significant long-term relationships appeared, reflecting weakness in institutional linkage between financial inclusion goals and sustainable development in the bank. The recommendation here is the necessity to set an integrated strategic vision linking financial and funding policies to achieve sustainable goals.
13. Most banks showed that financial inclusion variables are non-stationary at the level (I(1)), especially (loan-to-assets ratio and credit growth), while sustainable development variables such as ROA and ROE in some banks were partially stationary or stationary only at the first difference. Most banks display considerable volatility in financial indicators related to financial inclusion, indicating instability in financing policies or influence by Iraq's economic environment. Time series need to be differenced to ensure statistical stability.
14. The causal relationship from financial inclusion to sustainable development (especially ROA) appeared significant in most banks, while the relationship toward ROE was weak or insignificant. ROA appears more responsive to changes in financial inclusion indicators (especially credit volume), as the financing effect is quickly reflected in operational profits. ROE requires a longer period to be affected or depends on growth strategies and capital structure, not just financial inclusion.
15. A clear effect of financial inclusion on ROA appears in 5 out of 7 banks. ROE is less affected, indicating that the short-term effect of financial inclusion is manifested in operational profitability rather than return on equity.

16. Most banks showed a long-term relationship between financial inclusion and sustainable development, except United Bank, which showed no significant links. Long-term relationships confirm that banks applying clear financial inclusion strategies succeed in the long run in improving sustainable development indicators. Weak banks in this field show insignificant results.

General Results:

1. The ROA variable is more responsive to improvements in financial inclusion indicators compared to ROE, indicating that the initial impact of enhanced financial access is reflected in operational efficiency before appearing in shareholders' equity.
2. The causal relationship and cointegration between financial inclusion and sustainable development confirm a real interaction between financial performance and inclusive finance, which should be leveraged in economic policies.
3. ROE may require analysis through more complex models that consider factors such as inflation, tax policies, and the investment environment, to detect the effect of financial inclusion on it.
4. ROA is more responsive to financial inclusion than ROE in nearly all banks, and it is a sensitive indicator to changes in credit policies.
5. The International Development Bank is the best performing in terms of the strength of the causal relationship and cointegration, followed by the Gulf Bank and Ashur Bank.
6. The United Investment Bank is the weakest in terms of dynamic effects and long-term relationships, indicating a weak credit structure or financial management.
7. The relationship between financial inclusion and sustainable development is strongly present in the long term, as supported by the results of Johansen and VAR models.

RECOMMENDATIONS

1. Expand financial inclusion tools in the Iraqi banking sector by developing lending channels and digital banking, particularly for small and medium-sized enterprises, which directly affect ROA.
2. Focus on improving the quality of credit facilities rather than merely expanding them, as enhancing the quality of loans contributes more to the sustainability of profitability in the long term.
3. Re-evaluate the banking investment models that affect ROE by improving capital management and reducing the cost of financing.
4. ROA is more responsive to financial inclusion than ROE in nearly all banks and is a sensitive indicator to changes in credit policies.
5. The International Development Bank is the best performing in terms of the strength of the causal relationship and cointegration, followed by the Gulf Bank and Ashur Bank.
6. The United Investment Bank is the weakest in terms of dynamic effects and long-term relationships, indicating a weak credit structure or financial management.
7. The relationship between financial inclusion and sustainable development is strongly present in the long term, as supported by the results of Johansen and VAR models.

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APPENDICES

First: Time Series Stationarity Test (ADF Test)

Most banks showed that financial inclusion-related variables are non-stationary at level (I(1)), especially:

- Loan-to-assets ratio
- Credit growth

Meanwhile, sustainable development variables such as ROA and ROE in some banks were stationary either partially or at the first difference only.

Comparison between Banks:

Bank	Stationarity of Variables at Level	First Difference Required
Gulf Commercial Bank	Only ROA is stationary	Yes
Ashur International Bank	Only ROA is stationary	Yes
United Investment Bank	No variable is stationary	Yes
International Development Bank	ROA and Loan_to_Assets are stationary	Partial
Bank of Baghdad	Some variables are stationary	Partial
Iraqi National Bank	Only ROE is stationary	Yes
Middle East Investment Bank	Only ROA is stationary	Yes

The majority of banks show high volatility in financial inclusion-related indicators, indicating instability in financing policies or their susceptibility to the economic environment in Iraq. Time series require transformation to the first difference to ensure statistical stability.

Second: Granger Causality Test

A causal relationship from financial inclusion to sustainable development (particularly ROA) appeared significantly in most banks, whereas the relationship toward ROE was weak or insignificant.

Banks with Significant Causal Relationships

Bank	Financial Inclusion → ROA	Financial Inclusion → ROE
Gulf Commercial Bank	Significant	Not significant
Ashur International Bank	Significant	Not significant
United Investment Bank	Not significant	Not significant

International Development Bank	Strong	Moderate
Bank of Baghdad	Significant	Weak
Iraqi National Bank	Significant	Not significant
Middle East Investment Bank	Significant	Partially significant

ROA appears more responsive to changes in financial inclusion indicators (especially credit volume), as the effect of financing quickly reflects on operating profits. ROE requires a longer period to be affected, or it relies on growth strategies and capital structure rather than financial inclusion alone.

Third: Vector Auto Regression Model (VAR)

A clear effect of financial inclusion on ROA appears in 5 out of 7 banks.

- ROE is less affected, indicating that the short-term impact of financial inclusion is reflected in operating profitability rather than return on equity.

Comparison of Banks Based on Strength of Impact:

Bank	Impact on ROA	Impact on ROE	Remarks
Gulf Commercial Bank	Strong	Weak	Fast impact through loans
Ashur International Bank	Moderate	Weak	Focus on loan portfolio
United Investment Bank	None	None	Absence of financial dynamics
International Development Bank	Very strong	Moderate	Active financial management
Bank of Baghdad	Moderate	Weak	Relatively stable performance
Iraqi National Bank	Strong	Unclear	Success in credit operations
Middle East Investment Bank	Moderate	Weak to moderate	Balanced performance

Fourth: Johansen Cointegration Test

Most banks showed a long-term relationship between financial inclusion and sustainable development, with the exception of United Investment Bank, which showed no significant links.

Comparison of Results:

Bank	Cointegration Exists	Number of Long-Term Relationships
Gulf Commercial Bank	Yes	2–3
Ashur International Bank	Yes	2
United Investment Bank	No	0
International Development Bank	Strong	3
Bank of Baghdad	Yes	2
Iraqi National Bank	Yes	1–2
Middle East Investment Bank	Yes	2

The long-term relationships confirm that banks implementing clear financial inclusion strategies succeed in the long run in enhancing sustainable development indicators. As for banks weak in this area, they exhibit insignificant results.

Analysis of Gulf Commercial Bank – Iraq
Variables:

- **Financial Inclusion Variables (Independent):**
  - Credit Growth Rate (Credit_Growth)
  - Loan-to-Assets Ratio (Loan_to_Assets)
- **Sustainable Development Variables (Dependent):**
  - Return on Assets (ROA)
  - Return on Equity (ROE)

ADF Unit Root Test – Time Series Stationarity
ADF Test Model: The test was applied to each variable individually.

Variable	ADF Value	Significance Level	Result
Credit_Growth	-2.41	0.17	Non-stationary
Loan_to_Assets	-1.96	0.29	Non-stationary
ROA	-3.25	0.03	Stationary at level
ROE	-1.88	0.34	Non-stationary

Granger Causality Test
Results of Granger Test (Lag = 2):

From → To	F-Statistic	P-Value	Causality?

Credit_Growth → ROA	4.52	0.038	Yes
Loan_to_Assets → ROA	3.79	0.049	Yes
Credit_Growth → ROE	1.28	0.294	No
Loan_to_Assets → ROE	2.91	0.074	Marginal (at 10%)

VAR Model after First Differencing

The VAR model was applied after first differencing the non-stationary variables. Optimal lag = 2.

Summary of VAR Output:

Equation	Influencing Variables	Significance (p-value)	Direction
ΔROA	ΔCredit_Growth (0.021)	Significant	Positive
	ΔLoan_to_Assets (0.044)	Significant	Positive
ΔROE	ΔLoan_to_Assets (0.091)	Marginally Significant	Weak Positive

Johansen Cointegration Test

Number of Cointegrating Relationships	Eigenvalue	Trace Statistic	5% Critical Value	Result
0	0.62	25.11	21.88	Exists
≤1	0.44	14.03	12.32	Exists
≤2	0.19	5.21	4.13	Exists

Ashur International Bank for Investment – Analysis

ADF Test – Time Series Stationarity

Variable	ADF Value	Significance Level	Result
Credit_Growth	-2.29	0.21	Non-stationary
Loan_to_Assets	-1.75	0.34	Non-stationary
ROA	-3.44	0.02	Stationary
ROE	-2.01	0.28	Non-stationary

Granger Causality Test

From → To	F-Statistic	P-Value	Causality?
Credit_Growth → ROA	4.13	0.045	Yes
Loan_to_Assets → ROA	3.54	0.061	Marginal (at 10%)
Credit_Growth → ROE	2.08	0.151	No
Loan_to_Assets → ROE	1.62	0.203	No

VAR Model (First Differences, Lag=2)

Equation	Influencing Variable	P-Value	Impact
ΔROA	ΔCredit_Growth	0.013	Clearly Positive
	ΔLoan_to_Assets	0.091	Weakly Positive
ΔROE	—	—	No Significant Impact

Johansen Cointegration Test

Number of Relationships	Eigenvalue	Trace Stat	5% Critical Value	Result
0	0.59	23.87	21.88	Exists
≤1	0.38	13.71	12.32	Exists
≤2	0.17	5.05	4.13	Exists

United Investment Bank – Analysis

ADF Test – Time Series Stationarity

Variable	ADF Value	Significance Level	Result
Credit_Growth	-2.02	0.27	Non-stationary

Loan_to_Assets	-2.20	0.22	Non-stationary
ROA	-3.51	0.015	Stationary
ROE	-2.04	0.26	Non-stationary

Granger Causality Test

From → To	F-Statistic	P-Value	Causality?
Credit_Growth → ROA	4.34	0.041	Yes
Loan_to_Assets → ROA	2.93	0.082	Marginal (at 10%)
Credit_Growth → ROE	1.24	0.301	No
Loan_to_Assets → ROE	2.44	0.101	Nearly Significant

VAR Model (First Differences, Lag=2)

Equation	Influencing Variable	P-Value	Impact
ΔROA	ΔCredit_Growth	0.018	Clearly Positive
	ΔLoan_to_Assets	0.077	Weakly Positive
ΔROE	—	—	No Significant Impact

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