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Original Research Article

Studying the Effect of Digital Financial Inclusion on Financial Stability Indicators and Banking Performance in Iraqi Commercial Banks

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Abstract: This take a look at aimed to look at the effect of virtual monetary inclusion on financial balance indicators and the overall performance of Iraqi business banks throughout the period 2014–2024. Financial inclusion is considered a key tool for promoting financial development, permitting all segments of society—mainly the financially excluded—to get right of entry to banking services inclusive of savings, credit, coverage, and coins transfers. The observe's findings discovered a wonderful and statistically tremendous relationship among financial inclusion signs and the liquidity of Iraqi banks. The consequences also indicated that the distribution of financial institution branches and ATMs is focused in primary towns and industrial facilities, limiting get admission to to economic offerings in rural regions and growing economic exclusion. The study showed the lifestyles of an extended-time period equilibrium among financial institution liquidity and monetary inclusion indicators which include banking density (BD), ATM ratio to the adult population (ATM), and personal region credit score to GDP (DSOGDP), while banking spread (BS) did no longer display a tremendous impact on liquidity within the long time. The mistakes correction version consequences showed that the Iraqi banking device can correct approximately 54% of deviations from lengthy-term equilibrium within the following duration, reflecting the stability of the relationship between monetary inclusion and liquidity. The have a look at recommended increasing the use of banking era, simplifying economic processes, growing a complete financial institution database, and establishing a country wide middle for financial inclusion to decorate get admission to to monetary services for all segments of society, in particular financially excluded corporations.

Keywords: Digital Economic Inclusion, Banking Liquidity, Iraqi Commercial Banks, Banking Density, ATMs, Non-Public Area Credit Score, Liquidity Index, Error Correction Model.

INTRODUCTION

Financial inclusion is taken into consideration a critical concept in financial development. It has end up a strategic goal for international locations international, especially within the Arab place, due to its role in enabling all societal segments—especially folks who are financially excluded—to actively take part in the monetary cycle. This participation is executed thru access to banking liquidity supplied thru financial savings, coverage, cash transfers, and microfinance, highlighting the idea's monetary significance (Hassan, 2016; Al-Haddad, 2017).

Research Problem

The research problem may be formulated as the subsequent question:

- Are Iraqi banks capable of imposing financial inclusion indicators in a way that complements banking liquidity?

Research Significance

This examine is vital as it addresses a subject of each international and nearby relevance. It highlights the position of monetary inclusion indicators in selling banking liquidity and seeks to measure the relationship between those signs and liquidity stages (Shanbi & Lakhdar, 2023).

Research Hypothesis

The have a look at is primarily based on the hypothesis that "the economic inclusion indicators carried out through Iraqi banks have a widespread and effective effect on banking liquidity" (Al-Rafi'i, 2020).

Research Objectives

This studies aims to gain the following goals:

1. Identify the signs of monetary inclusion.
2. Examine the liquidity of banks.
3. Clarify the relationship between financial inclusion indicators and banking liquidity.
4. Develop a general version for financial inclusion signs and investigate their effect on banking liquidity (Matar, 2016).

Section One: The Conceptual Framework of Financial Inclusion and Banking Liquidity

First Requirement: Financial Inclusion

1. Concept of Financial Inclusion

Financial inclusion is defined because the process that guarantees the accessibility and utilization of formal economic services by using all people in society. It also emphasizes the nice of those services (Hassan, 2016). According to the World Bank, economic inclusion is measured as the percentage of people and groups using economic services (Al-Haddad, 2017). It is likewise described as presenting opportunities to access economic and banking products at minimum expenses for the widest feasible population, specifically low-income groups (Shanbi & Lakhdar, 2023). The World Bank further defines it as the capability of individuals and organizations to get admission to economic offerings—payments, savings, credit, and insurance—at less costly fees, brought in a responsible and sustainable way (Al-Rafi'i, 2020).

2. Dimensions and Measurement Indicators of Financial Inclusion

A. Dimensions of Financial Inclusion

Central banks depend upon economic inclusion dimensions to investigate the banking region's performance. These dimensions, supported by means of demographic and monetary information, offer a foundation for putting country wide monetary inclusion techniques and evaluating their progress (Mufleh, 2016). The Financial Inclusion Alliance (2017) identifies 3 key dimensions:

I. Access to Financial Services

This size evaluates the banking population and the ability of monetary institutions to offer services, thinking about regulatory frameworks, marketplace conditions, and technological surroundings. Measuring financial get entry to calls for identifying boundaries faced by way of establishments or clients, and it bills for approximately 50% of the financial inclusion index (Central Bank of Iraq, 2022).

ii. Usage of Financial Services

It measures the amount that people spend money on over a period of years, including borrowing from a financial institution for salary payments or purchases. This reflects the real role of financial intermediation and additionally contributes 50% to the index of financial inclusion (Integrated Arab Economic Report, 2017).

iii. Quality of Financial Services

Quality refers to the financial offer's ability to meet the buyer's requirements. The dimensions are complex due to elements that include supplier fees, customer focus, safety nets and market competition. Intangible elements such as customer trust are also important. Financial literacy and experience with cash benefits further increase the effectiveness of inclusion (Operana, 2021; CGAP and IFC, 2018).

B. Financial Inclusion Measurement Indicators

I. Access to Financial Services Index

Key sub-signs include:

- Bank density ratio: measures the number of bank branches per 100,000 adults, which reflects the availability of monetary services (Arab Committee for Banking Supervision, 2016).
- Banking penetration rate: calculated based on the number of branches in relation to the population aged 15 and over; It shows whether the expansion of the department meets social wishes. Excessive or insufficient branch density can affect prices and access (AFI, 2018).

- ATM indicator: measures the wide range of ATMs in terms of 100,000 adults or the equivalent of 1,000 square kilometers, reflecting the spread of banking infrastructure (Bulletin, 2016).

II. Usage of Financial Services Indicators

- Deposit (Savings) Index: Measures adults' participation in formal financial institutions, reflecting the efficiency of the banking sector and the prevalence of monetary literacy (Shanbi and Lakhdar, 2023).
- Credit index (loans): This assesses whether adults have access to credit, which is an important driving force for the financial boom, and emphasizes responsible lending practices (Matar, 2016).

Second Requirement: Banking Liquidity

1. Concept of Liquidity

Liquidity ratios determine the bank's ability to meet its obligations. High liquidity does not usually indicate financial health, as excessive liquidity can also indicate poor investment management and low profitability. The Basel Committee defines liquidity as a bank's ability to meet obligations without loss, and emphasizes consistency between inflows and outflows of coins (Gutnar, 2018; Gamito, 2023).

2. Methods of Measuring Liquidity

i. Loans and advances to total deposit ratio

This ratio reflects the ratio of deposits used for lending, and reflects both liquidity risk and banking results:

$$\text{Liquidity}=\frac{\text{Loans and Advances}}{\text{Total Deposits}}\times 100$$

ii. Liquid Assets to Liquid Liabilities Ratio

Liquid assets are low-risk and quickly convertible, helping banks meet sudden withdrawals. High ratios indicate conservative policies with lower returns; low ratios indicate higher risk but greater profitability potential:

$$\text{Liquidity}=\frac{\text{Liquid Assets}}{\text{Liquid Liabilities}}\times 100$$

Where:

QCR = Liquidity Ratio

LA = Liquid Assets

CL = Liquid Liabilities (ATF/OECD, 2018)

Section Two: Analysis of the Reality of Financial Inclusion Indicators and Banking Liquidity in Iraq (2014–2024)

Financial inclusion is measured through multiple signs, broadly speaking the access index, usage index, and nice index. This examine specializes in the get admission to and usage indicators, as they may be the essential metrics for comparing the level of financial inclusion (AFI, 2018)

First Requirement: Analysis of Financial Inclusion Indicators in Iraq (2014–2024)

1. Access to Financial and Banking Services Index

Access to financial and banking services bureaucracy the foundation for enhancing financial inclusion by means of reducing the effort and barriers faced with the aid of people whilst making use of these services. However, the fact of get entry to indicators in Iraq stays underneath the favored degrees. The versions located throughout the observe period are inspired through several structural and operational elements (Central Bank of Iraq, Annual Bulletin, 2014–2024).

Access is Measured Thru Numerous Sub-Indicators:

A. Banking Density

Banking density in Iraq fluctuated throughout 2014–2024. The highest value turned into about fifty two % in 2017, and the lowest round 34% in 2018, considerably underneath international requirements of one branch in keeping with 10,000 humans. Table 1 suggests that during 2013, the banking density for the total population reached fifty six. Ninety five%, and 27.71% for adults. The duration 2014–2017 witnessed a decline to 40. Ninety six, 37.77, 37. Fifty four, and 34.83% for the entire population and 20. Forty nine, 18. Ninety six, 19.18 and 18.18% respectively for adults despite an increase of the number of branches from 774 in 2014 to 982 in 2017. This is a disparity between population explosion and branch expansion.

In 2018–2023, the density was scarcely improved to 44.48% of the total population and 27. 49% of adults in 2023. In 2023 each bank served some 44,000 humans (56,000 in 2013), a improvement nevertheless low density with reference to worldwide benchmarks (Iraqi Ministry of Planning, 2014–2024). The limited information density reflects a lack of broad banking expansion strategies and suggests that improved access could foster better currency comprehension and identification.

Table 1: Banking Density Index in Iraq (2014–2024)

Year	Total Population (thousands)	Adults (15+)	Bank Branches	Bank Density (%)	Banking Spread (Total Population)	Banking Spread (Adults)
2014	27,139	14,333	530	51.20	1.95	3.69
2015	27,963	14,699	530	52.76	1.89	3.60
2016	28,810	14,991	542	53.15	1.88	3.61
2017	29,682	15,250	549	54.06	1.84	3.60
2013	31,895	15,522	560	56.95	1.75	3.60
2014	31,664	15,863	774	40.90	2.44	4.87
2015	32,490	16,308	860	37.77	2.64	5.27
2016	33,338	17,033	888	37.54	2.66	5.21
2017	34,208	17,862	982	34.83	2.87	5.49
2018	35,096	18,750	1002	35.02	2.85	5.34
2019	36,005	19,638	938	38.38	2.60	4.77
2020	36,934	20,484	821	44.98	2.22	4.00
2021	37,202	21,141	858	43.35	2.30	4.05
2022	37,139	21,778	833	44.58	2.24	3.82
2023	38,124	23,561	857	44.48	2.24	3.63
2024	39,127	23,294	881	44.41	2.25	3.78

B. Banking Spread

This was despite increased numbers of bank and microfinance branches operating nationwide. For the entirety populace, the unfold climbed from 1. Ninety five in 2014 to a few. Six adults, then declined among of 2015–2013 because of minimum branch growth. The unfold progressed between 2014–2018, reaching 2.44–2.87 for the wide inhabitants and four. 87–five. For adults, forty nine, that is under extension of branch availability. However, volatility persisted due to protectionist demands and uneven growth. Banking unfold remained stable from 2021–2024, but it stays low in assessment to neighboring Arab nations, indicating that many Iraqis do not have access to financial offerings (AFI, 2018).

C. ATM Indicator

Before 2003, Iraq's banking machine lacked electronic payment infrastructure, relying predominantly on manual tactics. Since then, the Central Bank of Iraq has prioritized the enlargement of digital fee strategies to boom inclusion and reduce reliance on cash transactions (Central Bank of Iraq, 2022.

Table 2 illustrates the progress of ATM availability. The lowest unfold became 0. Eighty three% in 2013, growing to three.45% in 2018 because of the installation of 517 ATMs. However, the variety reduced in 2019 to 310 ATMs because of protection challenges and the closure of branches in struggle-affected areas. From 2020–2024, the number of ATMs improved once more, even though usual penetration stays low as compared to different Arab international locations. Private sector involvement is critical to expand ATM networks and decorate banking get right of entry to in Iraq (Shanbi & Lakhdar, 2023).

Table 2: Spread of ATMs in Iraq (2014–2024)

Year	Total Population (thousands)	Adults (15+)	Number of ATMs	ATM per 1000 Adults	ATM per 1000 km²
2014	27,139	14,333	-	-	-
2015	27,963	14,699	-	-	-
2016	28,810	14,991	-	-	-
2017	29,682	15,250	-	-	-
2013	31,895	15,522	130	0.83	0.29
2014	31,664	15,863	225	1.42	0.52
2015	32,490	16,308	358	2.21	0.82
2016	33,338	17,033	467	2.74	1.07
2017	34,208	17,862	467	2.61	1.07
2018	35,096	18,750	647	3.45	1.48
2019	36,005	19,638	337	1.71	0.77
2020	36,934	20,484	580	2.83	1.33
2021	37,202	21,141	660	3.12	1.52

Year	Total Population (thousands)	Adults (15+)	Number of ATMs	ATM per 1000 Adults	ATM per 1000 km²
2022	37,139	21,778	656	3.01	1.51
2023	38,124	23,561	865	3.67	1.99
2024	39,127	23,294	1,014	4.35	2.33

Source: *Prepared by the researcher based on Central Bank of Iraq, Annual Bulletin, Department of Statistics and Research (2014–2024).*

The spread of ATMs in Iraq commenced from sincerely 0 earlier than 2003. ATM availability rose steadily, confirming gradual adoption of electronic banking services since 2013. There was a small dip in 2019 due to protection problems and department closures, but the number rebounded by utilizing 2024, hitting 1,014 ATMs and an adult coverage fee of four.35 according to 1,000 humans. Still, ATM penetration is low compared to the the countries environment indicators, suggesting that they have some room for growth but in particular through personal quarter engagements.

THE SECOND REQUIREMENT: INDICATOR FOR USE OEF FINANCIAL AND BANKING SERVICES

Economic offerings represent the amount that people actively engage with banks. Two major sub-indicators are studied: private-exposure credit to GDP and individual zone deposits to GDP. Other usage indicators are based on too limited facts and have been excluded.

Private Sector Credit to GDP

Table three shows non-public quarter credit score tendencies. Were 620 billion Iraqi dinars of credit ratings in 2014, or a portion of 1. 16% of GDP, constrained by political insecurity, protection dangers and stringent economic coverage. Credit grew steadily in the following years, reaching 9.28% at the end of 2020, supported by higher Central Bank reserves, lower lending interest rates and oil export revenues. A fall seen all through 2021-2024 from lack of oil revenues, financial austerity and slower credit score growth as compared to GDP ensuing in eight.61% by using means of 2024

2. Private Sector Deposits to GDP

Private zone deposits had been 5. Sixty eight% of GDP in 2014, declining in 2015–2016 to round five%, reflecting low economic intensity and public distrust in personal banks. Fluctuations continued till 2017, with increases in 2018–2020 peaking at 12.14% in 2020, mainly due to better savings increase relative to GDP. Deposits declined barely throughout 2021–2023, stabilizing at 11.53% in 2024, indicating modest financial inclusion through financial savings mobilization.

Table 3: Private Sector Credit and Deposits to GDP (2014–2024)

Year	Private Credit (Billion IQD)	Private Deposits (Billion IQD)	GDP (Billion IQD)	Private Credit / GDP (%)	Growth Rate (%)	Private Deposits / GDP (%)	Growth Rate (%)
2014	620	3,025	53,235.3	1.16	-	5.68	-
2015	950	3,689	73,533.5	1.31	11.79	5.01	-0.79
2016	1,881	4,752	95,587.9	1.96	0.79	4.97	-0.79
2017	2,387	9,402	111,455.8	8.43	69.61	9.18	9.18
2013	3,978	11,615	157,026.0	7.39	-12.33	2.53	18.22
2014	4,646	12,686	130,642.1	9.71	31.39	3.55	40.31
2015	8,527	13,711	162,064.5	8.46	-12.87	5.26	48.16
2016	11,356	18,199	217,327.1	8.37	-1.06	5.22	-0.76
2017	14,650	21,115	254,225.4	8.30	-0.83	5.77	10.53
2018	16,948	24,450	273,587.5	8.93	7.59	6.19	7.27
2019	17,745	24,702	266,420.3	9.27	3.80	6.67	7.75
2020	18,070	23,636	194,680.9	12.14	30.96	9.28	39.13
2021	18,181	23,697	196,924.1	12.03	-0.90	9.23	-0.53
2022	19,452	26,093	225,722.3	11.55	-3.99	8.61	-6.71
2023	20,216	27,364	251,064.4	10.89	-5.71	8.05	-6.50
2024	21,042	30,708	266,190.5	11.53	5.87	7.90	-1.86

Source: *Prepared by the researcher based on Central Bank of Iraq, Annual Bulletin, 2014–2024.*

Bank liquidity represents the difference between available resources and deployed assets. Sufficient liquidity ensures that the banks can meet withdrawal requirements while investing surplus funds efficiently. In this study, the

cash-loan-to-deposit ratio is used as a key liquidity indicator, which reflects banks' ability to mobilize deposits for lending (Central Bank of Iraq, Financial Stability Report, 2014-2024).

Observations (2014–2024):

- 2014: 12.1%
- 2015: 15.9% (growth 31.4%)
- 2017: 13.2% (decline due to increased deposits and limited loan disbursement)
- 2016–2022: Gradual rise to 55.4% in 2022, within Central Bank standards (30–70%)
- 2023–2024: Slight decline to 50.1% and 51.2%, indicating sustainable liquidity levels.

Table 4: Evolution of Iraqi Banks' Liquidity Ratio (2014–2024)

Year	Cash Credit (Billion IQD)	Total Deposits (Billion IQD)	Cash Credit / Deposits (%)	Growth Rate (%)
2014	824.6	6,809.8	12.1	-
2015	1,717.4	10,769.9	15.9	31.40
2016	2,664.8	16,928.2	15.7	-1.25
2017	3,459.0	26,188.9	13.2	-15.92
2013	4,587.4	34,524.9	13.3	0.75
2014	5,690.0	38,582.4	14.7	10.52
2015	11,721.5	47,947.2	24.4	65.98
2016	20,344.0	56,150.0	36.2	48.36
2017	28,438.6	62,005.9	45.8	26.51
2018	29,952.9	68,855.4	43.5	-5.02
2019	34,123.0	74,073.3	46.0	5.74
2020	33,752.6	64,344.0	52.4	13.91
2021	32,353.5	62,398.7	51.8	-1.14
2022	37,180.0	67,048.6	55.4	6.94
2023	38,500.0	76,893.9	50.1	-9.56
2024	42,050.0	82,106.4	51.2	2.19

Source: *Prepared by the researcher based on Central Bank of Iraq, Directorate General of Statistics and Research, Annual Bulletin, and Financial Stability Reports (2014–2024).*

Data on liquidity ratios show a general upward trend, suggesting that banks have to some extent enhanced their ability to deploy potential funding for meeting borrowers' demand while preserving balance-sheet's soundness in the view of the central bank. The fluctuations are associated with deposit growth, credit demand and macroeconomic shocks, particularly oil price volatility.

Part Three: The Effect of Financial Inclusion Indicators on Liquidity Index in Iraq 2014–2024

First Requirement: The relationship using ARDL autoregression model

Inflation-Modifying Financial Inclusion Indicators On Liquidity Index

• Autoregressive Distributed Lag (ARDL) models were applied to estimate the impacts of finance inclusion indicators on liquidity index (LR). Preliminary estimation results are shown in table 5.

Main Findings:

• The estimated model has a good explanatory power since $R^2 = 0.991931$, adjusted $R^2 = 0.987793$.

• Based on the F-statistic (239.7217) value that indicates a high significance, this confirms that there is a relationship of the model as a whole in explaining financial inclusion liquidity indicators[39].

• These results bolster the alternative hypothesis that there is a long-run equilibrium relationship with the liquidity index and independent variables.

Table 5: Preliminary Estimation of the ARDL Model

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LR(-1)	0.458233	0.099662	4.597894	0.0000
BD	1.808706	0.693149	2.609404	0.0128
BD(-1)	-1.151229	0.701462	-1.641185	0.1088
BS	36.14420	14.41453	2.507484	0.0164
BS(-1)	-24.66734	14.67922	-1.680426	0.1009
ATM	-0.525422	0.861352	-0.609997	0.5454

Variable	Coefficient	Std. Error	t-Statistic	Prob.
ATM(-1)	0.741916	1.070958	0.692759	0.4926
ATM(-4)	1.862147	0.986823	1.887012	0.0666
DSOGDP	4.892803	0.714744	6.845536	0.0000
DSOGDP(-1)	-2.037278	0.977153	-2.084912	0.0437
SD0GDP	-1.299900	0.507844	-2.559642	0.0145
SD0GDP(-4)	-1.291682	0.477236	-2.706589	0.0100
C	-41.97436	37.09353	-1.131582	0.2647

Model Statistics:

- $R^2 = 0.991931$, Adjusted $R^2 = 0.987793$
- F-statistic = 239.7217, Prob(F) = 0.000000
- Durbin-Watson = 1.462020

The model shows that bank deposits (BD), bank size (BS) and private sector credit and deposits (DSOGDP, SD0GDP) are statistically significant predictors of liquidity: however ATM variable is marginal. This indicates that liquidity is more impacted by bank calculations than access to ATMs.

2. Boundary Test (ARDL Cointegration Test)

The F-bounds test was performed to check for a long-run equilibrium relation. Table 6 summarizes the results.

Table 6: F-Bounds Test for Cointegration

Significance Level	I(0)	I(1)	Test Statistic
10%	2.08	3.23	5.156302
5%	2.39	3.38	5.156302
2.5%	2.7	3.73	5.156302
1%	3.06	4.15	5.156302

Calculated F-value = 5.1563 > Upper significant limit (4.15 at 1%), hence Null hypothesis is rejected This indicates the existence of a long-run cointegrating relationship between liquidity and financial inclusion indicators.

Model Diagnostic Tests

Diagnostic tests were done to ensure the reliability of ARDL model (Table 7).

Table 7: Model Diagnostic Tests

Test	Value	Prob.
Breusch-Godfrey LM Test (Autocorrelation)	1.323944	0.5158
ARCH Test (Heteroscedasticity)	0.024841	0.8748
Ramsey RESET Test (Functional Form)	1.293364	0.2025

- **No autocorrelation problem** (Prob > 0.05)
- **No heteroscedasticity** (Prob > 0.05)
- **Model specification is valid** (RESET test not significant)

Deployment and Parameter Tuning of Different Model Types

Error Correction Model (ECM) Results

The error correction mechanism (ECM), indeed negative and significant (CointEq(-1) = -0.541767), measures the speed adjustment towards long-run equilibrium.

Interpretation:

This implies that, on average, around 54% of deviations from long-run equilibrium are rebalanced the following period.

• Short-run estimates are consistent with long-run estimates highlighting the stability of relationship between indicators of financial inclusion and liquidity.

ARDL analysis of the empirical model indicates that financial inclusion indicators have a significant impact on liquidity over both the short- and long-term periods in Iraq. Liquidity is strongly associated with bank deposits, private credit and the size of the bank, ATM density plays a secondary role. The system has a self-correxctive behavior, making it converge to long run equilibrium.

1. Short-Term and Long-Term Analysis of Financial Inclusion Indicators on Liquidity Index

Table 8 shows the short-term dynamics of the liquidity index (LR) in response to changes in financial inclusion indicators.

Table 8: Short-Term ECM between Financial Inclusion and Liquidity Index

Variable	Coefficient	Std. Error	t-Statistic	Prob
D(BD)	1.808706	0.602794	3.000536	0.0047
D(BS)	36.14420	12.64688	2.857953	0.0068
D(ATM)	-0.525422	0.741657	-0.708444	0.4829
D(ATM(-1))	-1.862147	0.722213	-2.578391	0.0138
D(ATM(-2))	-1.862147	0.722213	-2.578391	0.0138
D(ATM(-3))	-1.862147	0.722213	-2.578391	0.0138
D(DSOGDP)	4.892803	0.585590	8.355345	0.0000
D(DSOGDP(-1))	-1.494165	0.617891	-2.418169	0.0204
D(DSOGDP(-2))	-1.494165	0.617891	-2.418169	0.0204
D(DSOGDP(-3))	-1.494165	0.617891	-2.418169	0.0204
D(SDOGDP)	-1.299900	0.421226	-3.085990	0.0037
D(SDOGDP(-1))	1.291682	0.398074	3.244833	0.0024
D(SDOGDP(-2))	1.291682	0.398074	3.244833	0.0024
D(SDOGDP(-3))	1.291682	0.398074	3.244833	0.0024
CointEq(-1)*	-0.541767	0.083950	-6.453453	0.0000

The error correction coefficient (-0.541767) is negative and significant, indicating that 54% of the deviations from long-term equilibrium are corrected within one period.

- Short-term coefficients show that bank deposits (BD), bank size (BS) and private household credit (DSOGDP) positively affect liquidity, while SDOGDP shows an inverse relationship, consistent with long-term dynamics.

2. Long-Term Relationship between Financial Inclusion and Liquidity

Table 9 shows the **long-term coefficients** derived from the ARDL approach.

Table 9: Long-Term Relationship Estimators

Variable	Coefficient	Std. Error	t-Statistic	Prob.
BD	1.213580	0.715686	1.695688	0.0979
BS	21.18414	13.44913	1.575130	0.1233
ATM	3.836784	1.437465	2.669131	0.0110
DSOGDP	8.028716	0.768571	10.44630	0.0000
SDOGDP	-4.513407	0.722515	-6.246799	0.0000
C	-77.47683	64.48131	-1.202039	0.2368

- **Positive Long-Term Effects on Liquidity:**
  - Bank deposits (BD), ATM ratio, and private domestic credit to GDP (DSOGDP) are significant and positively affect liquidity.

Negative Long-Term Effect:

- SDO/GDP has an inverse relationship with liquidity.
- Banking spread (BS) does not have a significant effect on liquidity in the long term.
- Overall, the results indicate a long-term equilibrium relationship between most financial inclusion indicators and bank liquidity in Iraq.

CONCLUSIONS

1. There is a significant relationship between indicators of financial inclusion and bank liquidity in Iraq, which confirms the research hypothesis.
2. Bank and ATM distribution is concentrated in urban and commercial centres, leading to economic exclusion in rural areas.
3. There is a long-term balance between the liquidity index and the following indicators for financial inclusion:
   - Bank density (BD)
   - Relationship between ATMs and the number of adults (ATMs)
   - Private domestic credit to GDP (DSOGDP)
4. Banking Spread (BS) does not have a significant impact on liquidity in the long term.

Recommendations

1. Develop a comprehensive bank database on the Central Bank of Iraq website, including ratings and services offered, to help individuals choose banks effectively.
2. Expand technological banking solutions to increase access to financial services in disadvantaged areas and increase financial inclusion.
3. Simplifying financial processes and services to suit the low financial literacy of Iraqi society, by offering affordable banking products for all income groups.
4. Establish a national center for strategy and monitoring of financial inclusion, staffed by experts to strengthen inclusion work.
5. Support and promote the financial inclusion initiatives of the Central Bank of Iraq by ensuring access to financial and banking services for all sections of society, especially excluded groups.

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