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MEASURING AND ANALYZING THE RELATIONSHIP BETWEEN FINANCIAL INCLUSION AND BANK DEPOSITS IN IRAQ

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Abstract:

The research highlights the measurement and analysis of the dynamic interac (short-term and long-term) between some financial inclusion indicators (numb bank branches, ATM machines, credit extended to the private sector, broad m supply) as independent variables, and bank deposits as a dependent variable, u the ARDL model. Additionally, quarterly data covering the period (2010-2023) used. The research assumes that there is both a negative and positive effe certain financial inclusion indicators on bank deposits in Iraq. Finally, the resul the dynamic interactions revealed that the two indicators (number of bank bran and credit extended to the private sector) have a positive impact on bank dep in the short term, but they have a negative impact in the long term. As for the indicators (ATM machines and broad money supply), they have a negative positive effect on bank deposits in the short term due to time lags, but in the term, the ATM indicator has a negative impact on bank deposits, while the b money supply indicator has a positive effect. Therefore, policymakers in the financial sector should focus on improving financial infrastructure, raising fina awareness among individuals and institutions, encouraging innovation in fina services, and enhancing the stability of the financial system in order to pro financial inclusion and increase bank deposits, which will contribute to sustair economic development in Iraq .

Keywords: Some financial inclusion indicators, bank deposits, ARDL model

INTRODUCTION

Financial inclusion refers to the provision of comprehensive and equal access for all individuals, families, and businesses to a wide range of reliable and affordable financial services (such as banking accounts, loans, insurance, and digital payment services). Financial inclusion encompasses the ability to access these services in a way that ensures everyone benefits from them, regardless of geographic location or social or economic status. Therefore, financial inclusion is considered one of the main goals in many economic and social policies because it contributes to enhancing economic growth, reducing poverty, and achieving social justice. As for bank deposits, they refer to the funds that individuals or businesses deposit in banks in the form of savings accounts or current accounts, and they are an important indicator of economic and financial activity. Thus, bank deposits reflect individuals' ability to save and their appreciation for the importance of financial services. At the same time, deposits are a major source of funding for banks, which can be used for lending and investment. In many cases, the volume of bank deposits indicates the level of development of the banking system and the extent of financial inclusion in the country.

In the Iraqi economy, as in many developing countries, this sector has faced complex challenges but represents a significant opportunity for progress and growth. On the other hand, financial inclusion in Iraq is one of the most prominent challenges facing the financial and banking system, as a large percentage of the population remains far from accessing banking services, whether due to weak infrastructure, low financial awareness, or issues of trust in the financial system, as a result of the economic and political conditions the country has experienced. Nevertheless, there are serious efforts to improve this situation through government initiatives and reform plans aimed at enhancing access to modern financial services, including through financial technology and digital banking systems.

Therefore, bank deposits in Iraq are considered low compared to some other countries in the region, as many Iraqis prefer to keep their money outside the banking system. This is due either to a lack of trust in banks or the absence of

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appropriate incentives. However, there are indicators that point to a growing interest in banking services in recent years, especially with the development of digital banking solutions that provide easier access to bank accounts and payment and transfer operations. Therefore, measuring the relationship between financial inclusion and bank deposits in Iraq is of great importance, as it can help understand how expanding financial inclusion affects saving and financing behavior in the banking system. By analyzing this relationship, strategies can be developed to encourage citizens to use banking services, thereby increasing the volume of bank deposits, which contributes to enhancing financial stability and economic growth in the country.

Research problem

The research problem lies in analyzing the relationship between financial inclusion and banking deposits in Iraq, as the Iraqi banking sector suffers from weak financial inclusion and low levels of banking deposits compared to many countries. The research aims to explore the factors influencing this relationship and how financial inclusion affects the enhancement of trust in the banking system and the increase of banking deposit volumes in Iraq.

The Importance of Research

The significance of this research lies in highlighting one of the vital topics that concern the Iraqi economy, which is improving the level of financial inclusion that is considered one of the key factors in enhancing financial stability and economic growth. The research also provides important information and data for the banking sector in Iraq on how to improve its strategies to expand the scope of its financial services and increase bank deposits, thereby contributing to improving local savings and providing financing for investment.

Research Hypothesis

The research hypothesizes that there is an inverse and direct effect of certain financial inclusion indicators on bank deposits in Iraq .

Research Objective

To measure and analyze the relationship between certain financial inclusion indicators and bank deposits in Iraq using the Autoregressive Distributed Lag (ARDL) model .

Study Methodology

The research relied on a descriptive and inductive approach regarding the theoretical framework, and on a quantitative method to test the hypothesis concerning the case of the research (Iraq).

Study Boundaries

- Temporal: (2010 – 2022)
- Spatial: The Iraqi economy.

Chapter One

Theoretical Framework of Financial Inclusion and Bank Deposits and Their Relationship

Section One: Financial Inclusion and Some Related Concepts

First: Concept of Financial Inclusion

The concept of financial inclusion refers to the provision of accessible and comprehensive financial services to all segments of society, including individuals and small and medium-sized enterprises, regardless of economic, social, or geographic level. The goal of financial inclusion is to empower individuals and businesses to access a wide range of financial products and services (such as bank accounts, loans, insurance, digital payments, and others).[1]

Therefore, financial inclusion involves reducing barriers for marginalized or disadvantaged groups in society (such as the poor or residents of rural areas) so that they can fully participate in the financial system, which helps improve living standards and enhance economic growth

Secondly: Some Indicators of Financial Inclusion

1- Financial Services Access Index (ACCESS)

This measure is used to determine the availability and usage of financial services in a particular country or region. Therefore, this index aims to measure how easily individuals and businesses can access basic financial tools (such as bank accounts, loans, insurance, and other financial services). Important factors that are included in the calculation of this index are banking density and banking outreach indicators. This can be clarified as follows:[2]

A. Banking Density Index: This index reflects the number of bank branches or points of service (such as ATMs) in relation to the population or geographical distance. It is a measure that indicates the availability of financial institutions

[1] Ahmed Abdullah, Concepts of Financial Inclusion, Dar Al-Fikr Al-Eqtesadi - Egypt, 2020, p 45

[2] Financial Inclusion and Development: Recent Impact Evidence, Robert Cull, Asli Demirgüç-Kunt, and Jonathan Morduch, World Bank Publications, USA, 2014, PP: 45-47.

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in a specific area and how easily accessible they are to individuals. When discussing banking density, we refer to several aspects, including :

•The number of bank branches per 100,000 inhabitants: This indicator can reflect the availability of bank branches in urban or rural areas. If these branches are well distributed, it means that access to banking services is easier .

• The number of ATMs: ATMs are a key component in providing banking services to individuals indirectly. A larger number of ATMs contributes to easier access to financial services. The higher the banking density, the greater the access to financial services, which is an important measure of the extent to which banks and financial services are available in a particular area.

B. Bank penetration index: This index shows the extent of financial services availability among individuals and businesses in a certain area. Penetration does not only mean the presence of bank branches or ATMs, but also includes the percentage of individuals who have (bank accounts, use of loans and credit, benefit from insurance services, and others) [1]. Therefore, bank penetration can be measured through the following[2] :

•The percentage of individuals who own bank accounts: If the percentage of individuals who own bank accounts is high, it means that the banking system is widespread and reaches a large segment of the population .

• The percentage of digital services usage: This includes mobile payments and online banking services, which is an important indicator for measuring the progress in providing modern banking services. If bank penetration is weak, it may indicate that there are wide sectors of the population unable to access basic financial services, reflecting a gap in financial inclusion.

Based on the above, banking density contributes to increasing banking outreach, as the presence of numerous bank branches and ATMs in various areas facilitates individuals' access to financial services. Conversely, good banking outreach may indicate that these branches or services are effective in meeting the needs of the population, whether through traditional or digital services. The greater the density and outreach of banking services, the more opportunities individuals have to access financial tools, thus enhancing financial inclusion and supporting economic growth in the region.

2- Financial Services Usage Index

This index is one of the most prominent key indicators that contribute to understanding the level of financial inclusion in the economy. This index may include several vital aspects, including the following :

A. The contribution of non-bank financial companies in providing financial services: Non-bank financial companies refer to those institutions that offer financial services without being banks (such as insurance companies, financing companies, factoring companies, and leasing companies). These companies play an important role in financial inclusion as they provide financial services to groups that may not have access to traditional banking services, such as individuals or small and medium-sized enterprises. For example, consumer finance companies may provide personal loans for purchasing goods, which helps expand access to financing, or insurance companies provide insurance coverage for individuals and businesses, enhancing financial security for various groups.[3]

B- The spread of mobile payment services: Mobile payment services have become important tools in enhancing financial inclusion, especially in developing countries or areas lacking traditional banking infrastructure. These services allow individuals to make payments and transfer money using mobile phones, facilitating access to money and financial services without the need to visit bank branches. This can contribute to increasing individuals' access to electronic payment services, thereby increasing financial inclusion. Additionally, it improves efficiency and reduces the costs associated with conducting financial transactions. [4]

C - The Contribution of Processing, Issuance, and Collection Companies to Financial Inclusion: Financial processing companies include credit card companies, electronic payment companies, and data processing companies. These companies play a significant role in financial inclusion by facilitating payment and financial transfer processes between individuals and businesses. Additionally, issuance and collection companies, such as those that issue payment cards, help provide financial tools for individuals, making the processes of purchasing or transferring funds easier. Their

[1] The Economics of Money, Banking, and Financial Markets, Frederic S. Mishkin, Pearson Education, USA, 2018, PP: 250-254

[2] Digital Financial Inclusion, Douglas W. Arner, Jànos Barberis, and Ross P. Buckley, Cambridge University Press, UK, 2017, PP: 165-168.

[3] Muhammad Waseem, FinTech and Financial Inclusion, Routledge, UK, 2019, PP: 103-104.

[4] Abdullah Al-Assaf, Financial Inclusion in the Arab World, Dar Al-Fikr Al-Arabi – Egypt, 2018, pp. 45-46.

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role in financial inclusion is enhanced by facilitating non-cash payments and transfers, enabling individuals who do not engage with traditional banks to use financial tools. [1]

The second requirement: bank deposits and some related concepts

First : Concept of deposit

A deposit is understood as the amounts authorized in any currency that are deposited with the bank and are payable on demand or after notice or at a specific maturity date. This means that there are funds deposited with banks that are not considered deposits, such as[2] :

- Funds deposited in local currency in exchange for opening letters of credit .
- Funds deposited in exchange for issuing bank guarantees .
- Funds deposited in foreign currencies with local banks as collateral for opened letters of credit .
- Funds that one branch of a certain bank has deposited with another branch of the same bank.

Second: Types of Bank Deposits

There are several types of bank deposits, which can be explained as follows :

1- Demand Deposit : This type is one of the important deposits held by commercial banks, as it constitutes a majority of financial resources for these banks. The depositor has the right to withdraw from the deposit at any time without conditions or restrictions, using special instruments provided by the bank for this purpose. In other words, deposits in the current account are called current deposits. The depositor can deposit any amount as many times as they wish and can also withdraw any amount as many times as they want. The bank does not provide any interest on these accounts, but it may charge some fees to the depositor. This account is useful for traders who need money to conduct daily transactions multiple times a day.[3]

2- Time Deposits

This type of deposit requires prior agreement with the bank regarding the withdrawal period, which can range from six months to two years. The interest rate earned by the depositor increases with the length of the term, thus it is characterized by relative stability due to the bank's prior knowledge of withdrawal dates. Therefore, the mandatory reserve ratio on it is lower than that of demand deposits. This type of deposit is suited for individuals with small savings who do not frequently withdraw funds, and the interest rate on such deposits is low. Typically, savings or deposit accounts are opened by families with salaries and individuals with average incomes[4].

3- Saving Deposits

These are savings deposits for small savers, for which the bank pays interest to encourage saving among the public. The withdrawal process is subject to certain restrictions; the depositor must notify the bank in advance if they wish to withdraw an amount exceeding a specific limit.[5]

Third: Factors Influencing Bank Deposits

These are a set of factors that affect the decision of individuals or companies to deposit their money in banks. These factors can vary based on economic, political, and technical circumstances, and some of them can be summarized as follows:

1- Interest Rate : The interest rate is one of the most important factors that attracts individuals to deposit their money in banks. The higher the interest rate on deposits, the more attractive the deposit becomes, as depositors seek to obtain a greater return on their funds.

2- Safety and Stability : Individuals tend to deposit their money in banks that have a good reputation and a long history of financial stability, which reduces the risk of losing money.

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[1] S. M. K. Islam and M. M. Uddin, Financial Inclusion and Digital Payments, Springer, Germany, 2021, PP: 68-69.

[2] Sadiq Rashid Al-Shammari, Banking Operations Management - Introduction and Applications, Dar Al-Yazuri Scientific Publishing and Distribution - Amman (Jordan), Arabic Edition, 2014, p. 146.

[3] Anupam Agarwal ,Smt. Sharad Agarwal, Introductory Macroeconomics Based on NCERT Guidelines Class XII , SBPD Publications, SBPD Publications, latest edotion, 2020, P: 141

[4] Anupam Agarwal, Sharad Agarwal, Economics Class XII, SBPD Publications, LATEST EDITION, 2022, P: 94.

[5] Saeed Sami Al-Hallaq, Muhammad Mahmoud Al-Ajlouni, Money, Banks and Central Banks, Dar Al-Yazuri Scientific for Publishing and Distribution - Amman, 2018, p. 48.

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3- Financial Needs of the Depositor : The choice of the type of deposit varies based on the individual's or company's needs in terms of liquidity, duration, and profitability. For example, some may prefer fixed-term deposits to obtain higher returns, while others may prefer current accounts for easy access to their funds.[1]

4- Banking regulations and laws : Legal and regulatory impacts on banks and deposits, such as deposit guarantees, can significantly influence depositors' choices. In some countries, governments provide guarantees on deposits up to a certain limit, which enhances confidence in the banking system .

5- Economic fluctuations : General economic conditions, such as inflation, financial crises, or fluctuations in interest rates, all affect individuals' willingness to keep their money in banks, and they may sometimes prefer to place their funds elsewhere, such as investing in stocks or real estate .

6- Banking fees and conditions : Some banks may impose fees on deposits or limit withdrawal capacity, which influences the depositor's decision. Additionally, the presence of flexible or stringent conditions on deposits may affect depositors' choices .

7- Technological developments : Many banks offer digital services that facilitate the management of deposits online, increasing the attractiveness of depositing in these banks due to easy access to accounts and transaction execution[2] . Based on the above, it can be said that all the factors mentioned work together to shape decisions related to bank deposits, and individuals and investors should balance them to choose the option that best suits their financial needs.

The third requirement: The relationship between financial inclusion and bank deposits

The relationship between financial inclusion and bank deposits is one of the main relationships that significantly affects the stability of the financial system and stimulates economic growth. To understand this relationship broadly, we can analyze it from multiple aspects:

First : Financial Inclusion: A broader scope and its social and economic dimensions

We previously clarified that financial inclusion does not only involve providing basic financial services but also includes improving and expanding individuals' access to advanced financial tools. This encompasses not only traditional bank accounts but also (digital financing, microloans, insurance, mobile banking services). When all members of society can access these services, they are empowered to make more informed and secure financial decisions, which enhances their ability to (manage risks, invest for the long term, fund personal or business projects). Therefore, financial inclusion leads to increased financial awareness and enables individuals to use financial tools in ways that improve their economic lives.[3]

Second: Bank Deposits and Their Role in Providing Financing for Economic Activity

Bank deposits represent the main source for financing economic activities through banking loans and investment of funds. When deposits are large and diversified, they enable banks to provide many loans at lower interest rates compared to times when the volume of deposits is limited. When deposits increase due to financial inclusion, this provides the bank with (greater liquidity, diversification of financing risks, liquidity management) .[4]

Third: The Mechanism of Financial Inclusion's Impact on Bank Deposits

A. Increasing Financial Awareness and Confidence in the Banking System: Financial inclusion does not only mean providing financial services but also includes financial education aimed at improving individuals' ability to make informed financial decisions. Through these educational programs, individuals can understand the benefits of saving and how to use banking services such as checking and savings accounts, as well as learn how to invest in financial instruments that provide them with long-term financial security.

B. Access to Banking Services Using Technology : Financial technology is one of the key factors that has enhanced financial inclusion. In many countries, banks offer digital banking services through mobile applications and websites, making it easier for individuals to open bank accounts and access financial products without the need to visit traditional

[1] Ahlam Buabedali, Commercial Bank Management Policies and Indicators, Dar Al-Jinan for Publishing and Distribution, 2015, pp. 45-64.

[2] Banking and Finance, J.F. Smith, International Publishing House , UK, 2015, PP: 120-122.

[3] Mohamed Helal, Financial Inclusion in the Arab World, Dar Al-Fikr Al-Arabi – Egypt, 2020, p. 34.

[4] Ahmed Adel, Bank Finance and its Role in Economic Development, Al-Ahram Foundation – Egypt, 2018, p. 58.

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banks. This feature enhances financial independence and increases individuals' ability to save their money away from the risks associated with keeping money at home or in informal markets.[1]

Fourth: The Increase of Bank Deposits and Its Impact on Financial System Stability

The increase in bank deposits due to financial inclusion leads to the enhancement of the stability of the financial system through :

• Diversification of deposits: When banks have a broad base of deposits from various demographic segments, the banking system becomes more resilient to economic shocks. For example, during times of economic crises, banks can continue to provide funding to individuals and businesses if they have a wide deposit base .

• Enhancing trust in the financial system: As the number of individuals dealing with banks increases, it enhances trust in the banking system and helps to mitigate concerns about financial crises that may occur due to a lack of trust or liquidity anxiety.

Banks with a large deposit base are capable of providing liquidity easily to economic projects, thereby enhancing the overall stability of the national economy.[2]

Fifth: Challenges that may affect the relationship between financial inclusion and bank deposits

Despite the numerous benefits resulting from financial inclusion, there are challenges that may hinder the achievement of a positive impact on bank deposits, including the following [3]:

A. The digital divide and lack of internet access

In many areas, particularly in developing countries or rural regions, internet access remains limited, making it difficult to use online or mobile banking services. This means that these groups may be excluded from benefiting from financial inclusion, which limits the banking system's ability to attract deposits from large segments of society.

B. Trust in the financial system and banking institutions

In some cases, there may be doubts or a lack of trust in the banking system due to previous experiences with financial crises or mismanagement in some banks. This weak trust can pose an obstacle to increasing deposits, as some individuals may prefer to keep their money in cash or with informal institutions.

C. Legal and regulatory challenges

Banks need to adhere to strict laws and regulations to ensure the protection of deposits (such as deposit insurance or providing protection for investors), and any failure in this area may lead to a decline in trust in the financial system, consequently reducing the volume of deposits.

Sixth: The positive economic effects of financial inclusion on economic growth

A. Stimulating economic growth through sustainable financing : Increasing deposits provides the necessary capital to finance small and medium-sized enterprises, which are key sectors in promoting economic growth and creating job opportunities. Through increasing interaction between individuals and the banking system, the following can be achieved[4] :

• An increase in investment: by providing the necessary loans or financing for new projects .

• Fighting poverty: by enabling individuals to obtain affordable loans to improve their living conditions .

B. Enhancing social justice and economic inclusion : Financial inclusion helps reduce economic disparities by enhancing access for marginalized groups to the financial system. Bank deposits, in this context, represent a tool for economic empowerment, allowing individuals from all segments of society to improve their standard of living .

Based on the above, it can be said that financial inclusion and bank deposits together form a crucial axis for economic stability and sustainable growth. By providing access to financial services, individuals can increase their savings and achieve financial stability, which benefits the banking system and society as a whole. At the same time, the increase in bank deposits enhances the ability to finance projects and provides liquidity, thereby promoting economic stability and stimulating long-term economic growth.

Chapter Two

[1] Khaled Zakaria, Financial Education in the Arab World, Dar Al-Mada for Publishing and Distribution - UAE, 2021, p. 75.

[2] Abdullah Al-Najjar, The Stability of the Financial System and the Role of Deposits in Supporting Economic Growth, Dar Gharib for Publishing - Lebanon, 2019, p. 45.

[3] Jonathan Adams, Financial Inclusion and Development, Palgrave Macmillan , UK, 2018, PP: 43-44.

[4] Robert Cull & Lemma W. Senbet, Financial Systems and Development, Oxford University Press, UK, 2016, PP: 120-122.

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Analysis of Some Indicators of Financial Inclusion and Bank Deposits in Iraq

Section One: Analysis of Some Indicators of Financial Inclusion

Financial inclusion is considered one of the main factors for stimulating economic growth and achieving sustainable development. It refers to providing access to various financial services for individuals and companies, especially marginalized groups or those with low incomes. In Iraq, analyzing indicators of financial inclusion reflects the current situation and contributes to understanding the challenges and opportunities available to improve the level of financial inclusion in the country. Some indicators of financial inclusion can be analyzed as follows:

First: Access to Financial Services Index

The Access to Financial Services Index reflects some challenges related to financial infrastructure and digital technologies, as well as a lack of awareness among some individuals about the available financial services. Nevertheless, recent years have seen gradual developments in this field. This index relies on a number of variables, which are :

1- Banking Density and Bank Spread Index

Table (1) shows that both bank spread and banking density have continued to maintain their low levels in Iraq, as the bank spread has not changed much in recent years, reaching (2.80) in 2010 and becoming (2.81) in 2016, which is approximately (3) branches per (100) thousand people, while this ratio was (3.28) in 2015. The decrease in 2016 compared to 2015 is attributed to the decline in the number of bank branches from (1213) in 2015 to (1068) in 2016. This overall decrease reflects the insufficient number of bank branches compared to Iraq's high population, indicating that Iraq needs more bank branches in order to extend banking services to as many residents as possible. Based on this index, banking services are more widespread when this ratio increases.

As for the banking density indicator measured per 1,000 inhabitants for each branch, it did not change much in Iraq during the period (2010-2016), as it remained at over (30) thousand inhabitants per branch, indicating that this ratio is still low in Iraq. This means that banking density and banking spread in Iraq are still below the required level, and despite the opening of new banks in 2018, along with the Central Bank of Iraq encouraging banks to open branches throughout the country, there was a slight increase in the number of bank branches in 2018, reaching (865) branches, compared to (843) branches in 2017. This increase resulted from the establishment of new banks after some money transfer companies transformed into Islamic banks. Banking density saw a slight increase, reaching (44.16) in 2018, up from (44) in 2017, accompanied by a slight decrease in banking spread, which was (2.27) in 2017 and became (2.26) in 2018. Therefore, the minor change in the two years above, despite the increase in the number of branches, was due to the significant increase in Iraq's population, which reached approximately (22.696) million in 2018, after being (37.140) million .

Table (1): Banking Spread and Banking Density

Years	Economic Population (thousands)	Number of Bank Branches	Banking Density	Banking Penetration
	1	2	1/2=3	2/1=4
2010	32498	912	35.6	2.80
2011	33338	929	35.9	2.78
2012	34207	990	34.6	2.89
2013	35095	1042	33.7	2.96
2014	36004	1204	29.9	3.34
2015	36933	1213	30.4	3.28
2016	37883	1068	35.5	2.81
2017	37140	843	44	2.27
2018	22696	865	44.1	2.26
2019	22090	888	44.2	2.25
2020	22668	891	45	2.21
2021	23255	905	45.5	2.2
2022	23870	876	27.2	3.6
2023	32493	843	38.5	2.5

Source: Prepared by the researcher based on: Financial Stability Reports of the Central Bank of Iraq for the years (2010-202)

- 2018-2023 :Includes the economically active population (15-64).

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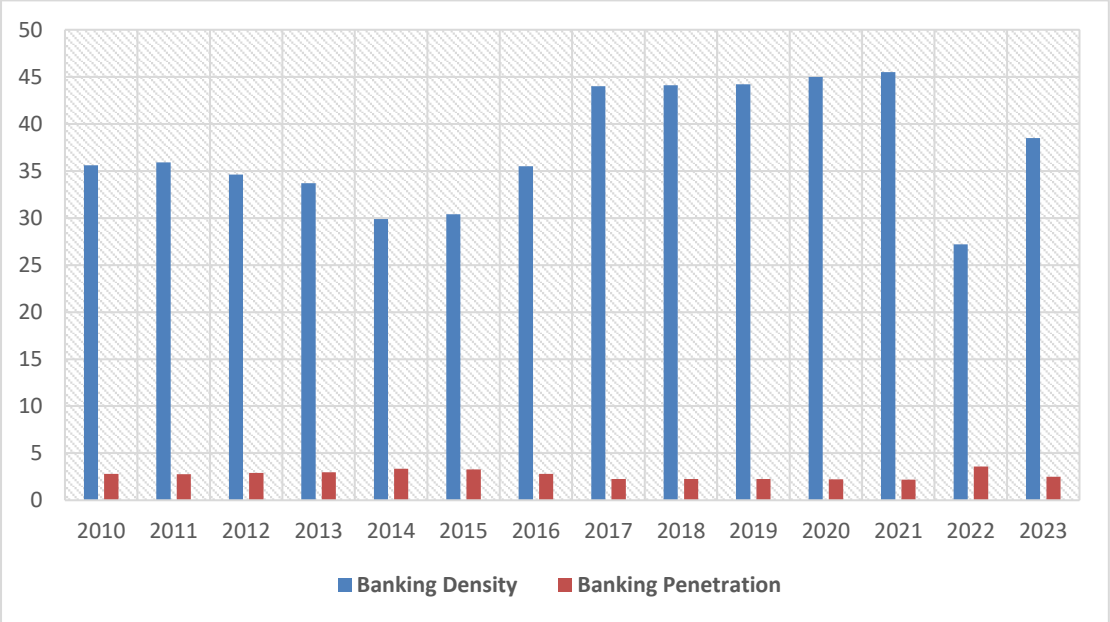
- Banking density = Population (thousand people) / Number of branches.
- Banking penetration = (Number of branches / Population (per 100,000 people)) * 100

In 2023, the banking sector witnessed a decrease in the number of bank branches, with the number of branches reaching (843), compared to (876) branches in 2022. The banking density index stood at (38.5) thousand inhabitants per bank branch on average in 2023, after being (27.2) thousand inhabitants per bank branch on average in 2022. Conversely, the banking penetration index decreased to (2.5%) in 2023, down from (3.6%) in 2022, which is attributed to the closure of some foreign bank branches.

Based on the above, the banking penetration and banking density can be illustrated in Figure (1) for the period (2010-2023.(

Figure 1: Banking Penetration and Banking Density for the period (2010-2023)



Source: Prepared by the researcher based on Table (1)

2. Banking Penetration of ATMs

Table (2) below indicates that the banking penetration of ATMs is considered low in Iraq compared to Arab countries. To increase the level of banking penetration in Iraq, banks, particularly private ones, contributed to increasing the number of ATMs in Iraq from (467) machines in 2011 to (660) machines in 2016, and most of these machines are available in commercial centers and some bank branches.

Therefore, the banking penetration based on the number of ATMs per (100) thousand adults in Iraq recorded very low rates that did not exceed (4), meaning fewer than four ATMs per hundred thousand adults during the period (2011-2016). In contrast, this rate reached (76), (68), and (56) in Saudi Arabia, Qatar, and Kuwait respectively in 2015, while points of sale in some Arab countries recorded more than (700) points In 2013, the rate of banking services per hundred thousand people was similar to that in the UAE, Lebanon, and Qatar [1]. The increase in this ratio is a better indicator due to the widespread use of electronic means instead of cash for payments. This is another indicator that reflects the limited access to banking services in Iraq, despite the efforts of the Central Bank of Iraq to promote the use of electronic payments at the retail level .

Table (2): Banking penetration of Automatic Teller Machines (ATM) (per 100,000 people)

Years	Number of adults (1000 people) 15 years and above	Payment devices			Percent %	Percent %	Percene %
		numbers ATM	numbers POS	numbers POC			
	1	2	3	4	2/1=4	3/1=5	4/1=6

[1] World Bank estimates for 2015, see : http://data.worldbank.org/topic/financial

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2010	**----**	**465**	**----**	**----**	**----**	**----**	**----**
2011	**19929**	**467**	**----**	**----**	**2.3**	**----**	**----**
2012	**20569**	**467**	**----**	**----**	**2.2**	**----**	**----**
2013	**21227**	**647**	**----**	**----**	**3.1**	**----**	**----**
2014	**21926**	**337**	**----**	**----**	**1.5**	**----**	**----**
2015	**22082**	**580**	**----**	**----**	**2.6**	**----**	**----**
2016	**22654**	**660**	**----**	**----**	**2.9**	**----**	**----**
2017	**43733**	**656**	**918**	**5143**	**1.5**	**2.0**	**11.7**
2018	**22696**	**865**	**2200**	**6625**	**3.8**	**9.6**	**29.1**
2019	**22090**	**1014**	**2226**	**11677**	**4.5**	**10.0**	**52.8**
2020	**22668**	**1340**	**7540**	**13796**	**5.9**	**33.2**	**60.8**
2021	**23255**	**1566**	**8329**	**14704**	**6.7**	**35.8**	**63.2**
2022	**23870**	**2223**	**10718**	**17610**	**9.3**	**44.9**	**73.7**
2023	**32493**	**4021**	**23066**	**17610**	**12.3**	**70.9**	**54.1**

Source: Prepared by the researcher based on the Financial Stability Reports of the Central Bank of Iraq for the years (2010-2023)

- 2023-2018Includes the economically active population (15-64)

In order to attract a larger number of people into the banking system, increase operations within the financial system, and gradually eliminate cash transactions, it is necessary to enhance electronic payment services, which are among the primary goals that the Central Bank of Iraq aims to achieve. This indicator measures the level of penetration of electronic payment services. The same table and figure (2) show the number of (POS), (POC), and (ATM) per 1,000 km. It is evident that there has been an increase in the number of (ATM), (POS), and (POC) devices across Iraq. It can be observed that the number of ATMs in relation to Iraq's area increased from (1.5%) in 2017 to (12.3%) in 2021. Meanwhile, the spread of POS devices increased from (2.0%) in 2017 to (70.9%) in 2023, and the number of POC devices also rose from (11.7%) in 2017 to (54.1%) in 2023.

The spread of electronic payment services in relation to the population of Iraq per 100,000 people remains low. The reason for this is the cash transactions and the manual processing of financial transactions between individuals and merchants, due to the lack of prevalence of this culture. This process remains unclear to most shop owners, particularly in popular and remote areas. Consequently, most commercial markets and shops deal in cash rather than using POS machines. As for ATM machines, their spread is limited to malls, commercial centers, some government offices, and the branches of banks, with no machines available in public areas.

Therefore, it is necessary for banks to increase the number of these machines in order to offer better services to the public, which will help increase the number of individuals entering the financial system and enhance the level of financial inclusion aimed at by the Central Bank.

Based on the above, the ratios of the spread of electronic payment services in relation to the area of Iraq can be illustrated in Figure 2 for the period 2010-2023.

Figure 2: The spread of electronic payment services in relation to the area of Iraq for the period 2010-2023

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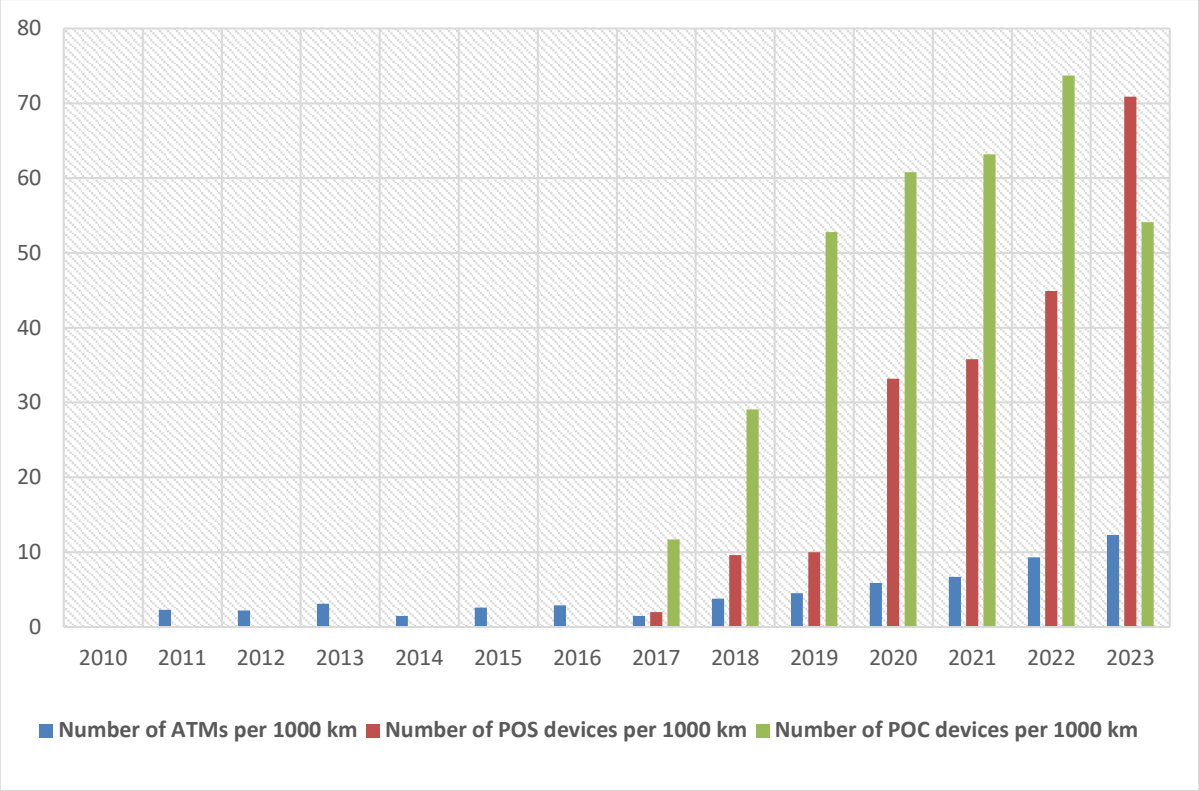

Source: Prepared by the researcher based on Table (2)

Secondly: Financial Services Usage Indicator

This indicator is used to measure the level of financial inclusion in Iraq, represented by the usage of various financial and banking services and the efficiency and effectiveness of financial intermediary institutions in promoting that usage. This indicator will include three sub-indicators:

1. Banking Depth Indicator

The Banking Depth Indicator is the ratio of the volume of loans and deposits to the Gross Domestic Product (GDP), as shown in Table (3), indicating an increase in the ratio of private sector loans to GDP during the period 2010-2016 From (5.2%) to (9.2%) respectively, and the same applies to the index of private sector deposits to GDP, which increased from (8.5%) in 2010 to (12.1%) in 2016. It is noteworthy that these ratios remain low, revealing the weak contribution of the banking sector to GDP and the weak demand for banking services whether deposit services or credit services. The World Bank estimates indicate that the ratio of credit to the private sector to GDP exceeds (100%) in Australia and Malaysia, while at the same time this ratio exceeds (50%) in some Arab countries such as Lebanon, Kuwait, and the UAE during the period 2010-2015.[1] Similarly, in the years 2017-2021, the ratio of credit provided to the private sector to GDP slightly increased from (13%) in 2017 to (13.3%) in 2021. The ratio of private sector deposits to GDP increased from (11.5%) in 2017 to (14.3%) in 2021. In 2022 and 2023, the contribution of credit provided to the private sector to GDP rose from (12.3%) to (14.9%), attributed to the increase in credit provided to the private sector, which recorded an amount of (49,366,440) million dinars in 2023, after being (47,287,087) million dinars in 2022. The ratio of private sector deposits to GDP also witnessed an increase in 2023, reaching (17.1%) after being (14.3%) in 2022, resulting from the increase in deposits to (56,556,663) million dinars after being (54,976,187) million during the same period .

Table (3): Measuring the level of banking depth (Million Dinars)

[1] World Bank estimates for 2015, see:: http://databank.worldbank.org/data/reports.aspx?source=2&Topic-7

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Years	Private sector credit	Private sector deposits	GDP	Banking depth index %	Banking depth index %
	1	2	3	1/3=4	2/3=5
2010	8527131	13711185	162064565	5.2	8.5
2011	11356308	18192612	217327107	5.2	8.4
2012	14650102	21115540	254225490	5.7	8.3
2013	16947533	24450014	273587529	6.2	8.9
2014	17745141	24702632	258900633	6.8	9.5
2015	18070058	23636904	191715791	9.4	12.3
2016	18164883	23697049	196536350	9.2	12.1
2017	29530500	26093354	225722375	13	11.5
2018	29232374	27364385	268918874	10.8	10.1
2019	30023945	30708684	276157867	10.8	11.1
2020	34871932	35920533	219768798	15.8	16.3
2021	40382293	43243055	301439533	13.3	14.3
2022	47287087	54976187	383064152	12.3	14.3
2023	49366440	56556663	330046390	14.9	17.1

Source: Prepared by the researcher based on the Financial Stability Reports of the Central Bank of Iraq for the years (2010-2023)

Based on the above, the ratio of credit and deposits for the private sector to GDP can be illustrated in Chart (3) for the period (2010-2023)

Chart 3: Ratio of credit and deposits for the private sector to GDP for the period (2010-2023)

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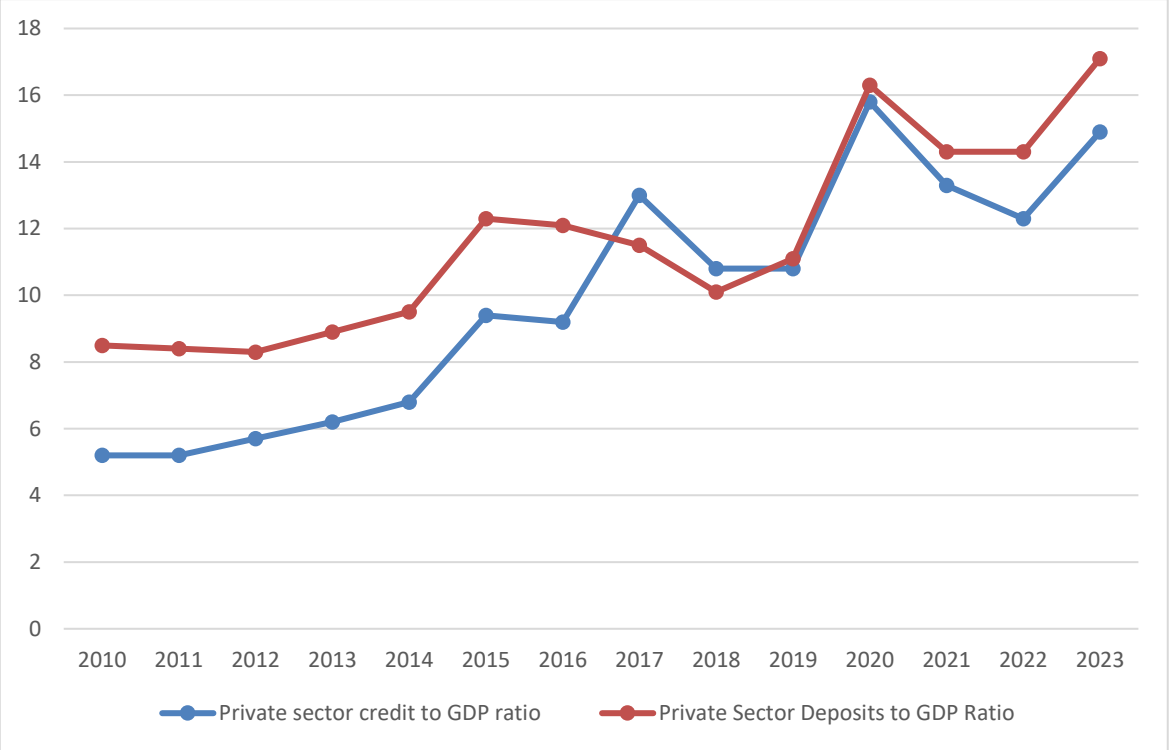

Source: Prepared by the researcher based on Table (3)

2. The ratio of money supply to GDP (liquidity ratio in the economy

The money supply measures the degree or ratio of restriction in the economy and provides important services for payments and savings. The narrow money supply leads to payment services, while the broad money supply leads to savings. However, during the process of financial developments, this ratio tends to decline, as other financial instruments not included in the money supply (including the monetary base and narrow money) become more available. This reflects the upward trend of financial innovation, providing greater flexibility and depth to the financial sector. Table (3) shows the ratio of money supply to GDP during the period 2010-2023. The table indicates that the broad money supply increased from (60,386,086) in 2010 to (180,975,628) million dinars in 2023, except for the decline in 2015, which indicates the increasing importance of the financial sector. The decline in 2015 is attributed to the decrease in net foreign assets due to a drop in oil revenues on one hand, and the expansive effect of the government's net debts and debts of the private sector and other sectors on the other hand, due to the war events the country faced recently.

As for the ratio of broad money supply to GDP, despite its minimum decline in 2012 at (30.3%), due to the slowdown in GDP growth caused by deteriorating security conditions and the disruption of local and foreign investments, this ratio has witnessed a growing trend, reaching (54.8%) in 2023 (despite the fluctuations this ratio experienced over the period due to variations in GDP size both increasing and decreasing). This significant increase in 2020 was attributed to a substantial decline in GDP due to the dual crisis affecting most countries, including Iraq, represented by the COVID-19 pandemic and the sharp drop in global oil prices. Although MS2 as a percentage of GDP in Iraq fluctuated during the period (2010 - 2023), it tends to increase, ending at (54.8%) in 2023, indicating a relative improvement in the liquidity rate of the economy and an increase in currency circulation, especially after monetizing oil revenues through the currency window, which expanded as government spending increased. Additionally, both fixed and current deposits have risen due to the expansion of banking presence and the relative stability of the local currency, which somewhat increased confidence in the local currency .

Table (4): Ratio of MS2 to GDP (million dinars).

Years	Broad money supply MS_2	Annual growth rate	GDP	Ratio of MS_2 to GDP
	1	2	3	1/3=4
2010	60386086	32.9	162064565	37.2
2011	72177951	19.5	217327107	33.2
2012	77187497	6.9	254225490	30.3
2013	89512076	15.9	273587529	32.7

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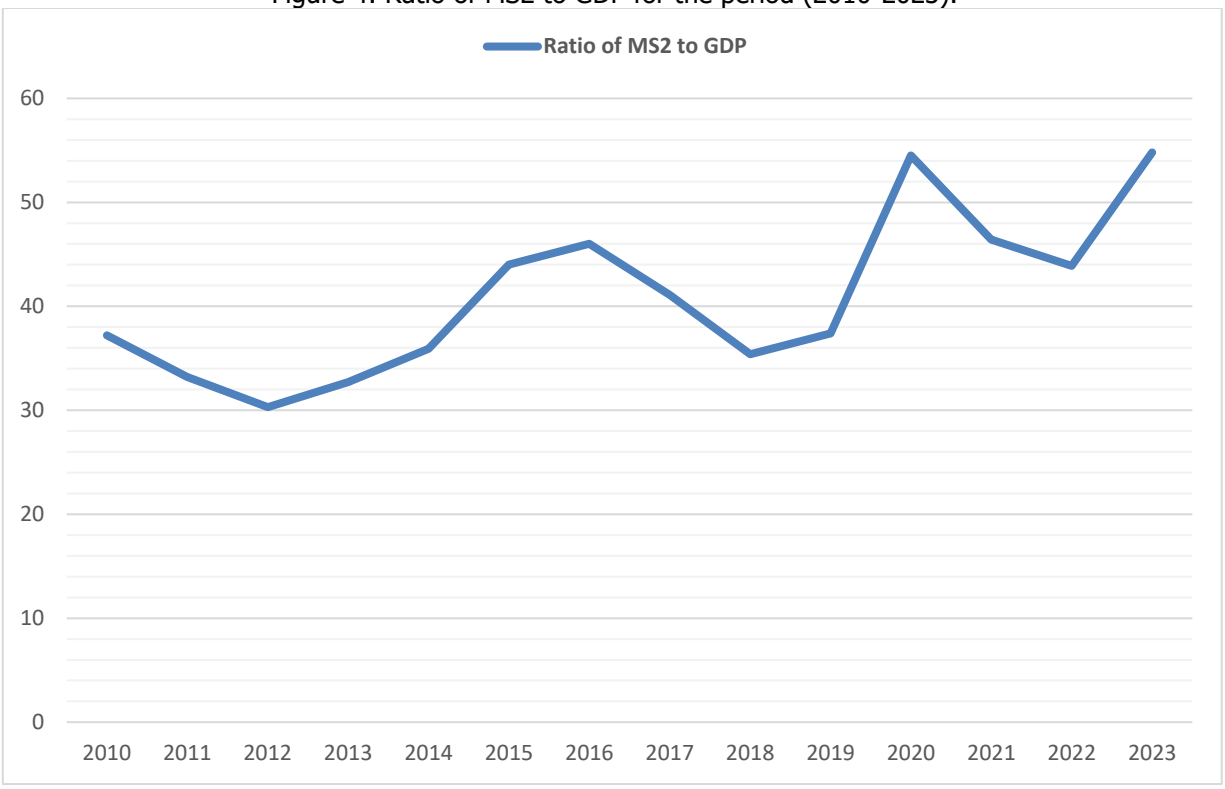
2014	**92988876**	**3.8**	**258900633**	**35.9**
2015	**84527272**	**-9.1**	**191715791**	**44**
2016	**90466370**	**7.0**	**196536350**	**46**
2017	**92857047**	**2.6**	**225722375**	**41.1**
2018	**95390725**	**2.7**	**268918874**	**35.4**
2019	**103441131**	**8.4**	**276157867**	**37.4**
2020	**119906260**	**15.9**	**219768798**	**54.5**
2021	**139885978**	**16.6**	**301439533**	**46.4**
2022	**168291372**	**20.3**	**383064152**	**43.9**
2023	**180975628**	**7.5**	**330046390**	**54.8**

Source: Prepared by the researcher based on the annual bulletins of the Central Bank of Iraq, Statistics and Research Department, for the years (2010-2023)

Based on the above, the ratio of money supply to GDP can be illustrated graphically in (4) for the period (2010-2023).

Figure 4: Ratio of MS2 to GDP for the period (2010-2023).



Source: Prepared by the researcher based on Table (4).

Second Requirement: Analysis of the Structure of Bank Deposits

The analysis of the structure of bank deposits in Iraq includes government and private banks. These deposits are for the central government, public institutions, in addition to the private sector. Table (5) below illustrates the structure of bank deposits during the period 2010-2023 .

The same table shows that the balance of deposits in the banking sector decreased from (64,344,061) million dinars in 2015 to (62,398,733) million dinars in 2016. This decrease is attributed to the reduction in government expenditures after 2014, which reflected in the decline of government deposits in banks, constituting more than (60%) of the total deposits in banks, especially in public ones, decreasing from (49,370,704) million dinars in 2014 to (40,955,277) million dinars in 2016. On the other hand, the decrease in expenditures affected individual incomes, leading to a decline in private sector deposits from (24,702,632) million dinars in 2014 to (23,636,904) million dinars in 2015; however, private deposits rose in 2016 to reach (23,708,420) million dinars, thus increasing their proportion of total deposits to (38.9) in 2016, reducing the gap between the proportion of private deposits and the proportion of public deposits. Therefore, the impact of the financial crisis in 2014 in Iraq, caused by falling oil prices and increased expenses related to the war on terrorism and support for displaced and refugees, had a negative effect on the growth rate of both public and private

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deposits. After the crisis, there was a deterioration in the growth of deposits, especially in the public sector, while the decline in the growth of private deposits was moderate.
In 2020, the contribution of public sector deposits to total bank deposits decreased to (57.7%) compared to 2019 in favor of private sector deposits at (42.2%). This is due to the two crises that Iraq faced (the global coronavirus crisis and falling oil prices). However, in general, as shown in (Figure 5), the ratios of public sector deposits to total bank deposits were higher than those of private sector deposits, indicating the level of trust individuals have in government banks compared to private or commercial banks .

Table (5): Public and private sector deposits for the period (2010-2023) million dinars for the years (2010-2023)

Years	Total Public Sector Deposits	Total Private Sector Deposits	Total bank deposits	ratio of the public sector to total bank deposits	ratio of the private sector to total bank deposits
	1	2	1+2=3	1/3=4	2/3=5
2010	34236047	13711185	47947232	71.4	28.5
2011	37957482	18192612	56157180	67.5	32.3
2012	40890395	21115540	62005935	65.9	34
2013	44405473	24450014	78819830	56.3	31
2014	49370704	24702632	74073336	66.6	33.3
2015	40707157	23636904	64344061	63.2	36.7
2016	38690313	23708420	62398733	62	37.9
2017	40955277	26093354	67048631	61	38.9
2018	49529542	27364385	76893927	64.4	35.5
2019	51397741	30708684	82106425	62.5	37.4
2020	49003635	35920533	84924168	57.7	42.2
2021	52828323	43243055	96071378	54.9	45
2022	74107135	54976187	129083322	57.4	42.5
2023	76941965	56556663	133498628	57.6	42.3

Source: Prepared by the researcher based on: Annual Bulletins of the Central Bank of Iraq, Department of Statistics and Research,

Based on the above, the contribution rates of the public and private sectors to total bank deposits can be illustrated in the graph (5) for the period (2010-2023).

Figure 5: The ratio of the public and private sectors to total bank deposits for the period (2010-2023)

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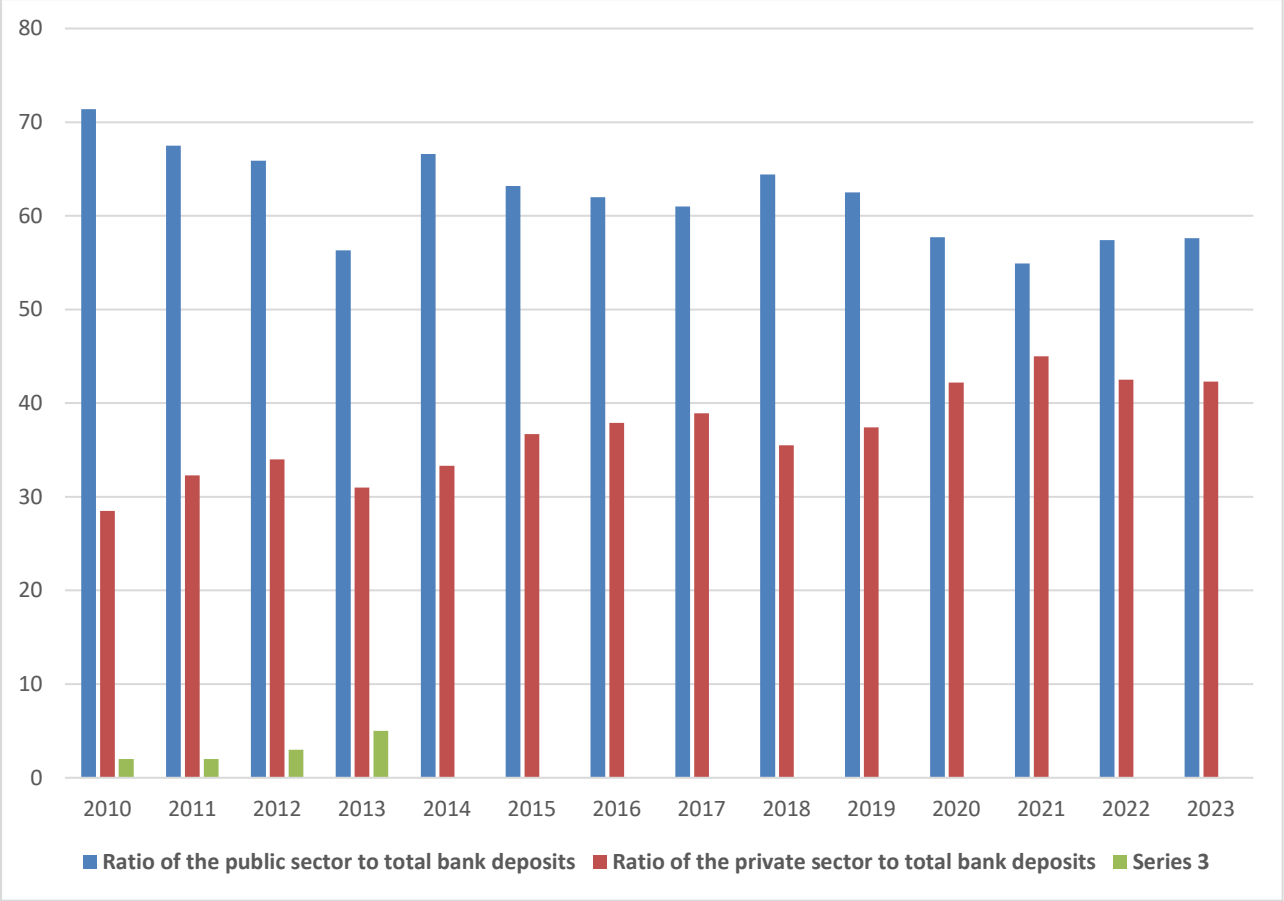

Source: Prepared by the researcher based on Table (5)

Chapter Three

Measuring and Analyzing the Impact of Some Financial Inclusion Indicators on Bank Deposits in Iraq

Section One: Description of the Variables Used in the Standard Model

In this section, the independent variables and the dependent variable of the research will be described, along with supporting the variables with mathematical equations .

It should be noted here that in order to prove the validity of the research hypothesis or not and to access its main objective, as well as to support the results obtained in the second section, what has been presented will be described in the following paragraphs as follows :

First: Independent Variables: These are represented by some indicators of financial inclusion :

- **The indicator of the number of bank branches:** This indicator reflects the number of banking branches spread across the country or region, and is considered one of the important indicators The text reflects the extent of the availability of banking services and access to them by individuals and companies.
- **ATM Payment Devices Indicator :** Refers to the number of Automated Teller Machines (ATMs) available in the country or region. This indicator serves as evidence of individuals' ability to easily access cash withdrawal and deposit services, thereby reflecting the level of access to banking services.
- **Credit Granted to the Private Sector Indicator:** Represents the total value of loans and credits granted by banks to the private sector, whether to individuals or companies. This indicator reflects the degree of availability of credit and financing for the private sector and the extent of access to these services by individuals and companies.
- **Money Supply Indicator:** Reflects the total amount of money available in the economy, including circulating currency, bank deposits, and other cash instruments. This indicator is used to measure cash liquidity in the market and the availability of funds for investment and consumption.

Secondly: Dependent Variable

This is the banking deposits indicator, which represents the total value of deposits made in banks by individuals and companies. This indicator is used to measure the level of trust in the banking system and the availability of liquidity within the economy through savings.

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In light of the above, a table can be inserted illustrating the symbols used for the independent variables and the dependent variable in the ARDL model.

Table (6): Study Variables in terms of (name, type, symbol used) in the ARDL model

N	Variable Name	Variable Type	Used Symbol
1	Number of Bank Branches Index	Independent Variables	NB
2	Payment Devices Index		ATM
3	Private Sector Credit Index		CPS
4	Money Supply Index		MS
5	Bank Deposits Index	Dependent Variable	BD

Source: Prepared by the researcher based on the previous explanation.

Based on the above, the variables can be formulated in linear equations as follows :

$$BD = f(NB, ATM, CPS, MS) \quad \text{.....(11)}$$

$$BD = \beta_0 + \beta_1 NB + \beta_1 ATM + \beta_1 CPS + \beta_1 MS + Ui \quad \text{.. (12)}$$

Equations Model One

Where: BD: the dependent variable. B0: the constant term. (ß1, ß21, ß3, ß4): parameters of the independent variables. (NB, ATM, CPS, MS): the independent variable. Ui: the random error term.

Requirement Two: Presentation of Time Series Stationarity Results and Discussion

The estimation of the relationship function for the models presented earlier requires conducting some standard tests and analyzing them from a statistical and economic perspective. Stationarity tests are utilized to avoid the problem of spurious regression by taking the first difference or second difference when the stationarity property is not available at the level. In light of this context, appropriate standard models in the property of cointegration are determined, leading to valid and non-spurious results. To identify the stationarity tests, two unit root tests have been relied upon :

1- The Augmented Dickey-Fuller Test (ADF)

The Augmented Dickey-Fuller test can be used to infer whether the independent or dependent variables might be stationary and not suffer from a unit root, or whether the variables are non-stationary and suffer from a unit root. When the variables are stationary, the alternative hypothesis is accepted, and the null hypothesis is rejected. Conversely, when the variables are non-stationary, the null hypothesis is accepted, and the alternative hypothesis is rejected .

The rejection or acceptance of the null and alternative hypotheses is based on the p-value Prob and is compared to the significance level of 5%. (When the p-value is greater than the 5% level, this indicates that the variables are not significant and suffer from a unit root; therefore, we accept the null hypothesis, which states that the variables involved in the stationarity tests are not significant, and we reject the alternative hypothesis. Conversely, If the p-value is less than the 5% level, this indicates that the variables are significant and do not suffer from a unit root, and thus we reject the null hypothesis and accept the alternative hypothesis which states that the variables included in the test are stationary .

Therefore, it is clear from Table (7) the results of the ADF test across three cases: (Intercept only, Trend and intercept, None). Table (7) shows that the variables (BD, NB, ATM, CPS, MS) are non-stationary at the Level I(0) in all cases except for the variable NB which is stationary in the cases of (Intercept only, Trend and intercept), and also the variables MS and BD were stationary in one case which is (Trend and intercept). Therefore, the first difference I(1) of these variables must be taken, and it was found after taking the first difference that all variables (BD, NB, ATM, CPS, MS) are stationary in the first difference, as the p-value is less than 5%, thus we reject the null hypothesis and accept the alternative hypothesis.

Table (7): Results of the ADF test.

The first difference Ist difference $I_{(1)}$			Level $I_{(0)}$			Variables
No fixed limit or general	**Trend and intercept**	**Intercept**	**No fixed limit or**	**Trend and intercept**	**Intercept**	

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direction None			general direction			
Prob	Prob	Prob	Prob	Prob	Prob	
0.0005	0.0330	0.0090	0.4708	0.0012	0.0029	NB
0.00050	0.0008	0.0024	0.6724	0.1095	0.5655	ATM
0.0002	0.0003	0.0000	0.8199	0.0022	0.7075	CPS
0.0122	0.0305	0.0192	0.7563	0.0535	0.4708	MS
0.0005	0.0050	0.0014	0.6982	0.0138	0.2470	BD

Source: Prepared by the researcher using the program (Eviews 12)

2. Phillips-Perron Test (P-P)

The Phillips-Perron test (P-P) is characterized by greater accuracy in time series for small samples compared to the ADF test. We will present the results of the (P-P) test and compare them with the results of the (ADF) test to ensure the correct estimation of the tests or models that will be used later .

The table (8) shows the results of the (ADF) test across three cases: (intercept only, intercept and trend, none). Thus, table (8) indicates that the variables (BD, NB, ATM, CPS, MS) are non-stationary at level I(0) in all cases except for the variable NB, which is stationary in the cases of intercept only and intercept and trend. Additionally, the variables CPS, MS, and BD were stationary in one case only, which is the intercept and trend case. Subsequently, the first difference I(1) of these variables must be taken. It was found after taking the first difference that all variables (BD, NB, ATM, CPS, MS) are stationary at the first difference since the significance level is less than 5%. Therefore, we reject the null hypothesis and accept the alternative hypothesis .

Table (8): Results of the (PP) test

The first difference Ist difference $I_{(1)}$			Level $I_{(0)}$			Variables
No fixed limit or general direction None	Trend and intercept	Intercept	No fixed limit or general direction	Trend and intercept	Intercept	
Prob	Prob	Prob	Prob	Prob	Prob	
0.0005	0.0330	0.0090	0.4708	0.0012	0.0029	NB
0.00050	0.0008	0.0024	0.6724	0.1095	0.5655	ATM
0.0002	0.0003	0.0000	0.8199	0.0022	0.7075	CPS
0.0122	0.0305	0.0192	0.7563	0.0535	0.4708	MS
0.0005	0.0050	0.0014	0.6982	0.0138	0.2470	BD

Source: Prepared by the researcher using the program (Eviews 12)

Third Requirement: Presentation and Discussion of ARDL Model Results

In this section, the results of the ARDL model will be presented and discussed in order to estimate the relationship function between the independent variables and the dependent variable.

Firstly: Preliminary estimation test for the ARDL model

This test refers to the results of the ARDL model in terms of the optimal lag length for the variables, the explanatory power of the weighted coefficient of determination, the calculated value F and its significance, and then the Durbin-Watson statistics .

Table (9) shows that the ARDL model automatically determines the optimal lag length for the variables (BD, NB, ATM, CPS, MS), where the lag length for the dependent variable, which is the bank deposit rate (BD), is three lag periods, while the lag lengths for the independent variables (number of bank branches NB, ATM devices, credit to the private sector CPS, broad money MS) were (4, 1, 2, and 2) respectively. On the other hand, the statistical results indicated that the independent variable explained that the value of the Adjusted R-Squared (AR-S) was (0.99%), meaning that the change in the dependent

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variable (BD) is attributed to the change in the independent variables, and about (0.10.4%) is due to the random error term .

Table (9): Results of the ARDL model test

Selected Model: ARDL(**3, 2, 2, 1, 4**)

Prob.*	t-Statistic	Std. Error	Coefficient	Variable
0.0000	13.37020	0.143216	1.914825	BD(-1)
0.0000	-4.813020	0.269299	-1.296144	BD(-2)
0.1251	1.571497	0.163421	0.256815	BD(-3)
0.8292	-0.217394	13922.71	-3026.712	NB
0.8376	0.206458	22331.17	4610.458	NB(-1)
0.0781	-1.814985	10975.11	-19919.66	NB(-2)
0.0509	-2.021740	2906.920	-5877.037	ATM
0.0909	1.738829	4927.586	8568.230	ATM(-1)
0.0307	-2.251914	3200.973	-7208.317	ATM(-2)
0.4336	0.792139	0.253665	0.200938	CPS
0.0110	-2.686560	0.242556	-0.651640	CPS(-1)
0.0000	5.851380	0.143053	0.837056	MS2
0.0006	-3.800562	0.397268	-1.509841	MS2(-1)
0.0202	2.432933	0.490016	1.192176	MS2(-2)
0.0439	-2.090870	0.383525	-0.801902	MS2(-3)
0.0040	3.083733	0.211221	0.651348	MS2(-4)
0.0007	3.714398	492417.3	1829034.	C

20527415	Mean dependent var	0.999584	R-squared
5984949.	S.D. dependent var	**0.999394**	**Adjusted R-squared**
26.89750	Akaike info criterion	147389.9	S.E. of regression
27.53541	Schwarz criterion	7.60E+11	Sum squared resid
27.14206	Hannan-Quinn criter.	-682.3350	Log likelihood
2.505692	**Durbin-Watson stat**	5253.574	F-statistic
		0.000000	**Prob(F-statistic)**

Source: Prepared by the researcher based on the (Eviews 12) program.

As for the calculated value F, it is statistically significant because its probability value is less than the 5% level, reaching (0.00000), which explains the significance of the model statistically as a whole. It should also be pointed out that the Durbin-Watson statistics (D-W) indicate that its value reached (2.505692), which shows that the model is free from issues of spurious regression.

Second: Bounds Test for Cointegration

The cointegration between the independent variables (NB, ATM, CPS, MS) and the dependent variable BD is verified by comparing the calculated value of (F) with the upper bound I(1) and the lower bound I(0). If the calculated value of (F) is greater than the upper bound I(1), the alternative hypothesis must be accepted, which states that (there is a cointegration and a long-term equilibrium relationship between the variables, rejecting the null hypothesis). Conversely, if the value of (F) is less than the lower bound I(0), the null hypothesis must be accepted, rejecting the alternative hypothesis which states (that there is no cointegration among the variables). If the value of (F) falls between the upper and lower bounds, the result here is ambiguous and inconclusive for decision-making. Table (10) illustrates the above .

Table (10) shows that the calculated value of F, which is (5.9), is greater than the upper bound of (3.49) and the lower bound of (2.56) at the significance level of (5%). This indicates that there is a cointegration and a long-term equilibrium relationship between the independent variables of the study and the dependent variable, hence we accept the alternative hypothesis and reject the null hypothesis .

Table (10): Results of the Bounds Test

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Null Hypothesis: No levels relationship F-Bounds Test

I(1)	I(0)	Signif.	Value	Test Statistic
3.09	2.2	10%	**5.936529**	**F-statistic**
3.49	**2.56**	**5%**	4	k
3.87	2.88	2.5%		
4.37	3.29	1%		

Indicates the number of

Source: Prepared by the researcher based on the .(Eviews 12) program

Third: Estimation of Short-Run Parameters and Unrestricted Error Correction Model (UECM)

This test illustrates the effect of the independent variable on the dependent variable in the short run. It also determines the type of relationship between these two variables, whether it is direct or inverse. On one hand, this test also demonstrates the unrestricted error correction model (UECM) that measures the speed at which the model returns to equilibrium in the long run Between the independent variables and the dependent variable in the case of divergence and deviation occurring in the short term, one of the conditions of UECM is that it should be negative and significant. If this condition is met, the model approaches a state of equilibrium in the long term. Conversely, if it is, for example, positive and significant, or negative and not significant, or otherwise, the model does not achieve a state of equilibrium. Table (11) illustrates the estimation results in the short term for the temporal slowdown. This can be clarified (statistically and economically) below.

Table (11): Short-term parameter estimation results

ECM Regression

Case 2: Restricted Constant and No Trend

Prob.	t-Statistic	Std. Error	Coefficient	Variable
0.0000	9.892460	0.105063	1.039329	D(BD(-1))
0.0272	-2.305081	0.111413	-0.256815	D(BD(-2))
0.7625	-0.304538	9938.696	**-3026.712**	***D(NB)**
0.0305	2.254902	8833.933	**19919.66**	**D(NB(-1))**
0.0024	-3.273014	1795.604	**-5877.037**	**D(ATM)**
0.0004	3.952989	1823.511	**7208.317**	**D(ATM(-1))**
0.2492	1.171679	0.171496	**0.200938**	**D(CPS)**
0.0000	7.431711	0.112633	**0.837056**	**D(MS2)**
0.0000	-4.624411	0.225244	**-1.041623**	**D(MS2(-1))**
0.5305	0.633555	0.237633	**0.150553**	**D(MS2(-2))**
0.0011	-3.567061	0.182601	**-0.651348**	**D(MS2(-3))**
0.0000	-6.380253	0.019514	**-0.124504**	**CointEq(-1)***

Source: Prepared by the researcher based on the Eviews 12 program.

❁ هذا التباطؤ الزمني D(NB)

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Table (11) shows the impact of the independent variables (NB, ATM, CPS, MS) on the dependent variable BD in the short term, and each independent variable's effect on the dependent variable can be explained through the following points:

1. The effect of the number of bank branches NB on the bank deposits BD

Table (11) indicates that there is a positive effect of the number of bank branches on bank deposits at the temporal slowdown D(NB(-1)) in the short term. This means that an increase in the number of bank branches by one unit will lead to an increase in bank deposits by (19919.66). This may be due to easier access to banking services, which boosts customer confidence in the banking system. Additionally, geographic expansion allows for attracting new customers, and competition among banks contributes to better offers, leading to increased bank deposits.

2. The effect of ATM payment devices on bank deposits BD

The same table shows that there is an inverse and positive effect of payment devices on bank deposits at the two temporal slowdowns D(ATM) and D(ATM(-1)) in the short term. This means that an increase in ATM payment devices by one unit will lead to a decrease or increase in bank deposits BD of (-5877.037) and (7208.317) respectively, and the reason for this inverse and direct effect in the short term may be attributed to several factors, including the following:

- **Immediate liquidity orientation:** Individuals may tend to withdraw their money from bank accounts using ATMs for immediate consumption purposes or to meet emergency needs, leading to a decline in deposits in banks. This represents the inverse effect, as the availability of these machines increases individuals' ability to access their funds quickly, thus reducing their desire to keep them in bank accounts.
- **Eased withdrawal from savings accounts**: The widespread use of ATMs can lead to increased withdrawals from savings or current accounts, especially under the economic conditions in Iraq, where there may not be strong incentives (such as high interest rates) to keep money in bank accounts. In the short term, there may not be enough encouraging factors for individuals to increase deposits, which may further decrease balances.
- **Limited trust in the banking system :** In some cases, the use of ATMs may reflect a lack of trust in the Iraqi banking system, where individuals may prefer to convert their money into cash rather than leaving it in banks, especially amid concerns regarding financial stability or economic fluctuations.
- **General economic factors :** Economic crises or inflationary pressures in Iraq may drive individuals to withdraw their deposits more frequently, while ATMs provide an easy and quick way to access funds in times of need, increasing withdrawal activities from deposits. At the same time, increased usage of these machines may lead to a rise in deposits in some cases , If used continuously to manage daily payments or to provide a safer financial tool .

3- The impact of credit provided to the private sector (CPS) on bank deposits (BD)

The same table shows that there is a positive effect of credit provided to the private sector on bank deposits at the time lag D(CPS) in the short term, but it is not significant at (0.2492). This means that an increase in credit provided to the private sector (CPS) by one unit will lead to an increase in bank deposits (BD) by (0.200938). The reasons for this may include the following :

- **Lack of direct or profound impact:** Although the increase in credit provided to the private sector may lead to an increase in bank deposits in the short term, this relationship may be weak or not strong enough to be statistically significant. Other factors, such as monetary policy or interest rates, may have a greater impact on deposits .
- **Time lags:** There may be a time lag between the increase in credit to the private sector and its effect on bank deposits. In other words, the increase in credit may not directly affect deposits in the short term, but may have a noticeable impact after a longer period .
- **The private sector and credit use:** Not all credit provided to the private sector necessarily leads to an increase in bank deposits, as part of the credit may be used for consumption or investment purposes that do not necessarily lead to an increase in bank deposits. In other words, some credit may remain outside the banking system or be used in other channels rather than deposits .
- **Changes in confidence and demand for credit :** Psychological or economic factors, such as confidence in the economy or demand for credit, may influence this relationship For example, if there is a policy restricting banks' ability to expand credit or if interest rates are high, an increase in credit may not translate into a significant rise in bank deposits .

4- The effect of the broad money supply MS2 on bank deposits BD

Table (11) shows that there is a direct and inverse effect of the broad money supply on bank deposits in the short term at lag times D(MS2), D(MS2(-1)), D(MS2(-2)), and D(MS2(-3)), with significance levels of (0.000) and (0.0000) and a non-significant level of (0.5305) for D(MS2(-2)), and a significant level of (0.0011) respectively. This means that an increase in the broad money supply by one unit will lead to an increase and a decrease in bank deposits by amounts of (0.837056), (-1.041623), (0.150553), and (-0.651348) respectively. The reasons for this direct and inverse effect may be attributed to the following :

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• **Short-term effects:** In the short term, an increase in the broad money supply (such as an increase in funds available in the economy) may lead to increased liquidity in the market, making individuals and businesses more capable of depositing money in banks. In this case, the relationship is direct. On the other hand, if the increase in the broad money supply is accompanied by inflation expectations or a decline in the real value of cash, people may avoid depositing their money in banks for fear of a future decrease in its value, leading to a decrease in bank deposits in the short term. In this case, the relationship is inverse .

• **Economic expectations**: In some cases, an increase in the money supply may be accompanied by unstable expectations regarding the economy (such as rising inflation rates or a decline in the value of the local currency), This drives individuals to withdraw their money from banks and convert it into other, safer assets, which leads to a decrease in bank deposits.

• **Monetary policies:** The central bank's policies may also affect this relationship. For example, if the central bank implements stimulative policies to increase the broad money supply, the short-term impact on bank deposits may be contradictory due to varying market expectations.

• **Banking and economic behaviors specific to Iraq:** Iraq may have unique economic conditions related to political or financial instability, affecting individuals' confidence in the banking system. Therefore, the relationship between the money supply and bank deposits may be inconsistent in the short term, as people react irregularly to economic and financial situations.

Based on the above, Table (11) also illustrates, from another perspective, the unrestricted error correction term (UECM), which has a value of (-0.124504), negative and significant at a probability value (Prob=0.0000). This confirms the existence of a short-term equilibrium relationship between the independent variables (NB, ATM, CPS, MS) and the dependent variable BD towards a long-term equilibrium relationship. This means that the unrestricted error correction term (UECM) explains that a value of (0.12-%) of the short-term errors in BD for the previous period (t-1) can be corrected in the current period (t) in order to return to long-term equilibrium when a shock or change in the independent variable occurs

Fourth: Testing the estimated parameters in the long term

This test also clarifies the influence of the independent variable on the dependent variable but in the long term. This test also defines the type of relationship between these two variables, whether it is direct or inverse , Table (12) illustrates this .

Table (12): Results of Estimating Long-Term Parameters

Levels Equation

Case 2: Restricted Constant and No Trend

Prob.	t-Statistic	Std. Error	Coefficient	Variable
0.0425	-2.105633	69941.94	**-147272.1**	**NB**
0.0558	-1.978582	18336.90	**-36281.06**	**ATM**
0.0304	-2.255656	1.604852	**-3.619994**	**CPS**
0.0073	2.849409	1.039678	**2.962467**	**MS2**
0.0391	2.143278	6854270.	14690605	C

Source: Prepared by the researcher based on the program (Eviews 12(

Table (12) above shows the impact of independent variables (NB, ATM, CPS, MS) on the dependent variable BD in the long term. Each independent variable's effect on the dependent variable can be explained through the following points :

1- The impact of the number of bank branches (NB) on bank deposits (BD)

Table (12) indicates that there is an inverse effect of the number of bank branches on bank deposits in the long term. This means that an increase of one unit in the number of bank branches will lead to a decrease in bank deposits by (-147272.1) at a significance level of (0.0425). This may be due to several potential factors, including market saturation, as an increase in the number of branches may not be linked to a genuine increase in the demand for banking services. When banks exceed a certain threshold of branches, this may not contribute to an increase in deposits and may, in some cases, lead to a decline

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due to excessive competition among banks. Additionally, there may be a lack of trust in the banking system; if banks open new branches without improving their services or without sufficient transparency, this may prompt customers to reduce their deposits in these banks. Furthermore, an increase in the number of branches may lead to variability in the quality of services provided, meaning that new branches may not adequately meet customer needs, contributing to a decline in deposits. Additionally, there may be macroeconomic factors affecting deposits, such as inflation or a decrease in purchasing power, which reduces individuals' ability to deposit money in banks.Finally, individuals may turn to other financial alternatives, such as the real estate market or investing in gold, especially if banks do not offer attractive returns, which leads to a decline in bank deposits despite the increase in the number of branches .

2. The impact of ATM payment devices on bank deposits BD

The same table indicates that there is an inverse effect of payment devices on bank deposits in the long term, meaning that an increase in ATM payment devices by one unit will lead to a decrease in bank deposits BD by (-36281.06) at a significance level of (0.0558). This inverse effect in the long term also aligns with the short term. According to these results, the addition of one ATM payment device results in a decrease in bank deposits, indicating that individuals may be more inclined to use these machines to withdraw cash instead of keeping it in their bank accounts in the long term. Therefore, this inverse effect can be interpreted as a result of the ease of access to funds, which may reduce the need to maintain deposits in banks. Additionally, this could be related to changes in individuals' behaviors regarding how they manage their money and their use of modern banking tools.

3. The impact of credit provided to the private sector (CPS) on bank deposits (BD)

Table (11) shows that there is an inverse effect of credit provided to the private sector on bank deposits in the long term. This means that an increase in credit provided to the private sector (CPS) by one unit will lead to a decrease in bank deposits (BD) by (-3.619994) at a significance level of (0.0304). This may be due to the fact that companies and private sectors that receive bank credit use the funds granted to them for investments or various expenses instead of depositing them in banks. When companies are able to obtain loans, they may see this as an opportunity to grow their businesses more quickly, and thus resources are directed towards purchasing assets or covering operational costs, rather than depositing money in the banking system. Additionally, this effect may reflect the market situation in Iraq or the monetary policies followed in certain cases. When credit is provided excessively, banks may be in a position that forces them to grant loans to individuals and companies, which reduces the incentives for individuals to leave their money as deposits in banks, leading individuals to use their own funds instead of leaving them as bank deposits. Furthermore, this phenomenon may be related to the behaviors of financial institutions in Iraq, such as a preference for lending over attracting deposits, or it may be influenced by financial or monetary policies that lead to a diversion of funds away from the traditional banking system.

In general, this analysis may reflect a complex interaction between bank credit and deposits in the Iraqi banking system, and it may indicate that an increase in credit to the private sector could lead to a decrease in the funds available in the form of bank deposits in the long term.

4. The effect of broad money supply MS2 on bank deposits BD

Table (11) shows that there is a positive effect of broad money supply on bank deposits in the long term. This means that an increase in broad money supply by one unit will lead to an increase in bank deposits by (2.962467) at a significance level of (0.0073). This inverse effect in the long term also matched in the short term. This may be attributed to the relationship between liquidity availability in the economy and the behavior of individuals and companies. When broad money supply increases, it means that there is an increase in the amount of money available in the economic system, which can encourage individuals and companies to increase their deposits in banks, as they feel financial comfort and tend to keep their money in bank accounts instead of using it for direct consumption or investing it elsewhere. Additionally, an increase in money supply may contribute to lower interest rates, making bank deposits more attractive as a tool for value preservation and increasing returns.

Fifth: Diagnostic tests for residuals

To ensure the validity and accuracy of the results obtained in the previous tests, we will conduct some diagnostic tests to prove this as follows:

1. Test for autocorrelation problem

This test is used to ensure that the estimated model is free from the autocorrelation problem of the residuals. Table (13) illustrates this.

Table (13): Results of the LM autocorrelation problem test

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	**2.621429**	**Prob. F(3,41)**	**0.0635**

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0.0337	Prob. Chi-Square(3)	8.690836	Obs*R-squared

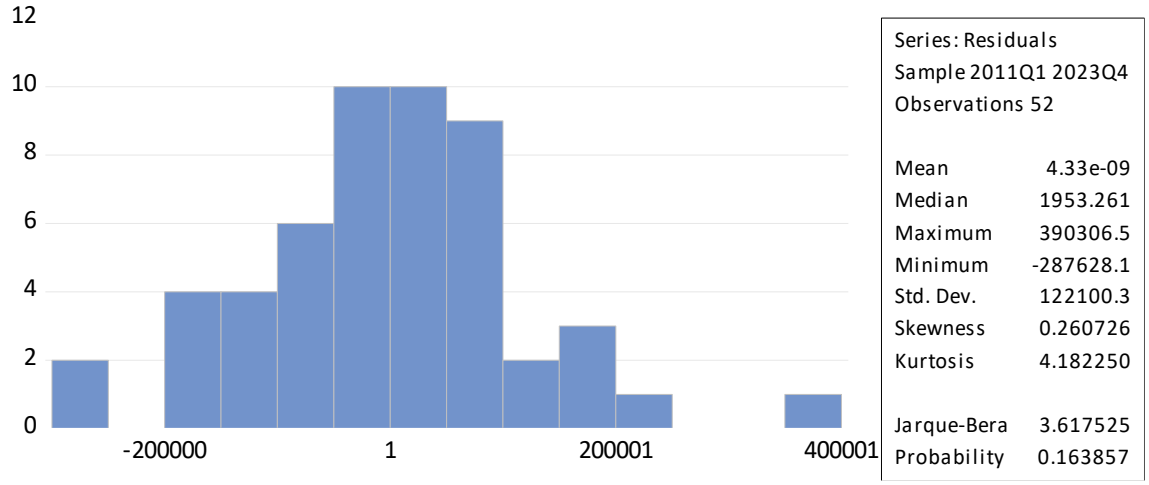
Source: Prepared by the researcher based on the Eviews 12 program.
Table (14) shows the results of the heteroscedasticity problem test (ARCH), where we note that the calculated F probability value reached (Prob=0.9986), which is greater than the (5%) level, indicating that there is no problem in autocorrelation, and then the null hypothesis that states that there is no autocorrelation problem between random residues must be accepted and the alternative hypothesis rejected.
2. Contrast Difference Problem Test This test is used to confirm whether the estimated model is free of the variance problem of the remainders, and the table shows this.
Table 14: Results of the test of the variance difference problem for ARCH

Heteroskedasticity Test: ARCH

0.9986	**Prob. F(1,49)**	**3.21E-06**	**F-statistic**
0.9985	Prob. Chi Square(1)	3.35E-06	Obs*R-squared

Source: Prepared by the researcher based on the . (Eviews 12)
Table (14) shows the results of the test for the problem of heteroscedasticity for ((ARCH, where we note that the calculated F value has reached (Prob=0.9986), which is greater than the level (5%), indicating that there is no problem with heteroscedasticity. Therefore, we should accept the null hypothesis which states that there is no issue of autocorrelation among the random residuals and reject the alternative hypothesis.
3. Normality Distribution Test - Histogram-Normality Test
This test is used to verify the extent to which the estimated model is free from the problem of normal distribution of the residuals. Figure (6) illustrates this.

Figure (6): Results of the Normality Distribution Test



Source: Prepared by the researcher based on the program (Eviews 12)
Figure (6) shows the results of the normality distribution test for (Jarque-Bera), where we note that its p-value has reached (Prob=0.163857), which is greater than the level (5%), indicating that there is no problem with normal distribution. Therefore, we must accept the null hypothesis which states that there is no problem with the normal distribution of the residuals and reject the alternative hypothesis which states that there is a problem with normal distribution.

4. Structural Stability Test for the ARDL Model

This test is used to ensure the stability of the ARDL model by using the cumulative sum of the estimated residuals in the (CUSUM) chart. Structural stability of the model parameters is achieved if the blue line (zigzag) lies within the critical

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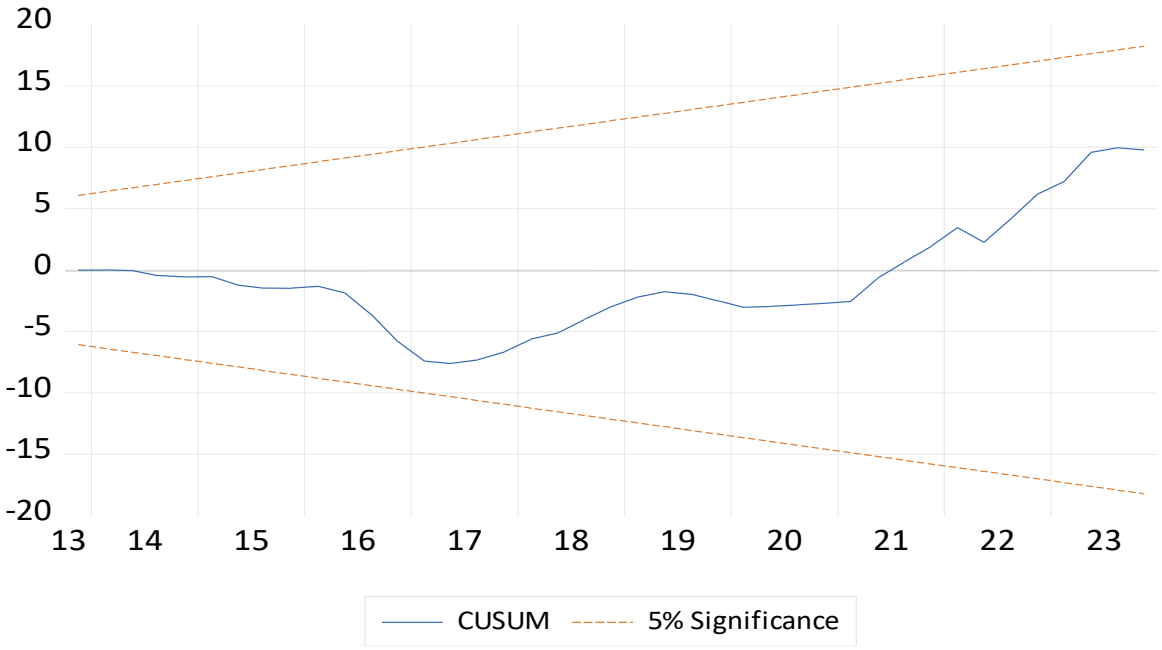
boundaries marked by red dots at the (5%) level. Conversely, if the blue line lies outside the critical boundaries, then the structural stability of the model is not achieved. The figure below illustrates this.

Figure (7): Results of the Structural Stability Test for (CUSUM)



Source: Prepared by the researcher based on the program (Eviews 12)

CONCLUSIONS AND RECOMMENDATION

First: Conclusions

1. The level of access to financial services in Iraq is low, especially in rural areas, partly due to weak financial infrastructure and inadequate available financial services.
2. The spread of ATMs plays an important role in promoting financial inclusion; however, their penetration rate in Iraq remains low compared to other countries.
3. The use of financial services is an important indicator of the level of financial inclusion. The rate of financial service usage in Iraq is relatively low, reflecting limited financial awareness among individuals and institutions.
4. There is a varying impact of financial inclusion variables on bank deposits, as follows:

• The number of bank branches positively affects bank deposits in the short term, while negatively affecting them in the long term.
• ATMs have a negative impact on bank deposits in both the short and long term.
• Credit extended to the private sector has a positive effect on bank deposits in the short term, while negatively affecting them in the long term.
• The money supply has a varying impact on bank deposits in the short term, while negatively affecting them in the long term.

Second: Recommendations

1. Improve financial infrastructure by:

• Working on developing financial infrastructure, including expanding the network of bank branches and ATMs, especially in rural areas.
• Facilitating the procedures for opening bank accounts and providing incentives for individuals and institutions to use financial services.

2. Enhance financial awareness:

• Launching comprehensive awareness campaigns to promote financial awareness among individuals and institutions, clarifying the importance and benefits of using financial services.
• Providing training programs to raise the level of financial skills among various segments of society.

3. Encouraging innovation in the field of financial services:

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• Supporting the development of new and innovative financial services that meet the needs of different segments of society, including digital financial services.
4. Enhancing the stability of the financial system:
• Working to enhance the stability of the financial system and strengthen trust in financial institutions.
• Establishing sound and sustainable monetary and fiscal policies.

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