INDICATORS OF FINANCIAL INCLUSION AND THEIR IMPACT ON BANKING LIQUIDITY IN IRAQ FOR THE PERIOD (2004-2019)

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Abstract
The aim of the research is to clarify the impact of financial inclusion indicators on the banking liquidity of Iraqi banks, as the reality of financial inclusion in Iraq has been diagnosed by presenting its indicators. And knowing the type of relationship between the research variables, By analyzing indicators of financial inclusion and banking liquidity and knowing their levels for the period (2004-2019), To prove the research hypothesis (that the financial inclusion indicators applied by Iraqi banks have a significant and effective impact on banking liquidity), the effect of financial inclusion indicators on the banking liquidity of Iraqi banks was analyzed and measured using the Autoregressive Distributed Delay (ARDL) model.

AN INTRODUCTION

Financial inclusion is one of the important terms on the economic level, as it has become a goal that all countries of the world, especially the Arab countries, seek to achieve, and that is from the role of financial inclusion represented in enabling all segments of society, especially those who are financially excluded, to actively participate in the economic cycle by providing bank liquidity Necessary and based on: (savings, insurance, cash transfers, and microfinance) due to its economic importance.

The research's problem:

The research problem is defined in the following question:

Are Iraqi banks able to apply indicators of financial inclusion that lead to achieving good bank liquidity rates?

The research's importance:

The importance of this research lies in its handling of a topic of importance at the international and local levels, with an indication of the role of financial inclusion indicators in banking liquidity and measuring the relationship between them.

The research's hypothesis:

The research stems from the hypothesis that "the indicators of financial inclusion applied by Iraqi banks have a significant and effective impact on banking liquidity."

The research's aim :

The research aims to achieve a set of points, the most important of which are:

1- Identify the indicators of financial inclusion.

2- Identifying the banking liquidity of banks.

3- Clarifying the relationship between indicators of financial inclusion and banking liquidity.

4- Building the standard model for financial inclusion indicators and their impact on banking liquidity.

The first topic :

Financial inclusion and banking liquidity conceptual framework

The first requirement: financial inclusion

First: The concept of financial inclusion: It is defined as the process that guarantees the use of the formal financial system and the ease of access and availability for all individuals in society[1]. The use of these services, their quality, and when searching for a practical definition that can be

measured relatively consistently in a wide range of countries, and to find out the concept of financial inclusion, we note that there are differences in defining and defining its concept according to the opinions of writers in this regard, as the World Bank defined it as "the percentage of people and companies used Financial services[2] It was also defined as providing the opportunity to use financial and banking services and products at the lowest costs for the largest possible number of societies, institutions and individuals, especially segments of society with limited income[3], while the World Bank adopted a definition of financial inclusion as "the possibility of individuals and companies accessing financial products and services to meet their needs Transactions Payments, savings, credit and nationalization at affordable prices and presenting them to them in a responsible and sustainable manner[4].

Second: Dimensions of financial inclusion and its measurement indicators

1**- Dimensions of financial inclusion**

The dimensions of financial inclusion are among the most important dimensions taken by central banks, which give an accurate analysis of the reality of the banking sector's work, relying on a solid database of the most important indicators of the work of financial and banking institutions, as well as backing it up with demographic data. Financial inclusion can be seen as a collective indicator calculated on At the level of one country or at the level of a group of countries, and its value is equal to the correct one. Measuring indicators of financial inclusion helps to set national goals for the financial inclusion strategy to be applied in any economy, as well as estimating the degree of its achieved progress. Thus, the indicators of financial inclusion give a clear explanation of the extent of the impact of the levels of financial inclusion and the degree of development of the financial system in the micro and macro economy. Different types.

In our research, we will address these dimensions that were referred to by the Financial Inclusion Alliance in 2012, which concluded that financial inclusion has three main dimensions, which are as follows:

A- After accessing financial services

This dimension helps to measure the size of the banking population,

It means the ability of financial and banking institutions to provide financial services and products, which are related to regulations, regulatory arrangements, the market and the technological environment.

Achieving financial access requires identifying the potential difficulties and obstacles facing institutions in providing services and products, or those facing customers. It reflects the depth of access and the spread of financial and banking services within the framework of a comprehensive financial system, as financial services should be made available to potential users with complete ease, and this indicator contributes 50% of the indicators of financial inclusion.

b. After use of financial services

The use of financial services refers to the extent to which customers use financial products and services provided through banking sector institutions, and determining the extent to which financial services are used requires collecting data on the regularity and frequency of inclusion over a certain period of time. It expresses the number of individuals who are actually able to obtain one or more financial services[6], or in other words, it includes measuring the extent to which individuals aged fifteen years and older use financial services, such as the use of bank accounts to pay wages and pay purchase lists, and reflects the real role of financial intermediation of the banking sector and includes the depth of access to its services. It contributes 50% of the amount of the financial inclusion index.

C- After the quality of financial services:

It is the ability of financial products and services to meet consumer demands, and the process of developing indicators to measure the dimensions of quality is a theoretical challenge in itself, because the quality dimension of financial inclusion is not a clear and direct dimension because there are many factors that affect the quality and quality of financial services such as the cost of service, consumer awareness, as well as consumer protection services and financial guarantees, and transparent competition in the market[7], and there are also intangible factors such as consumer

confidence Studies emphasize the need for societies to develop capabilities Financial so that they can take full advantage of the services that are provided to them, as the financial ability of the customer has become an increasingly important central aspect in thinking about financial inclusion, and studies emphasize the role of experience as it is the most important feature in financial ability improvements, and that experience includes the use of financial products, even before they are fully understood[8].

2- Financial Inclusion Measurement Indicators

A. Access to Financial Services Measurement Index

One of the goals of achieving financial inclusion is to access banking services and financial products to all segments of society, especially low-income individuals, women and small enterprises in a way that includes all geographical areas, especially rural and deputy ones, which are difficult to reach, so that the main goal of financial inclusion is the wide spread of the network of bank branches in urban, rural and remote areas alike[9]. It depends on a number of sub-indicators or ratios, which are as follows [10]:

- Banking density ratio: Many studies dealt with the ratio of banking density as an indicator to measure the degree of access of financial products and services to various segments of society, and the most important studies that dealt with this concept are the study of each of (Cameron & Trivedi) in 1967 and known by their names and this model is based on the ratio of banking density, which is measured through the number of bank branches to the population per 100,000 thousand adults.

- Banking penetration ratio: The study carried out by (Cameron & Trivedi) included measuring the banking penetration ratio, and this ratio was calculated on the basis of the number of branches to the total population or the number of adults aged fifteen years and above, and its value must be equal to one correct, and this means that the banking spread is in its ideal position. If it is greater than the correct one, it indicates that there is a large spread of bank branches that may be greater than the need for it, which entails a large burden both in terms of high cost to banks and a decrease in their availability. When it is less than the correct one, this indicates that the proliferation of banks is insufficient to meet the need for them, and therefore financial and banking services cannot be reached by certain segments of society who need this service.

- ATM indicator

It is an indicator used to measure the spread of ATMs, which is one of the important indicators for the development of the banking system, as this indicator is measured on the basis of the number of ATMs per (100) thousand adults or through the number of ATMs per (1000) km2 [11].

1 -Indicators for measuring the use of financial services

There are a number of indicators or sub-ratios[12] .

A - Deposit index (savings)

Measures the extent to which adult individuals aged fifteen years and over deposit their savings in formal financial institutions. The data of this indicator shows the effectiveness of the financial and banking sector in attracting deposits from individuals and all economic units, and the higher this percentage, the more this indicates the development and effectiveness of financial and banking institutions, as well as the development of banking habits for all and the spread of financial culture.

B – Credit Index (Borrowing)

This indicator measures the degree to which adult individuals aged 15 and above tend to obtain credit (loans) and credit plays an active role in the process of economic development, and the growth of the economy depends on it, but the parties to the credit process should make optimal use of it, because the opposite leads to negative consequences on the economy.

The second requirement: bank liquidity is a conceptual framework

First: The concept of liquidity: Liquidity ratios are used as tools to assess the credit position of the bank, which usually expresses the extent of its ability to meet its obligations, but the high liquidity ratios in the bank should not always be taken as a sign of health in the bank's performance, as excessive liquidity may be an indicator of the inefficiency of investment management and thus a

reason for a decrease in the bank's profitability indicators. Dedicating management's efforts to achieving high profitability indicators will reflect negatively on liquidity indicators[13].

The Basel Committee has referred to the concept of liquidity as the ability of the bank to transfer the increase in assets and meet obligations when due without incurring losses is unacceptable and since the primary role of banks is to employ sources of funds restricted term long-term employment makes them more vulnerable to liquidity risks and therefore the efficient management of liquidity risks ensures that banks meet cash obligations and liquidity management also needs to find a balance between cash outflows and inflows of items inside or outside the balance sheet in order to provide funds Adequate and affordable as appropriately used[14].

Second: Methods of measuring liquidity

Liquidity is measured through the following two indicators1 :

-1Ratio of loans and advances to total deposits

This indicator refers to the ability of banks to employ the money obtained from deposits to meet the needs of customers from loans and advances, and on the other hand has an impact on bank liquidity, as the rise of this indicator shows the ability of banks to employ deposits in the form of loans, as well as the high liquidity risk represented by the difficulty of liquidating loans when liquidity is needed, and the decrease in this indicator reflects the low percentage of loan employment from deposits, as well as the low risk of bank liquidity.

Liquidity = (Loans and advances / total deposits)*100

Ratio of liquid assets to liquid liabilities

Liquid assets are characterized by being low-return with low risks, but they can be converted into cash quickly, unlike long-term assets, and these liquid assets are generally important for banks, for the purpose of facing sudden withdrawals of depositors, as well as one of the means of control for the Central Bank in order to maintain the liquidity of the bank, so the high percentage of this indicator reflects a conservative policy of banks towards investment, but with low returns, and then the bank can face its various obligations, either The low ratios of this indicator reflect a banking policy with high risk, but with high returns and low liquidity.

Liquidity = (Liquid Assets / Liquid Liabilities)*100

QCR=LA/CL

Whereas :

QCR : Liquidity Ratio

LA : Liquid Assets

CL : Liquid Liabilities

The second topic

Analysis of the reality of indicators of financial inclusion and banking liquidity in Iraq for the period (2004-2019)

One of the most important indicators of financial inclusion is the access index, the use index and the quality index, and our research will focus on the access and use indicators because they are one of the most important basic indicators used to measure the level of financial inclusion 16 .

The first requirement: Analysis of the reality of financial inclusion indicators in Iraq for the period (2004-2019)

First: Access to Financial and Banking Services Index

The indicators of access to financial and banking services are the basis for paving the way towards enhancing and achieving financial inclusion, by reducing the effort and burden borne by individuals when they need financial and banking services, but the reality of these indicators and the nature of their levels were and are still below the required level, so the changes that occurred will be analyzed with the most important reasons behind this. The access indicators are based on a set of sub-indicators, which can be summarized as follows:

1- Percentage of banking density

It is noted through Table (1) that the banking density in Iraq during the period studied was fluctuating, as its highest value reached about (52%) in 2007 and its lowest value amounted to about (34%) in 2013, which is a very low percentage compared to the global standard ratio, which is

one branch per 10 thousand people, and it is clear from Table (1) that the index of the percentage of banking density in Iraq in 2008 amounted to (56.95) and represents the highest percentage in relation to the total population, while the ratio for the number of adults (27.71) for the same year, while it began to decrease for the period (2009-2012), as it reached (40.96, 37.77, 37.54, 34.83) respectively for the total population and amounted to about (20.49, 18.96, 19.18, 18.18) respectively for the number of adults from the population and attributed this decrease as a result of the increase in the number of branches from 774 branches in 2009 to 982 branches in 2012 and this increase in the number of branches is not commensurate with the increase in the population , and then returned to rise for the period, (2013-2018) as it reached (44.48) of the total population and (27.49) in 2018 relative to the number of adults of the population after it was (35.02) and (18.71) respectively for the year 2013 In other words, the banking density in 2018 reached that each bank (44,000) people after it was in 2008 for each bank (56,000), it is concluded through this that despite the development that has occurred to the banking sector in Iraq, The percentage of banking density is still low, and the reason for this is due to the lack of availability of sober banking plans in expanding the network of banking branches and spreading their services at a wide level, and that the level of banking density is weak compared to global indicators and indicators of the region, and that the level of availability to the largest segment of society will reflect positively on the level of awareness and financial and banking education.

Table (1) Banking Density Index in Iraq for the Period (2004-2019)

Years	Total population (thousand (people	The number of adults is 15 years and over	Number of bank branches	Bank density %		Banking Spread %	
				Total population (1000 (inhabitants	The number of adults is 15 years and over	Total Population	Number of adults
2004	27139	14333	530	51.20	27.04	1.95	3.69
2005	27963	14699	530	52.76	27.73	1.89	3.60
2006	28810	14991	542	53.15	27.65	1.88	3.61
2007	29682	15250	549	54.06	27.77	1.84	3.6
2008	31895	15522	560	56.95	27.71	1.75	3.60
2009	31664	15863	774	40.90	20.49	2.44	4.87
2010	32490	16308	860	37.77	18.96	2.64	5.27
2011	33338	17033	888	37.54	19.18	2.66	5.21
2012	34208	17862	982	34.83	18.18	2.87	5.49
2013	35096	18750	1002	35.02	18.71	2.85	5.34
2014	36005	19638	938	38.38	20.93	2.60	4.77
2015	36934	20484	821	44.98	24.95	2.22	4.00
2016	37202	21141	858	43.35	24.63	2.30	4.05
2017	37139	21778	833	44.58	26.14	2.24	3.82
2018	38124	23561	857	44.48	27.49	2.24	3.63
2019	39127	23294	881	44.41	26.44	2.25	3.78

The source is prepared by the researcher based on:

- Central Bank of Iraq, Annual Bulletin, Department of Statistics and Research, for different years
- Iraqi Ministry of Planning, Statistical Collection, Population Statistics, for the years (2004-2019)
-Bank density = population (1000 inhabitants) / number of branches
-2Banking Spread

The banking spread is still below the required level in Iraq, despite the increase in the number of bank branches during the research period, but this increase in the number of bank branches is not commensurate with the increase in the population, as it is noted through Table (1) that the banking spread reached (1.95) in 2004 to the total population and reached (3.69) to the total number of

adults from the population, while it was declining for the years (2005-2008), as the banking spread reached the total population (1.89, 1.88, 1.84, 1.75) respectively This decrease is attributed to the slight increase in the number of bank branches, which will not exceed 30 branches during the period, then the banking penetration ratio began to rise for the years (2009-2013), reaching (2.44, 2.64, 2.66, 2.87, 2.85) respectively to the total population. It amounted to (4.87, 5.27, 5.21, 5.49, 5.34) respectively in relation to the adult population, and this increase is a result of the increase in the number of bank branches, as the increase reached 228 branches during the period, while the banking penetration rate decreased to reach (2.22) to the total population in 2015, and (4.00) to the total number of adults of the population, and the reason for this decrease is attributed to the decrease in the number of bank branches from (938) branches in 2014 to (821) branches in 2015, while the banking penetration index reached Stability for the period (2016-2019), as it reached (2.30, 2.24, 2.24, 2.25) for the total population respectively, and that the banking penetration index in Iraq is very low compared to the Arab countries and neighboring countries, meaning that individuals face a problem in accessing banks and their branches and obtaining financial and banking services, as well as that the number of banking branches is not commensurate with the population.

3-ATM indicator

The Iraqi banking system was devoid of electronic payment methods before 2003, as manual work was prevalent in all financial transactions, so electronic payment methods have become one of the most important main goals that the Central Bank of Iraq seeks to increase, and the introduction of the largest possible number of individuals into the financial system and the use of electronic payment methods, and the transition to electronic dealing instead of dealing with cash gradually, and that the banking spread for ATMs is no less important than the rate of spread of branches Banking, so the level of spread of ATMs is important to raise the levels of access to banking and financial services, we note through Table (2), that the spread of ATMs in Iraq witnessed a remarkable development during the period (2008-2019), as it reached its lowest percentage (0.83) in 2008, and began to rise to record a ratio of (3.45) in 2013 to the proportion of adults from the population, as a result of the increase The number of ATMs amounting to 517 ATMs for the year 2008, and decreased in 2014, as the percentage reached (1.71), as a result of the decrease in the number of ATMs by (310) ATMs from 2013, due to the security situation that a number of Iraqi provinces were exposed to and the closure of some bank branches in the governorates controlled by terrorist gangs, and returned to rise for the years (2015-2019), and despite this rise, the spread of ATMs is a low percentage in Iraq Compared to the Arab countries, it is necessary to increase the volume of banking penetration in Iraq, through the contribution of private banks to increase the number of ATMs.

Table (2) The spread of ATMs in Iraq for the period (2004-2019)

Years	Total population (thousand (people	Population of 1000 (15) and over	Number of ATMs	Ratio of ATM to the number of adults (1000) people 15 years % and above	ATM per % 1000 km²
2004	27139	14333	-	-	-
2005	96327	14699	-	-	-
2006	28810	14991	-	-	-
2007	29682	15250	-	-	-
2008	31895	15522	130	0.83	0.29
2009	31664	15863	225	1.42	0.52
2010	32490	16308	358	2.21	0.82
2011	33338	17033	467	2.74	1.07
2012	34208	17862	467	2.61	1.07
2013	35096	18750	647	3.45	1.48

2014	36005	19638	337	1.71	0.77
2015	36934	20484	580	2.83	1.33
2016	37202	21141	660	3.12	1.52
2017	37139	21778	656	3.01	1.51
2018	38124	23561	865	3.67	1.99
2019	39127	23294	1014	4.35	2.33

Source: Prepared by the researcher based on

- Central Bank of Iraq, Department of Investigation and Research, annual statistical bulletin, for different years.
- Years (2004-2007) Lack of data on ATMs
- *Years marked with (-) mean data is not available*

Second: Indicator of use of financial and banking services

The indicator of the use of financial and banking services is an important indicator to measure the level of financial inclusion and the extent to which individuals use financial and banking services provided by banks, and this indicator is measured through a set of sub-indicators, which will address two important indicators, namely the index of the ratio of private sector credit to GDP and the index of the ratio of deposits to GDP, and the rest of the indicators were excluded due to the lack of accurate data.

-1Private sector credit to GDP ratio index:

Table (3) indicates the results of the analysis of the index of the ratio of private sector credit to GDP, as it is noted that the index of the private credit ratio has reached its lowest level of 620 billion dinars in 2004, and a percentage of GDP amounted to 1.16%, due to the transformation of the political system in Iraq and the unstable security situation that led commercial banks to reduce the credit granted in anticipation of the risks of non-default and non-payment, and the other reason for the decrease in credit granted by Before commercial banks, the cash reserves of commercial banks decreased due to the strict monetary policies towards loans granted to banks, which led to reducing their ability to grant credit, and then the private credit index to GDP rose in the following years and significantly to reach 9.28% in 2015, with a growth rate of (39.13%) as private credit reached (18070) billion dinars, due to the increase in cash reserves at the Central Bank as a result of allowing Iraq to export oil products. This led to the reduction of interest rates on loans provided to commercial banks by the Central Bank to about 6%, which led to an increase in the cash reserves of commercial banks, and this in turn led to an increase in their ability to grant credit, then the private credit index to GDP recorded a decline during the years (2016-2019), reaching (9.23%) in 2016, with a negative growth rate of (0.53%), due to the decline in oil prices, which led to a decrease in oil revenues, This in turn led to a decrease in public revenues, which led to a deficit in the public budget, which led to the government to follow the policy of financial austerity by the Central Bank raising the cost of borrowing on commercial banks, which led to a reduction in their cash reserves with the Central Bank and thus a decrease in their ability to grant credit, as well as to increase the growth rate of GDP at growth rates that exceed the growth rate of private sector credit, as the GDP growth rate reached Total (6.02%) The credit index reached (8.61) in 2019 with a negative growth rate of (1.86%).

Table (3) The ratio of sector credit and private deposits to the gross domestic product in Iraq for the period (2019-2004) (billion dinars - percentage)

years	Local Private Credit	Private Sector Deposits	GDP	Growth % rate	Private sector deposits to GDP % Total	Growth % rate	Private domestic credit to GDP %	Growth % rate
2004	620	3025	53235.3	-	1.16	-	5.68	-
2005	950	3689	73533.5	38.12	1.31	12.93	5.01	(11.79)

2006	1881	4752	95587.9	23.07	1.96	49.61	4.97	(0.79)
2007	2387	9402	111455.8	16.60	2.14	9.18	8.43	69.61
2008	3978	11615	157026.0	4.88	2.53	18.22	7.39	(12.33)
2009	4646	12686	130642.1	(16.80)	3.55	40.31	9.71	31.39
2010	8527	13711	162064.5	24.05	5.26	48.16	8.46	(12.87)
2011	11356	18199	217327.1	34.09	5.22	(0.76)	8.37	(1.06)
2012	14650	21115	254225.4	16.97	5.77	10.53	8.30	(0.83)
2013	16948	24450	273587.5	7.61	6.19	7.27	8.93	7.59
2014	17745	24702	266420.3	(2.61)	6.67	7.75	9.27	3.80
2015	18070	23636	194680.9	(26.92)	9.28	39.13	12.14	30.96
2016	18181	23697	196924.1	1.15	9.23	(0.53)	12.03	(0.90)
2017	19452	26093	225722.3	146.74	8.61	(6.71)	11.55	(3.99)
2018	20216	27364	251064.4	11.22	8.05	(6.50)	10.89	(5.71)
2019	21042	30708	266190.5	6.02	7.90	(1.86)	11.53	5.87

Source: Prepared by the researcher based on

- Central Bank of Iraq, Annual Bulletin, Department of Statistics and Research, for the years (2004-2019).
- Subsequent year – Previous year / Previous year × 100

1-Private sector deposits to GDP ratio index:

Through the analysis of the index of the ratio of private sector deposits to GDP in the Iraqi banking sector during the research period (2004-2019), it is clear through Table (3) that the value of the index amounted to (5.68) in 2004 and then decreased for the years (2005-2006) to reach (5.01, 4.97) respectively, and a negative growth rate of (0.79, 11.79%) respectively, and the index of the ratio of private sector deposits to GDP oscillates between high and low during the period (2005-2012) to record this ratio decrease at the end of 2012 as it reached (8.30), with a negative growth rate of (0.83%) due to attracting savings deposits with government banks by a decision of the Ministry of Finance to withdraw deposits belonging to the public sector from private banks to government banks, and the low percentage indicates the weak state of financial depth in Iraq because it is a very modest percentage, which leads to public mistrust in private banks compared to government banks. Then the ratio of private sector deposits to GDP returned to rise for the years (2013-2015) to reach (12.14%) in 2015 with a growth rate of (30.96%), which is the highest percentage recorded during the research period, as a result of recording an increase in the volume of farewell that exceeds the increase in the volume of GDP, which decreased from 2014, to record a negative growth rate of (26.92%), due to the repercussions of the war on terrorist gangs that controlled large areas of Iraq, as well as the decline in global oil prices, while The deposits to GDP index declined again for the years (2016-2018) to reach (10.89%, 11.55%, 12.03%) respectively with negative growth rates of (5.71%, 3.99%, 0.10%) respectively, and returned to a slight increase in 2019 to reach (11.53%) with a growth rate of (5.87%).

The second requirement: an analysis of the reality of the liquidity index in Iraq for the period (2004-2019)

Banking liquidity for banks represents the difference between the resources available to them and the funds used in various types of assets within the balance imposed by conventional banking assets, or banks are in a state of abundance in liquidity when the available funds are in excess of the bank's ability to borrow, so that the bank is forced to invest the surpluses within Liquid assets, such as securities, or in the form of balances with banks or the central bank17, as good management of bank liquidity is the primary goal of its management, as bank management cannot ask depositors for a period when requesting to withdraw their deposits, because the result of that is undermining trust between the customer And the bank, and it was determined by the Central Bank of Iraq at a rate of not less than (30%) and not more than (70%), and the bank's liquidity can be calculated using the financial liquidity ratios, and there are many ratios that can be used to

measure the bank's liquidity, but in our research, we used the cash credit ratio To deposits, as this indicator is an important indicator because it reflects the ability of banks to exploit the financial resources available to them. This indicator determines the ratio of cash credit to total deposits, and also expresses the ability of banks to transfer savings through bank deposits with them from economic units with a financial surplus to economic units With a financial deficit, therefore, it is an indicator of the expression of bank liquidity, and thus it reflects the ability of banks to employ the funds available to them and financed by deposits to meet the demand for loans and advances18, and we note from the data of Table (4) that the liquidity ratio according to the indicator of the ratio of cash credit to deposits took a fluctuating path Between a rise and a decrease during the study period (2004-2019), as the percentage reached (12.1%) in 2004, to rise to (15.9%) in 2005, with a growth rate of (31.40%), and this is a result of the increase in deposits from (6809.8) billion dinars in 2004 to (10769.9) billion dinars in 2005, and this percentage decreased in 2007 and reached (13.2%) at a negative growth rate of (-15.92%) compared to 2006 when it amounted to (15.7%). The funds available to it to meet the demand for loans and advances, in addition to the increase in the volume of deposits, and the liquidity ratios began to rise slightly for the years (2008-2010), reaching (24.4%, 14.7%, 13.3%), and this increase is less than the standard ratios specified by the Central Bank, if not Less than (30%), while the liquidity ratios gradually increased for the years (2011-2017), reaching their highest percentage (55.4%) in 2017 with a growth rate of (6.94%), and this rise falls within the standard ratios set by the Central Bank of Iraq. Which should not exceed (70%) and that it reflects the ability of banks to employ the funds available to them to meet the demand for credit, while this percentage reached (51.2%, 50.1%) for the years (2018-2019), respectively.

Table (4) Evolution of the liquidity ratio of Iraqi banks for the period (2004-2019)

(billion dinars)

Years	Cash Credit	Total Deposits	Cash Credit / Total % Deposits	%growth rate
2004	824.6	6809.8	12.1	-
2005	1717.4	10769.9	15.9	31.40
2006	2664.8	16928.2	15.7	(1.25)
2007	3459.0	26188.9	13.2	(15.92)
2008	4587.4	34524.9	13.3	0.75
2009	5690.0	38582.4	14.7	10.52
2010	11721.5	47947.2	24.4	65.98
2011	20344.0	56150.0	36.2	48.36
2012	28438.6	62005.9	45.8	26.51
2013	29952.9	68855.4	43.5	(5.02)
2014	34123.0	74073.3	46.0	5.74
2015	33752.6	64344.0	52.4	13.91
2016	32353.5	62398.7	51.8	(1.14)
2017	37180.0	67048.6	55.4	6.94
2018	38500.0	76893.9	50.1	(9.56)
2019	42050.0	82106.4	51.2	2.19

-Source: Prepared by the researcher based on

-Central Bank of Iraq, Directorate General of Statistics and Research, Annual Bulletin (miscellaneous years(

-Central Bank of Iraq, Financial Stability Report, miscellaneous years.

The third topic

Measuring the impact of financial inclusion indicators on the liquidity index in Iraq for the period (2004-2019)

First Requirement: Relationship Analysis Using ARDL Autoregression Model

First: Estimating the impact of financial inclusion indicators on the liquidity index

Table (5) shows the results of the initial estimation of the ARDL model of the relationship between the liquidity index (LR) and the indicators of financial inclusion, as it turned out that the estimated model has a high explanatory ability, as the value of the coefficient of determination (R2) reached (0.991931), which gives explanatory power to the model, and that the corrected coefficient of determination amounted to (0.987793), and the calculated value of (F) of (239.7217) indicates that the model is significant, meaning that there is a relationship between the indicators of financial inclusion and the liquidity index, so we accept the alternative hypothesis, which states that there is A long-term equilibrium relationship between independent variables and the dependent variable in the standard model.

Table (5)

Results of the preliminary assessment of the relationship between financial inclusion and liquidity index

Variable	Coefficien	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
ATM(-1)	0.741916	1.070958	0.692759	0.4926
ATM(-2)	-9.14E-13	1.005749	-9.09E-13	1.0000
ATM(-3)	-5.52E-14	1.005749	-5.49E-14	1.0000
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
DSOGDP (-2)	7.47E-13	0.870256	8.58E-13	1.0000
DSOGDP (-3)	1.05E-12	0.870256	1.21E-12	1.0000
DSOGDP (-4)	1.494165	0.769851	1.940848	0.0595
SD0GDP	-1.299900	0.507844	-2.559642	0.0145
SD0GDP (-1)	0.146369	0.581122	0.251873	0.8025
SD0GDP (-2)	5.78E-14	0.522717	1.11E-13	1.0000
SD0GDP (-3)	-5.31E-13	0.522717	-1.02E-12	1.0000
SD0GDP (-4)	-1.291682	0.477236	-2.706589	0.0100
C	-41.97436	37.09353	-1.131582	0.2647
R-squared	0.991931	Mean dependent var		35.30667
Adjusted R-squared	0.987793	S.D. dependent var		16.48710
S.E. of regression	1.821555	Akaike info criterion		4.306475
Sum squared resid	129.4044	Schwarz criterion		5.039496
Log likelihood	-108.1943	Hannan-Quinn criter.		4.593200
F-statistic	239.7217	Durbin-Watson stat		1.462020
Prob(F-statistic)	0.000000			

Source: From the work of the researcher based on the outputs of the statistical program (Eviews: 12).

Second: Boundary Test

Since the time series of financial inclusion indicators and liquidity index is static at the general level, the self-regression model of distributed slowdown was used to show the existence of a long-term equilibrium relationship between the model variables, as the economic meaning of the self-regression model of distributed slowdown is to verify the existence or absence of a buyer integration relationship and a long-term equilibrium relationship between the model variables, and it is clear through Table (6) that there is a common integration relationship between (liquidity) and financial inclusion during the research period, as the value of (F) The calculated amount reached (5.156302) in the boundary test, which is statistically significant because it is higher than the critical value at the upper limit of (4.15) and the minimum limit of (3.06), and this means rejecting the null hypothesis, which states that there is no long-term equilibrium relationship between the dependent variable and the independent variables.

Table (6)

Testing the boundaries between financial inclusion indicators and liquidity index

F-Bounds Test				
I(1)	I(0)	Signif.	Value	Test Statistic
	Asyinptotic N=1000			
3	2.08	10%	5.156302	F-Statistic
3.38	2.39	5%	5	K
3.73	2.7	2.5%		
4.15	3.06	1%		

Source: From the work of the researcher based on the outputs of the statistical program (Eviews: 12).

Third: Model Diagnostic Tests

With regard to the diagnosis of the model, the results of the analysis of the standard criteria shown in Table (7) showed that the model exceeded the standard problems, as it is noted from the same table that the model does not suffer from the problem of instability of variance, because the probability value reached (0.8748), which is greater than 5% in the sense of accepting the null hypothesis, which states that there is no problem of instability of variance and reject the alternative hypothesis that states the existence of the problem of instability of variance and through the results of Table (7) it is clear We have no autocorrelation problem, because the probability value of (0.5158) is greater than (5%) and this supports the validity and accuracy of the results of the model used, as the model shows that there is no problem of linear multiplicity based on the Klein test, which indicates that the features of R2 are greater than the correlation coefficient between independent variables, which means that there is no problem of linear multiplicity.

Table (7)

Model diagnostic tests for the impact of financial inclusion indicators on the liquidity index

the test	the value	Prob.
Breusch-Godfrey LM Test	1.323944	0.5158
Arch Test	0.024841	0.8748
Ramsey Reset Test	1.293364	0.2025

Source: The researcher's work based on the outputs of the statistical program(Eviews: 12)

Fourth: Error Correction Model (ECM) according to the ARDL methodology

Through the results of Table (8) came the error correction parameter CointEq(-1)* (-0.541767), and the condition of the signal is negative and statistically significant, as the error correction parameter indicates the speed of adaptation in the deviation in the values of the model variables in the long term up to (54%), which reveals the correction of imbalances in the short term and rebalancing in the long term, as well as that the parameters in the short term correspond to a large

extent with the parameters in the long term in terms of signals and that they vary Parameter values and in varying proportions.

Table(8)

Correction of the error in the 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

Source: From the researcher's work based on the outputs of the statistical program (Eviews: 12)

Fifth: The long-term relationship of the indicators of financial inclusion and the liquidity index Table (9) shows the results of the long-term relationship between the indicators of financial inclusion and the liquidity index, and through the above equation it is clear that the parameter (BD, ATM, DSO/GDP,) is significant in the long term, i.e. there is a long-term equilibrium relationship between the indicators of financial inclusion (Banking density, ATM ratio to the number of adults, private domestic credit to GDP) towards the liquidity index, and this is consistent with economic logic, while it turns out that the (SDO/GDP) parameter is significant and has an inverse relationship with the liquidity index (LR), and this does not apply with Economic reasoning, while there was no significant relationship between banking spread (BS) and liquidity (LR.(Schedule.

Table (9)

Estimators of the long-term relationship of financial inclusion indicators and liquidity index

Levels Equation

Case 2: Restricted Constant and No Trend

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	-1.201539	0.2368

EC = Y4 - (1.2136*X1 + 21.1841*X2 + 3.8368*X3 + 8.0287*X4 -4.5134*X5 - 77.4768)

Source: From the researcher's work based on the outputs of the statistical program (Eviews: 12)

CONCLUSIONS AND RECOMMENDATIONS

Conclusions:

-1The results of the research proved that there is a relationship between the indicators of financial inclusion and banking liquidity of Iraqi banks, and this applies with what came with the hypothesis of the research.

-2The spread of banking branches and ATMs is concentrated in governorate centers and commercial centers and their weak spread in districts, districts and rural areas, i.e. the presence of a large group excluded and deprived of financial and banking products and services.

-3The research found a long-term equilibrium relationship between the indicators of financial inclusion (bank density, ATM ratio to the number of adults, private domestic credit to GDP) with the index (bank liquidity.(

-4The results of the analysis also showed that there is no long-term equilibrium relationship between the financial inclusion index (banking spread) with the index (bank liquidity.(

Recommendations

1- A database should be provided on the website of the Central Bank of Iraq, including the classifications of banks operating in Iraq and their ranking in terms of preference in a way that helps individuals in choosing good banks in terms of the type of financial products and services provided.

2- The need to pay attention to the introduction of advanced technological techniques in the field of banking, because of its great importance in expanding the geographical area of beneficiaries of banking services products, and then attracting more individuals and groups of society that are still excluded and deprived of access to banking services, and to ensure the achievement of the broadest financial inclusion in Iraq.

3- The instructions and procedures of financial services should be simple, clear and consistent with the weak financial culture of Iraqi society, and banks should have financial products and services at low prices commensurate with the income of all members of society.

4- Establishing a national center specialized in the strategy of generalization and follow-up for financial inclusion in Iraq and employing expertise and specialists to conduct business in the center.

5- In light of the Central Bank of Iraq's initiative for financial inclusion, work should be done to enhance financial inclusion, which has a great importance and role in delivering the necessary financial and banking services to all segments of society, especially the financially excluded groups .

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