Journal of Namibian Studies, 33(2023): 2065–2091 ISSN: 2197-5523 (online)

Analyzing the relationship between banking finance and GDP in Iraq using the sectoral flexibilities approach for the period 2015-2021

Mostafa Kazemi Najaf Abadi[1], Najlah Shamoon Shlaymoon[2]

Abstract

Study Aim: This research aims to analyze the relationship between bank financing and GDP in Iraq from 2015 to 2021 using the sectoral flexibilities approach. Three variables were selected, including GDP, monetary bank credit, and the Central Bank of Iraq's initiative. The study measured the flexibility of economic sectors towards various forms of credit.

Method: This study used the sectoral flexibilities approach to examine the correlation between banking finance and GDP in Iraq. It measured the flexibility of oil and non-oil GDP towards various types of credit to assess the impact of monetary credit on Iraq's GDP. Data was collected from the Central Bank of Iraq and other relevant sources, and statistical tools such as regression analysis were employed for the analysis.

Main Findings: The study found that there is a clear response to monetary credit on the gross domestic product in Iraq. The flexibility of non-oil GDP towards total cash credit, government and private credit, pledge credit, cash credit granted by the sector, and the initiatives of the Central Bank of Iraq was found to be higher compared to the flexibility of oil GDP. The findings suggest that the private sector needs to be given more leeway to increase the effectiveness of its economic activity, which in turn will improve the relationship between bank financing and the domestic product.

Main Recommendations: Based on the findings of the study, it is recommended that the government of Iraq provide more opportunities for the private sector to increase their participation in the economy.

Keywords: Bank finance, GDP, cash credit, pledge credit.

INTRODUCTION

The provision of financing is one of the most important issues that should be addressed before undertaking any investment or

[1] Assistant professor, research institute of Howze and university, Islamic Republic of Iran, mostafakazemi@rihu.ac.ir

[2] Economic Researcher Republic of Iraq, nashch70 @gmail.com

development project. The success of the development process is linked to providing appropriate sources of funding as needed and the ability to provide them. In the development framework, bank finance plays a vital role by providing the financial resources needed to finance various economic activities and directing these resources in the direction that serves the economic sectors properly. Many believe that bank financing has a significant impact on GDP in terms of growth or contraction. Recently, the state has become interested in bank finance. It has introduced a series of reforms that serve the interests of commercial banks in addition to providing support to finance small, medium, and large projects through the Central Bank of Iraq's initiatives implemented through the banking system.

The aim of this literature review is to analyze the relationship between banking finance and GDP in Iraq, utilizing the sectoral flexibilities approach. This method considers the different sectors of the economy, including the agricultural, industrial, and service sectors, and how they respond to changes in banking finance. The Iraqi banking sector has undergone significant transformations since the fall of Saddam Hussein's regime, including the introduction of private banks, the removal of price controls, and the liberalization of the foreign exchange market. However, the sector still faces several challenges, including a high level of non-performing loans and limited access to credit for small and medium-sized enterprises. The relationship between banking finance and GDP in Iraq has been studied by several scholars, including (Al-Shammari, 2009), who analyzed the practical applications of banking management, and the Central Bank of Iraq (CBI) (2015-2021), which publishes annual reports on monetary policy. Additionally, studies such as those by (Hempel, 1999) and (Callen, 2021; Hungsapruek, 2022; Kumar, Maity, & Patnaik, 2022) have explored the relationship between banking and economic growth on a global scale. By using the sectoral flexibilities approach , this literature review aims to provide a comprehensive understanding of the relationship between banking finance and GDP in Iraq, and to identify the challenges and opportunities for the banking sector to contribute to the country's economic development.

THE IMPORTANCE OF RESEARCH

The importance of research stems mainly from the direction of Iraq, like other countries of the world, to increase reliance on banking financing provided by commercial banks of credit to achieve economic development, and this depends heavily on the effectiveness of credit provided to sectors of the Iraqi economy to achieve this purpose.

THE RESEARCH PROBLEM

Despite the great importance of commercial banks in influencing the economic development process through bank financing, the vision of the impact of these sources on economic activity in developing countries was not clear. Therefore, it is necessary to know the effectiveness of bank financing in influencing economic activity by studying the sources of financing and its relative importance to GDP as a key indicator of economic activity.

THE RESEARCH OBJECTIVES

The research aims to achieve the following:

1. Identify the sources of bank financing and identify what they are.

2. Identify the role played by bank financing sources in providing the necessary funds to achieve GDP growth through the use of the sectoral flexibility approach.

THE RESEARCH ASSUMPTION

The research seeks to test the hypothesis that "the role of banking finance is directly proportional to GDP growth rates if sufficient and sustainable sources of financing are available.

METHODOLOGY OF RESEARCH

The research adopted the analytical descriptive method of using statistical data from its sources and the use of percentage data of the banking system to grant credit to economic sectors, when relying on the tools of micro-analysis (mathematical) to analyze and measure the relationship between bank finance and GDP.

RESEARCH POPULATION AND DETERMINANTS:

The research will include the Iraqi economy as a whole sector and will rely on the data available in the statistical reports issued by the Central Bank of Iraq and the Ministry of Planning, the Central Bureau of Statistics for the period 2015-2021.

THE FIRST RESEARCH

BANKING FINANCE AND GDP

First: The Concept of Financing

Finance is defined as a field of knowledge for financial management and stems from the desire of individuals (Al-Kurdi, 2010) and businesses to maximize well-being. Funding, in the view of some, reflects the various activities involving the various actions of

individuals (Othman, 1986) and projects to obtain the funds needed to meet obligations owed to others on time. Or it is the provision of funds (cash liquidity) to spend on investments and fixed capital formation to increase production and consumption (Maytham, 2006).

It is the process of employing surplus funds in various investment tools and fields to create new production, expand current production, increase capital formation in the economy and society, or achieve an actual increase in wealth (Shbeeb, 2009).

From these previous definitions, it can be concluded that finance is the provision of funds necessary to carry out and develop economic projects in times of need, as it relates to cash, not goods and services, and to be at the required value at the required time. The goal is to develop public and private projects on time.

1. Bank financing

The definitions of bank finance vary according to the views that are considered: John Stuart Mill believes that bank finance is a permit to use another capital, that is, to add new capital to the project capital to use it. Others define it as the trust that the bank places in its customer in making a certain amount of money available for specific purposes during a given period in return (Al-Makkawi, 2010) for an agreed material return. Some have defined it as a cash credit in which one of the parties to the transaction (financial institutions) mostly provides money to the other borrowing party

2. Justification for the use of bank financing

The banking sector plays a major role in the economic development of any country in the world, as banks are a container in which savings and deposits pool to be re-lent to those who need them, as this sector aims to:

1. Face the temporary imbalance between cash inflows and outflows, pay for sudden business transactions, get a fast-paying deduction, or pay taxes due to insufficient liquidity to do so.

2. Spread the financing needs of the various economic units, whether existing or in the case of new projects.

3. Financing economic activities and increasing the rates of economic growth through the use of modern means of production, and the development and modernization of existing means and instruments of production.

4. Achieving economic stability through financing productive projects and establishing projects that provide jobs and increase production, consumption (Masbah, 2005) and incomes.

5. Financing economic policies and programs and carrying out structural reforms or implementing specific programs of economic reform (Al Haj, 2010) .

6. Loans and credit facilities are the primary employers of commercial and specialized banks (Al-Beblawi, et al., 2005).

Second, the GDP

The economic size of a country is usually measured by an index or index expressed in gross domestic product (value added), that is, all goods and services produced in a given country during a given period (year) (Al-Beblawi, et al., 2005, p. 25). The IMF defines it as measuring the monetary value of all consumer goods and services purchased by the consumer produced in a country at some point in time (for example, a year or a quarter) (Al Shammari, 2009). The GDP is one of the important economic indicators that reflect the country's economic activity (Samuelson, P., & House, W. 2021) and growth path and is an important indicator that reflects the extent of the country's ability to achieve the degree of growth and development achieved because it is the result of the interaction of sectors of the national economy and the fruit of their efforts.

GDP is defined in three basic ways that should yield the same result when all are correctly calculated, often called the spending approach, the production approach, and the income approach.

The productive sectors of the national economy are divided into three main groups (Ra'afat, 2000):

1. Commodity sectors: A range of sectors are organized: Oil and mining, agriculture, forestry, fishing, industry, electricity and water, and construction.

2. Distribution sectors: These include transport, transport, storage, trade, banking, and insurance.

3. Service sectors: These include ownership of housing houses, social, and personal development services (public government, personal services).

Third: The relationship between sources of banking finance and GDP

There is almost complete consensus among economists that there is a mutual impact between bank finance and GDP. As will be discussed in this article, Schumpeter stressed the creative ability of bank credit to affect economic activity. The financing process and granting of credit contribute to giving the regulator creative capabilities for production. The services performed by the banking sector between mobilizing savings, evaluating projects, managing risks, following up, and

supervising investments are all necessary for Progressing, and developing inventions and technical methods

The researchers mean the sources of banking financing here everything related to the banking system represented by the central bank, which provides liquidity to banks to grant loans to borrowers in addition to commercial banks and specialized banks that contribute directly or indirectly to the provision of financing for the growth of GDP.

THE SECOND EXAMINATION

THE DEVELOPMENT OF BANKING FINANCE SOURCES IN THE GDP OF IRAQ FOR THE PERIOD 2015-2021

To determine the contribution of sources of finance to the GDP will be addressed:

First: Analyze the role of the Central Bank in creating the economic environment through a set of measures and decisions aimed at regulating credit policy to achieve balanced growth rates of economic activity.

Quantitative easing and real sector stimulus policy

Affirming the development role of the Central Bank of Iraq through its policy aimed at stimulating the real sector, In the last quarter of 2015, the bank presented its lending initiative in cooperation with banks operating in Iraq to stimulate those banks to go to the market and provide credit and banking finance to small, medium and large enterprises in order to stimulate the development process and to be an exceptional initiative presented as an attempt to find mechanisms to address the problem of financing small, medium and large enterprises and to achieve some development goals include:

• Addressing the recession and liquidity shortage.

• Stimulating economic growth and reducing unemployment and poverty.

• Developing expertise skills, and existing small enterprises, expanding their production and creating new projects.

The initiative consists of two parts, the first of which is worth (1) trillion dinars, and the second is worth (5) trillion Iraqi dinars, as follows:

- The initiative (1) trillion Iraqi dinars: Its purpose is to finance small and medium enterprises, and the targets of financing are all categories of the business sector, trade, industry, hotels, restaurants, Shops, malls, workshops of all kinds, small, and medium enterprises.

The total loans granted in this initiative from 2015 to 2021 amounted to (873.6) billion dinars and with a compound growth rate of (40.2%), as in table (1), the total funding for the agricultural sector amounted to (10) billion dinars for the period 2015-2021, While the researchers find that the total funding for the industrial sector amounted to (133.4) billion dinars, while the total funding for the commercial sector amounted to (248.8) billion dinars, and the total funding for the health, educational and tourism services sector amounted to (194.8) billion dinars, while the total funding for the residential sector and personal loans amounted to (243.45), (43.1) billion dinars, respectively.

The commercial and residential sectors topped the first and second ranks of the total amount of funding for the period 2015-2021 by (28.5% and 27.9%) respectively, while the service sector ranked third by (22.3%), while the industrial sector ranked fourth and by (15.3%) to occupy personal loans and the agricultural sector last place (4.9% and 1.1%), respectively.

The number of small and medium-sized enterprises benefiting from this initiative in the agricultural sector reached (221) projects and the industrial sector reached (1017) projects and the housing sector reached (2857) projects and the service sector amounted to (2243) projects and personal loans (3115) projects, However, the largest beneficiary in terms of the number of projects was the commercial sector, where the number of projects reached (6822) projects with a contribution rate (41.9%) of the total number of projects, followed by personal loans and the residential sector with a contribution rate (19.1% and 17.6%), respectively, and the service sector by (13.8%). In contrast, the industrial and agricultural sectors recorded a contribution rate of (6.2% and 1.4%), respectively, table (1).

Table 1- Financing of the initiative of one trillion Iraqi dinars in the Central Bank of Iraq and the number of projects for the sectors benefiting for the period (2015 - 2021)

(Billion dinars)

The Relative importance of %	Total amount awarded	2021	2020	2019	2015 – 2018	Years / Statement	
1.1	10	2.4	2.2	2.8	2.6	Finance (billion)	The agricultural sector
1.4	221	64	29	43	85	Number of projects	
15.3	133.4	84.1	30	11.3	8	Finance (billion)	The industrial sector

6.2	1017	201	229	227	360	Number of projects	
28.5	248.8	125.7	46.3	33.0	43.7	Finance (billion)	The commercial sector
41.9	6822	1897	1391	1475	2059	Number of projects	
22.3	194.8	97.3	61.4	18	18.1	Finance (billion)	Services sector (health, education, tourism)
13.8	2243	536	452	530	725	Number of projects	
27.9	243.45	196.6	46.8	0.05	0	Finance (billion)	I live
17.6	2857	2096	760	1	0	Number of projects	
4.9	43.1	43.1	0	0	0	Finance (billion)	Personal loans
19.1	3115	3115	0	0	0	Number of projects	
100%	873.6	549.2	186.7	65.2	72.4	Finance (billion)	Total funding from the initiative
100%	16275	7909	2861	2276	3229	Number of projects	

Central Bank of Iraq/ Department of Statistics and Research/ Department of Monetary and Financial Statistics

- Preliminary data are subject to modification.

- The initiative (5) trillion Iraqi dinars: Its purpose is to finance medium and Source: The annual report of monetary policy for the years 2015-2021, published on the website of the Central Bank of Iraq, Department of Statistics and Research. Www.CBI.IQ

large projects to raise production in the agricultural and industrial sectors and the establishment of housing projects that contribute to the development of infrastructure of the Iraqi economy, and is distributed through three banks in addition to the housing fund so that the following amounts were allocated to each of them:

• Industrial Bank: The amount allocated from the initiative was recorded (12%) and the value of (359.5) billion dinars, and at an interest rate of (4%).

• The Agricultural Bank: The amount allocated from the initiative recorded (5.8%), which is worth (172.5) billion dinars, and at an interest rate of (4%).

• The Real Estate Bank has reached the amount allocated from the initiative (27.8%) of the total amount allocated and the value of (834) billion dinars, and at an interest rate of (3%).

• Housing Fund: The amount allocated to it from the initiative amounted to (54.4%), which is worth (1634) billion dinars and interest (3%).

The amount granted to banks from 2016 to 2021 (industrial, agricultural, real estate, housing fund) amounted to (147.9, 55.1, 784.4, 1634) billion dinars, respectively, and the total loans granted under this initiative until 31/12/2021 amounted to (2621.4) billion dinars.

As can be seen from the above, the lowest sectors benefiting from the initiative until 2021 are the agricultural and industrial sectors.

Table 2- Financing the initiative of (5) trillion Iraqi dinars in the Central Bank of Iraq for the period (2016 - 2021)

(Billion dinars)

The remaining	Ad hoc	Total awarded	2021	2020	2019	2016-2018	Years Statement
211.7	359.5	147.9	33.7	17.5	4.9	91.8	The Industrial Bank
117.4	172.5	55.1	1.9	2.4	23.2	27.6	The Agricultural Bank
49.6	834	784.4	84.4	35	0	665	The real estate bank
_	1634	1634	425	200	50	959	The Housing Fund
378.70	3000	2,621.4	545	254.9	78.1	1,743.4	Total

Source: Statistical website of the Central Bank of Iraq www.CBI.IQ.

Central Bank of Iraq/ Department of Statistics and Research/ Department of Monetary and Financial Statistics

- Preliminary data are subject to modification.

Analysis of the relationship between commercial banks and GDP for the period 2015-2021

To identify the role of commercial banks in the GDP, the volume and type of credit granted (cash, pledge) will be analyzed by the economic sectors dealt with by commercial banks, whether from the government or the private sector and their ratio to GDP.

It is clear from the annex to table (1) that the value of the total cash credit granted amounted to (36,752,686) million dinars in (2015) the community services sector ranked first in terms of its share of the credit (39%) of the total credit followed by the construction sector

(23%), followed by the trade, hotels, and restaurants sector (14%), followed by the industry sector Contribution rate (7%) for the rest of the sectors (17%).

The upward trend in the granting of credit to economic activities continued to fluctuate during the period 2019-2021 and grew at a rate of (9.18%, and 6.3%), respectively, and the compound growth rate in total credit granted (6.3%) during the period (2015-2021).

From the above, it can be said that the credit directed to all sectors of economic activity has witnessed remarkable growth despite the difference in the proportion of each sector of total credit during the years of study, the finance and insurance sector amounted to the value of credit directed to this sector (1,328,025) million dinars in 2015 and this value fluctuated between rise and fall During the years of study to reach (5,127,790) million dinars in 2021 and a compound growth rate of (25.3%) (Mohammed, 2000) and a contribution rate of (10%) of total credit, and this is due to the initiative of the Central Bank of Iraq in the revitalization of this sector and this shows the extent of the possibility of the banking sector to benefit from credit in investment opportunities. As for the credit granted to the sector of trade, restaurants, and hotels, the value of credit granted to this sector amounted to (5,246,398) million dinars in 2015 and the value of this indicator went up to (10,180,123) million dinars in 2021 and a compound growth rate of (11.7%)) and a contribution rate of (19%), This is the result of the sector's expansion (Hathloul, 2005) in the provision of consumer and investment goods to cover the need of the domestic market. Water, electricity, and gas recorded (817,686) million dinars in 2015 to reach (1,309,438) million dinars in 2021 and a composite growth rate of (8.2%) and a contribution rate of (2%).

From the note of the credit granted to the construction sector, it is clear how important the sector is in the acquisition of an important part of the credit granted by commercial banks has tended to rise most of the study period to reach the value of this credit to (11,155,678) million dinars in 2021 compared to (8,401,299) million dinars in 2015 and a compound growth rate reached (4.8%) with a contribution rate of (21%), this is due to the high domestic demand for residential and commercial buildings as a result of the initiative of the Central Bank with reduced and administrative benefits as well as the continued increase in the population, which is an incentive for the private sector to increase investment in this sector and thus increase the demand for credit from commercial banks.

Following up on the credit granted to the services sector, the researchers find that the growth index varied between rise and fall throughout the study, despite its high relative importance in total credit, where this sector maintained the first position in terms of

access to credit worth (18,998,599) million against (14,302,979) million dinars in 2015 and a compound growth rate reached (4.8%) with a contribution rate of (36%) for the period 2015-2021.

The agricultural sector recorded (2,038,158) million dinars in 2015 to reach in 2021 (2,110,038) million dinars and a compound growth rate of (0.6%) and a contribution rate of (4%). This is due to the desert environment and harsh climate, which increases the sector's costs for growth and thus reduces the incentive to invest in agricultural activity.

Following the share of the transport, storage and transportation sector in the total credit, the researchers find that the value of the credit directed to it was a low percentage compared to the rest of the sectors, especially because of the importance of this sector and its link to provide services to other sectors, especially the trade sector, they find that its share of the total credit was (2,181,929) million dinars and a contribution rate of (6%) year 2015 fluctuated between the rise and fall during the subsequent years until it reached (1,716,146) million dinars in 2021 to constitute (3%) of the total credit for that year and a compound growth rate of (-3.9%) for the period 2015-2021.

As for the mining sector, the credit provided to it was very low and with a compound growth rate of (-49%) throughout the study period, in contrast to the sector of the outside world recorded a negative compound growth rate of (-17.9%). Concerning the manufacturing sector, the value of the credit provided to it reached (2,396,690) million dinars in 2015, and the rate of compound growth reached (-0.2%) during the end of the research period, where the value of the credit directed to this sector (2,361,733) million dinars in 2021 and a contribution rate of (4%) of the total credit, this shows that a large portion of the credit is directed to consumer and non-productive purposes.

Comparing the percentage of credit granted to the private sector compared to the credit granted to the central government sector, the researchers find that most of the credit was directed to private sector activity compared to the government sector, the percentage of credit granted to the private sector ranged between (48.9%) as the lowest in 2016 and the highest percentage (55.8%) of total credit and a compound growth rate of (8.6%) throughout study with a minimum contribution (7.5%) and (11.8%) as a maximum of GDP, Appendix Table (2).

Following up on the credit granted to the government sector, The researchers find that this indicator has grown throughout the study period despite the decline in the relative importance of it in the total credit, where the highest percentage of this sector (43.6%) and the value of (18,355,430) million dinars (2019) went down during the

subsequent years to (36.3%) in (2021) and the value of (19,223,528) million dinars In 2021, with an annual growth rate of (10%) for the period 2015-2021 and a contribution rate of (5.1%) as a minimum to (9.7%) as a maximum of GDP, Appendix table (2).

The researchers conclude from the above that most of the growth rates achieved in the total credit granted to economic sectors were due to the competition of private demand for bank credit, which explains the increased contribution of the private sector to GDP and the achieved growth rates in GDP.

On the other hand, the length of the study period has been reduced by a compound growth rate of (6.2%) for the duration (2015-2021). This is due to the low credit directed to most of its sectors (agriculture, trade, restaurants and hotels, finance and insurance, community services, the outside world, and construction) with a compound growth rate of the length of the study period (-40.5%, -7.9%, -27.8%, -23%, -1.5%, -4.3%), respectively, the combined growth rates of the rest of the sectors (mining, manufacturing, water, electricity and gas, transport storage and transportation) increased by (67.3%, 49.4%, 27.3%, 14.8%), respectively, Schedule (3).

Concerning the GDP at current prices, Appendix table (4) shows that the value of this indicator amounted to (194,680,971.8) million dinars in 2015 compared to (301439533.9) million dinars in 2021 and a compound growth rate of (7.6%) the value of the product went up during the subsequent years except for 2020, in which the Iraqi economy was exposed to shock Double (COVID-19 and low global oil prices), which indicates the degree of the Iraqi economy's association with the global economy and its impact on it.

The value of this indicator continued to rise and with positive growth rates for the commodity, distribution, and service sectors and a compound growth rate of (10.3%, 5.5 %, 3.9%) respectively for the period 2015-2021 and this shows the rarity of the Iraqi economy and its dependence on oil to a large degree,

Following the values and growth rates of the commodity sectors for the period 2015-2021, it is clear that most activities in this sector have witnessed positive growth rates (13.2, 6.5%, 6.5%, 4.9%) for the sectors of crude oil, agriculture, fishing, manufacturing, electricity, and water respectively. The activity of other types of mining, and construction saw a decrease of (-7.6%,-3.2%), respectively. In contrast, the distribution sector witnessed a wave of growth rates for its component activities, as the banking and insurance sector recorded the highest compound growth rate (14.5%) as a result of the initiatives of the Central Bank directed to commercial banks and specialized banks, as well as other measures to provide liquidity related to the

requirements of the legal reserve and open market operations. The rest of the activities (transport, communications, storage, wholesale and retail, trade and hotels) recorded compound growth rates (6.2%, 3.3%). The service sectors also witnessed positive growth throughout the study period, reaching (2.3%, 4%, and 6.8%) for the residential, public government, and personal services sectors, respectively.

If the researchers calculate the contribution of cash credit by sectors to GDP (financial depth). They find that the relative importance of this sector, in general, is increasing throughout the study period, with the lowest contribution of this sector to the GDP (2%) for the mining sector and the highest contribution was to the community services sector (41.6%) for the period 2015-2021. In contrast, the rest of the sectors (construction, trade, restaurants and hotels, finance and insurance, agriculture and fishing, manufacturing, transport, storage, and transportation, water electricity and gas) contribution ratios (27.4%, 26.4%, 12.5%, 6.1%, 5.9%, 5.8%, 4.4%) respectively, table supplement (5), and pledge credit recorded the lowest contribution to GDP (9.2%) in 2019 and 2021 and the highest contribution (20.8%) in 2015 as in table annex (2), The lowest contribution of this sector to the GDP (2% 0.00) for the agriculture sector and the highest contribution was for the trade and catering sector (6.6%) attached to the table (3), This shows that the contribution rates of the above sectors throughout the study period were inconsistent with the economic policy of not relying on oil as the only source of income and the need to diversify the productive base, especially after the completion of the infrastructure of the economy and the provision of the appropriate climate for the private sector to contribute to the process of economic development.

THIRD EXAMINATION

THE DEVELOPMENT OF SECTORAL FLEXIBILITIES OF GDP AND THE SOURCES OF BANK FINANCING IN IRAQ FOR THE PERIOD 2015-2021

Flexibility is used in fiscal, monetary and trade policies. The flexible approach in economic sectors of GDP can be used to establish a set of dependable foundations for resource allocation policies and the achievement of targeted growth rates in future development plans, which in economics represent the extent to which one or more variables respond to changes in one or more measurement of how the change of one economic variable will affect the rest of the economic variables and is thus a measure of the relationship between the relative changes that occur in one phenomenon (the dependent variable), as a result of the relative changes in another phenomenon (the independent variable), called elasticity is given the following relation (Mundor, et al., 2006):

Percentage change of the dependent variable

Flexibility = $\frac{x}{y}$ * $\frac{dy}{dx}$

The rate of independent variable change

The dependent variable is affected by independent variables either a direct effect or a reverse effect, and to determine the direction of the dependent variable to be affected by all independent variables, The researchers will examine the dependent variable's effect on the independent variables separately. The impact of the value of flexibility varies among economic variables facing different degrees of financial constraints, and therefore this study constitutes an important frame of reference for future studies and will address the following:

First: The flexibility of the oil and non-oil GDP toward the total monetary credit and (government and private) for the period 2015-2021

Table (3) indicates that the flexibility rate of oil and non-oil GDP in the direction of total cash credit (the degree of response of GDP change to total cash credit) during the study period 2015 - 2021 was low, as the degree of flexibility (0.7, 0.5), respectively. While the degree of flexibility was weak toward government monetary credit, i.e. the degree of response to the change in oil and non-oil output toward the change in government monetary credit was inflexible, reaching (-0.09, -0.01) respectively, in contrast, the rate of flexibility toward private monetary credit recorded a low degree (0.16, 0.13) The oil and non-oil production, as explained by the following equations:

Y1=0.1+0.7x1+0.16x2-0.09x3

Y2 = 0.1+0.5x1+0.13x2-0.01x3

Where:

Y1=1

interdepended

(GDP) with current prices of oil

Y2 = dependent variable (GDP at current prices without oil

X1 = total cash credit

X2 = Private Cash Credit

X3 = Cash credit directed to the central government

Table 3 - The flexibility of GDP (oil and non-oil) toward total monetary credit and (government and private) for the period 2015-2021

The flexibility of non-oil GDP toward private monetary credit	The flexibility of non-oil GDP toward total monetary credit	The flexibility of GDP toward private monetary credit	The flexibility of GDP toward government cash credit	The flexibility of oil GDP toward total cash credit
0.13	0.5	0.16	-0.09	0.7

Table prepared by researchers based on Table (1 and 2)

Using the following equation:

Percentage change of the dependent variable

Flexibility = $\frac{x}{y} * \frac{dy}{dx}$

The rate of independent variable change

Second: The flexibility of GDP by sectors toward total monetary credit and (government and private) for the period 2015-2021

1- The flexibility of the agricultural sector toward total cash credit and (government and private)

Table (4) shows during the study period (2015-2021) that there is a clear response in the degree of flexibility, as the average flexibility of the agricultural sector reached the trend of total cash and government and private credit (1.4), (2.8) and (1.2), respectively. This is due to the government's interest in paying credit to the agricultural sector, as well as the central bank's role in supporting this sector through its initiatives for medium, small, and large enterprises. While the degree of response of the agricultural sector toward agricultural credit was very weak (0.5-) due to the fluctuation of growth in this sector the length of the study period as a result of the events in Iraq, which led to the loss of part of its agricultural land as well as the water and climate crisis, as explained by the following equation:

Y=2.3+1.4x1+2.8x2+1.2x3-0.5x4

Where:

Y= dependent variable, agriculture, fishing, and forestry sector

X1 = total cash credit

X2 = Cash credit directed to the central government

X3 = Private Cash Credit

X4 = Cash credit directed to the agricultural sector

2- The flexibility of the industrial sector toward total cash credit and (government and private)

As can be seen from table (4) the high rate of flexibility during the study period (2015-2021) where the average score of response was recorded (24.3), due to the high rate of flexibility of the industrial sector toward private cash credit due to the high balance of credit directed to this sector throughout the study period, In addition to the initiative of the Central Bank to support the industrial sector, where the rate of flexibility reached (9.7). While the degree of response of the industrial sector to the trend of credit of the industrial sector and government credit was very low (0.16, 0.6-), respectively, if the stability of security caused the decline of foreign investment in this sector, and this sector includes only some of the manufacturing industries, medium and small, and the conditions of the large production enterprises.

Y=0.12+24.3x1+9.7x2-0.6x3+0.16x4

Where:

Y = dependent variable, industrial sector

X1 = total cash credit

X2 = Private Cash Credit

X3 = Cash credit directed to the central government

X4 = Cash credit directed to the industrial sector

3- The flexibility of the service sector toward total cash and (government and private) credit and services sector credit

The services sector recorded a remarkable response to the trend of change in the total monetary sector, where the rate of flexibility was (1.6), while the rate of flexibility for the period 2015-2021 to the cash credit (private and government and credit directed to the services sector), where the degree of response (0.4, 0.07, -0.19), respectively, as explained by the following equation:

Y=0.14+1.6x1+0.4x2+0.07x3-0.19x4

Where:

Y = dependent variable, service sector

X1 = total cash credit

X2 = Private Cash Credit

X3 = Cash credit directed to the central government

X4 = Cash credit directed to the service sector

4- The flexibility of the transport, communications, and storage sector toward total cash and (government and private) credit directed to the transport and storage sector

Table (4) indicates that the rate of change of the transport, communications, and storage sector toward total cash and credit directed to the private sector (the degree to which the change in the transport and communications sector responded to the trend of total cash and credit directed to the private sector) during the study period 2015 - 2021 was very large, reaching the degree of flexibility (5.09,2.3). In contrast, there is a low degree of flexibility toward the credit directed to the transport, communications and storage sector, with an average of flexibility (0.004), while the transport, communications, and storage sector experienced a weak response to government credit, with a response rate (flexibility) (-0.2). It is also illustrated by the following equation:

Y=1.01+5.09x1-0.2x2+2.3x3+0.004x4

Where:

Y = the variable of the transport, communications, and storage sector

X1 = total cash credit

X2 = Cash credit directed to the central government

X3 = Private Cash Credit

X4 = Cash credit directed to the service sector

5- The flexibility of the construction sector toward total cash and (government and private) credit and credit directed to the construction sector

The construction sector recorded the trend of total credit during the study period a very weak response, as the degree of flexibility (3.56 -), The reasons for this decline and the crises experienced by the Iraqi economy such as the war on the organization of ISIS and the decline in oil prices as well as the crisis of Corona and the partial and total closure, which led to a recession in this sector and this is reflected by the low flexibility of the construction sector toward credit directed to this sector during the study period (-3.8), in addition, the rate of flexibility for the government and private sectors was low (0.3, 0.1), respectively. It is also illustrated by the following equation:

Y=4.3-2.56x1+0.3x2+0.1x3-3.8x4

Where:

Y = dependent variable, construction sector

X1 = total cash credit

X2 = Cash credit directed to the central government

X3 = Private Cash Credit

X4 = Cash credit directed to the construction sector

6- The flexibility of the water and electricity sector toward the total cash and (government and private) credit directed to the water and electricity sector

Table (4) shows during the study period (2015-2021) that there is a great response in the degree of flexibility of the water and electricity sector toward total cash credit, as the average flexibility (15.2), due to the high rate of flexibility of this sector toward the private sector as the rate of the flexibility (8.6), In contrast, the degree of response was low and weak toward the government sector and the credit directed to this sector, as the rate of flexibility (0.4, -0.04) during the study period, due to the increase in the import of electricity and demand as well as the increase in the number of generators by the private sector with the number of government support. It is also illustrated by the following equation:

Y=1.15+7.2x1+0.4x2+8.6x3-0.04x4

Where:

Y = dependent variable, water and electricity sector

X1= Cash credit

X2 = Cash credit directed to the central government sector

X3 = Private Cash Credit

X4 = Cash credit directed to the water and electricity sector

7- The flexibility of the banking and insurance sector toward total cash and (government and private) credit directed to the banking and insurance sector

During the study period (2015-2021), the banking and insurance sector recorded a significant response in the degree of flexibility toward total cash credit, with average flexibility of (8.5) (table 4), due to the high rate of the flexibility of this sector toward the private sector, where the rate of flexibility reached (5.2). This is due to the initiatives of the Central Bank provided through the banking system as well as its procedures to provide liquidity through its indirect tools of compulsory

reserve and open market operations, etc. in contrast, the degree of response to the government sector and the credit directed to this sector reached the rate of flexibility (-0.65, -0.09) Respectively during the study period, this is due to the financial and health crises experienced by the Iraqi economy the length of the study period. It is also illustrated by the following equation:

Y=0.8+44.5x1+5.2x2-0.65x3-0.09x4

Where:

Y = dependent variable, banking, and insurance sector

X1 = total cash credit

X2 = Private Cash Credit

X3 = Cash credit directed to the central government

X4 = Cash credit directed to the banking and insurance sector

8- The flexibility of the mining and quarrying sector toward total cash and (government and private) credit directed to the mining and quarrying sector

Table (4) shows during the study period (2015-2021) that there is a clear response in the degree of flexibility of the mining and quarrying sector toward the total cash credit, where the average flexibility was (3.5), in contrast, the degree of response was low toward the government and private sector, where the rate of flexibility (0.6, 0.8) during the study period. The sector did not show any degree of response to the cash credit directed to it, as the degree of flexibility was very weak (i.e., inflexible) as it reached (-0.0000002). It is also illustrated by the following equation:

Y=0.3+79.5x1+0.6x2+0.8x3-0.00002x4

Where:

Y=dependent variable, mining and quarrying sector

X1 = total cash credit

X2 = Cash credit directed to the central government

X3 = Private Cash Credit

X4 = Cash credit directed to the mining and quarrying sector

9- The flexibility of the wholesale and retail trade sector and hotels and similar toward the total cash and (government and private) credit directed to the trade sector

The trade sector experienced a clear response in the degree of flexibility toward total monetary credit, with average flexibility of (2.8) for the period (2015-2021) (Table 3), in contrast, the degree of response to government and private credit and cash credit directed to the trade sector was weak (-1.04, -2.38, -0.52). During the duration of the study, this shows the degree of economic exposure of the Iraqi economy. It is also illustrated by the following equation:

Y=5.2+03.8x1-1.04x2-2.38x3-0.52x4

Where:

Y1 = dependent variable, wholesale and retail sector, hotels and similar

X1 = total cash credit

X2 = Cash credit directed to the central government

X3 = Private Cash Credit

X4 = Cash credit directed to the trade sector

Table 4 - Sectoral GDP growth flexibilities at current prices (by sectors) achieved against government and private monetary credit directed to the same sector for the period 2015-2021

The flexibility of the sector toward the cash credit provided to the same sector	The flexibility of the sector toward private cash credit	The sector's flexibility toward government cash credit	The flexibility of the sector toward total cash credit	The GDP By sectors
-0.5	1.2	2.8	1.4	Agriculture, hunting, and forestry
-0.0000002	0.8	0.6	3.5	Mining
0.16	9.7	-0.6	24.3	Manufacturing transformation
-0.04	8.6	0.4	15.2	Electricity and water
-3.8	0.1	0.3	-3.56	Building and construction
0.004	2.3	-0.2	5.09	Transport, Communications , Storage, Building, and Construction
-0.52	-2.38	-1.04	2.8	Wholesale, Single, Hotels and similar
-0.09	5.2	-0.65	8.5	Banks and insurance
-0.19	0.4	0.07	1.6	Social and personal development services

Table prepared by researchers based on Appendix Table (1, 2, 4)

Using the following equation:

Percentage change of the dependent variable

Flexibility = $\frac{x}{y} * \frac{dy}{dx}$

The rate of independent variable change

Third: The flexibility of the oil and non-oil GDP toward the total committed credit for the period 2015-2021

Table (5) shows during the study period (2015-2021) that there is a weak response in the degree of flexibility of oil and non-oil GDP toward total committed credit, with the average flexibility (-0.7, -1.0), respectively. It is also explained by the following equations:

Y1 = 0.2-0.7x1

Y2 = 0.1-1.0x1

Where:

Y1=Dependent variable (GDP) at current prices

Y2 =(Non-oil GDP at current prices)

X1 = total credit pledged

Fourth: The flexibility of the sectors (mining and quarrying, services sector, agricultural sector, industrial sector, water and electricity sector, construction sector, trade sector, banking and insurance, wholesale and retail trade, hotels and similar, transport, communications, and storage toward the total credit pledged for the period 2015-2021.

Table (5) shows during the study period (2015-2021) that there is a very weak response in the degree of flexibility of the sectors of GDP (mining and quarries, service sector, agricultural sector, industrial sector, water and electricity sector, construction sector, wholesale and retail sector, hotels and similar sectors, banking and insurance) the trend of total pledged credit, The average flexibility (-3.3, -3.7, -46.3, -22.6, -4.7, -55.5, -0.11 and -30.2) respectively, in contrast, the transport, communications and storage sector witnessed a clear degree of response to the credit commitment, as the rate of flexibility (3.2), as in the following equations:

Y1=1.3 -9.3x1, Y2=0.3-2.7x1, Y3=4.46-4.3x1, Y4=2.22-2.6x1

Y5 =3.4-1.7x1, Y6=1.55-3.5x1, Y7=2.0-1.11x1, Y8=2.30-8.2x1

Y9 = 1.3+3.2x1

Where: Y1 = variant of the mining and quarrying sector at current prices, Y2 = service sector, Y3 = agricultural sector, Y4 = industrial sector, Y5 = water and electricity sector, Y6 = construction sector, Y7 = wholesale and retail sector, hotels and similar, Y8 = banking and

insurance, Y9 = transport, communications and storage sector, X1 = pledge credit.

Table 5 - Sectoral growth flexibilities of GDP at current prices by sector achieved against the 2015-2021 credit pledge

Flexibility of the sector toward total credit	GDP by sector
-46.3	Agriculture, hunting, and forestry
-3.3	Amendment of the order
-22.6	Manufacturing transformation
-4.7	Electricity and water
-55.5	Building and construction
3.2	Transport, Communications and Storage
-0.11	Wholesale, Single, Hotels and similar
0.2	\\Banks and insurance Banks and insurance
-3.7	Social and personal development services
The flexibility of non-oil GDP toward total committed credit	The flexibility of the oil GDP toward total committed credit
-1.0	-0.7

Table prepared by researchers based on Table Appendix Data (3, 4)

Using the following equation:

Percentage change of the dependent variable

Flexibility = = $\frac{x}{y}\frac{dy}{dx}$

The rate of independent variable change

Fifth: The sectoral growth flexibilities of the non-oil GDP achieved toward the initiative of the Central Bank (1) trillion and (5) trillion dinars for the period 2015 and 2016-2021

A. The flexibility of the non-oil GDP toward the initiative of the Central Bank (1) trillion and (5) trillion dinars for the period 2015 and 2016-2021

Table (6) shows during the study period that there is a clear response in the degree of flexibility of non-oil GDP toward the initiative of the Central Bank (1) trillion and (5) trillion, as the average flexibility (1.1, 1.5) respectively, as shown by the following equation:

Y=2.2+1.1x1+1.5x2

Where:

Y1 = dependent variable ((GDPN at current prices

X1 = the initiative of the Central Bank of Iraq (1) trillion

X2 = the initiative of the Central Bank of Iraq (5) trillion

B. The flexibility of sectors (agriculture, housing, service, real estate, industrial) toward the initiative of the Central Bank (1) trillion for the period 2015-2021 and the initiative (5) trillion dinars for the period 2016-2021.

Table (6) shows that there is a low response in the degree of flexibility of the sectors, agriculture, housing, and the service sector, as the average flexibility toward the initiative of the Central Bank in Iraq (1) trillion dinars (0.03, 0.1, 0.1) respectively, while there was an equal response in the degree of flexibility of the commercial sector, where the average response score (1) for the duration (2015-2021), as explained by the following equations:

Y1= 0.0+4.03x1, Y2=0.3+0.1x1, Y3=0.32+0.1x1, Y4=1.2+1x1

Y1 represents the agricultural sector in current prices, Y2 represents the housing sector, Y3 represents the service sector, and Y4 represents the commercial sector. X1 represents the One Trillion Dinar Initiative.

On the other hand, the average flexibility factor for the sectors (construction) and housing showed a great response to the initiative (5) trillion dinars, recorded (1.8, 1.3) respectively, and the average flexibility recorded a low response to the direction of the agricultural and industrial sectors, where it reached (0.1, 0.8) respectively for the period 2016-2021, as shown by the following equations:

Y1= 0.1+6.8x1, Y2=0.8+1.3x1, Y3=0.2+0.8x1, Y4=0.13+0.1x1

Y1 represents the construction sector, Y2 represents the housing ownership sector, Y3 represents the agricultural sector, and Y4 represents the industrial sector. X1 represents the Five Trillion Dinar Initiative.

Table 6 - The flexibility of the non-oil GDP (and economic sectors) toward the initiative of the Central Bank (1 and 5) trillion dinars for the period 2015-2021

Sector flexibility toward total initiative (5 trillion)	Sector flexibility toward a total (1) trillion initiative	The GDP By sectors
0.1	0.03	The agricultural sector
1.3	0.1	Housing

	0.1	Service
	1.0	Commercial
.81		Construction and construction
0.8		Industrial
The flexibility of the non-oil GDP toward the initiative (5 trillion dinars)	The flexibility of the non-oil GDP toward the initiative of (1) trillion dinars	
1.5	1.1	

Table prepared by researchers based on a table (1, 2) and a table extension (4) and using the following equation:

Percentage change of the dependent variable

Flexibility = $\frac{x}{y} * \frac{dy}{dx}$

The rate of independent variable change

CONCLUSIONS

1. The growth rates achieved in GDP during the study period were positive in most years, with the growth rate of the compound GDP (oil and non-oil) (7.6%, 4%), respectively, at current prices during the period (2015-2021), Except for 2020 was negative, amounting to (-20.4%) due to the double crisis experienced by the Iraqi economy (health and low oil prices).

2. The highest growth rates achieved in the GDP for the same period were in the commodity sectors (10.3%) and then the distribution and service sectors where it reached (5.5%) and (3.9%) respectively, and this shows the reality of the Iraqi economy.

3. The percentage of credit granted to the central government ranged from (29.6 %) as the lowest percentage in (2015) to (43.6%) as the highest percentage in (2019) compared to the share of credit provided to the private sector, ranging from (48.9%) as the lowest percentage in 2016 to (55.8%) as the highest percentage in 2021 Most of the growth rates achieved in the total credit granted to economic sectors were due to the competition of private demand for bank credit, which explains the increase in the private sector's contribution to GDP and the achieved growth rates in GDP.

4. The contribution of cash credit by sector to GDP over the length of the study period was a minimum (2%) for the mining sector and an

upper limit (41%) for the community services sector for the period 2015-2021. Pledged credit recorded the lowest contribution to GDP (9.2%) in 2019 and 2021 and the highest contribution (20.8%) in 2015. The lowest contribution of this sector to the GDP (2.0.00%) was for the agriculture sector and the highest contribution was for the trade and catering sector (6.6%), which indicates that the contribution rates for the above sectors throughout the study period were inconsistent with the economic policy in not relying on oil as a single source of income and necessity Diversification of the productive base, especially after the completion of the infrastructure of the economy and the provision of an appropriate environment for the private sector to contribute to the process of economic development.

5. The elasticity model of oil and non-oil GDP growth rates toward total cash credit show the rate of oil and non-oil GDP toward total cash credit (i.e., the degree of response of GDP change to the change in total cash credit). During the study period 2015-2021, the degree of flexibility was low (0.7, 0.5), respectively, and the role of government credit in achieving growth rates in GDP was weak, as this role was evident by the degree of response to the change in GDP (oil and non-oil). Toward total government cash credit during the study period 2015-2021, the average flexibility was reached (-0.09,-0.01), respectively, private credit was the least responsive to the required level of oil and non-oil GDP (0.16, 0.13).

6. The flexible model of oil and non-oil GDP growth rates shows the low and weak role of pledge credit in achieving growth rates in GDPs, as this role was evident by the degree of response of the change in GDP toward total pledge credit during the study period 2015-2021, when it reached (-0.7, -1.0) for oil and non-oil GDP, respectively.

7. The degrees of flexibility of the economic sectors of GDP toward monetary credit (government and private) and credit varied by sector type between rise and fall, and showed clear flexibility in the water and electricity sector toward the credit pledge while the flexibility or degree of response was very weak or inflexible toward other sectors throughout the study period.

8. The contribution of the Central Bank of Iraq in creating the appropriate economic environment for the continuation of achieving growth rates in GDP through the use of its tools (quantitative easing) in providing liquidity to banks through its lending initiative (1 and 5) trillion dinars, The degree of response to non-oil output was evident throughout the study period for initiatives (1) and (5) trillion dinars, with the average flexibility (1.1, 1.5), respectively.

Thus, all the models of flexibility were consistent with the logic of analysis of the reality of the Iraqi economy and proved the results of

the models used, which confirms the validity of the hypothesis on which the study was based.

RECOMMENDATIONS

1. Activating the role of the private sector in the field of productive sectors through the banks to increase cash credit and pledge to the productive sectors to make the proportion of its contribution greater in economic activity.

2. Direct the credit granted to the private sector from various sources of financing toward real productive projects by providing incentives and facilities such as lowering interest rates to a minimum and setting long-term grace and repayment periods because these measures would help.

3. To move the economy in the right direction toward building a correct productive base, it is necessary to direct cash credit and commitment toward the agricultural sector because of the contribution of this sector to provide essential and strategic goods and the importance of these goods for national security and the lives of citizens on the one hand, as well as the importance of this sector through the front links and the economic background on the other hand.

4. Activating the industrial sector and focusing on industries where there is a competitive advantage such as petrochemical industries as Iraq's economy is a rentier economy which will lead to the diversification of the production base and thus sources of income.

Bibliography

Al Haj, T. (2010). Finance Pawders. (1st ed.) Amman: Safaa Publishing and Distribution House.

Al Shammari, S. R. (2009). Banking Management (reality and practical Applications). Jordan, Amman: Safaa Publishing and Distribution House.

Al-Beblawi, H., & Akom, I. & Berniah, M. (2005). Arab Financial Institutions and Financing for Development and Investment in the Arab World. Economic and Social Council, League of Arab States, United Arab Emirates: Abu Dhabi.

Al-Kurdi, A. A. (2010). The most important theories of the function of finance, a guide to financial finance in modern business organizations.

Al-Makkawi, M. M. (2010). Banking Finance (traditional – Islamic) Scientific Method for decision making. Egypt: Modern Library for Publishing and Distribution.

Callen, T. (2021). Gross Domestic Product: An Economy's All. International Monetary Fund. https://www.imf.org/external/pubs/ft/fandd/basics/pdf/callen_gdp.pdf

Hathloul, A. M. (2005). Money and banks, theoretical analytical Introduction. Amman: Wael Publishing and Distribution House.

Hempel, G. H. (1999). Bank Management. 2nd ed. USA: John Wiley and Sons Inc.

Hungsapruek, T. (2022). Conditions for Donations to the University by Alumni: Faculty of Management Science of a Public University in Thailand. socialspacejournal.eu, 22(1), 325-344. https://socialspacejournal.eu/menu-script/index.php/ssj/article/view/22

Kumar, S., Maity, S. R., & Patnaik, L. (2022). Optimization of wear parameters for Duplex-TiAlN coated MDC-K tool steel using fuzzy mcdm techniques. Operational Research in Engineering Sciences: Theory and Applications, 5(3), 40-67. https://oresta.org/menu-script/index.php/oresta/article/view/115/

Masbah, S. (2005). Managing Bank Credit Risks, Investment and Finance in Palestine between Development Prospects and Contemporary Challenges. first scientific conference titled Investment and financing in Palestine between development prospects and contemporary challenges, Faculty of Commerce at the Islamic University, 8-9 May, Palestine. https://cutt.us/NEWY5

Maytham, A. (2006). International Finance. Amman: Zahran Publishing and Distribution House.

Mohammed, H. (2000). Management and Financial Analysis (1st ed.). Jordan, Amman: Dar Al-Fikr for Printing Publishing and Distribution.

Mundor, A& Abu Alsoud, M & Ghazlan, M. (2006). Principles of Microeconomics. Egypt, Alexandria: Faculty of Commerce, University of Alexandria. https://drive.google.com/file/d/1OzLsqN8FJKZtH7kccDmpiaJxXBRBmVtB/view

Othman, I. M. (1986). Fundamentals of Finance and Investment decision making. Cairo: Dar Al Nahda Arab.

Ra'afat, A. M. (2000). The role of banks in international loans. The new in banking business from legal and economic perspectives. (pt.2). Beirut: Al-Halabi Publications.

Samuelson, P., & House, W. (2021). Economics Scince. (1st ed.). Hisham Abdullah (Trans), Amman: Al-Ahliyya Publishing and Distribution House.

Shbeeb, D. K. A. (2009). Investment and Investment Analysis. Amman, Jordan: Dar Al-Yazouri Scientific Publishing.