

# The Mediating Effect of Bank Credit Between Monetary Variables and Productive Sectors in Iraq Using the Path Analysis Model

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DOI:10.37648/ijrssh.v13i04.009

<sup>1</sup>Received: 20 August 2023; Accepted: 30 September 2023; Published: 11 November 2023

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## ABSTRACT

The study aimed to measure and analyze the direct and indirect effects of monetary variables (interest rate on bank credit, broad money supply, parallel exchange rate) on non-oil productive sectors with and without bank credit, which was used as a mediating variable. The study used quarterly data for the period 2004-2021. In order to measure the objective of the study, the path analysis model was used using IBM SPSS-AMOS software. The study concluded that the direct and indirect effects of monetary variables have a weak role in directing bank credit towards the productive sectors in Iraq, due to instabilities within the Iraqi macro-economy that do not encourage the granting of bank credit on the one hand, or do not encourage making investment decisions, especially the desired one, which is embodied in turbulence. Prices in the exchange markets on the other hand.

**Keywords:** *Monetary variables; bank credit; productive sectors; path analysis model.*

## INTRODUCTION

Monetary policy variables are among the most important macroeconomic policies, which have a significant impact on economic activity in general, and on the banking sector in particular. Monetary variables represented by (interest rate, broad money supply, and exchange rate) in addition to bank credit and the productive sectors of the economy are among the most important topics in the economic arena.

The theoretical and experimental literature is not conclusive about the nature of these variables, but these variables can play an important role in shaping the relationship between them. Monetary variables are closely related to bank credit and the productive sectors of the economy. The credit granted by commercial banks plays an important role in supporting productive sectors or economic growth, as it is a financial intermediary between savers and investors. As the economic literature indicates, that the increase in the growth in bank credit leads to a direct increase in the growth of the real productive sectors, which flows into the growth of the gross domestic product. In this regard, Schumpeter was the first to refer to this relationship in 1911, when he confirmed that the banking sector (bank credit / bank loans) plays an important role in revitalizing the real productive sectors and increasing economic growth.

The previous relationship between (bank credit and the productive sectors) expands and decreases with the degree of the strength of the influence of monetary variables, because it is considered an exogenous factor that affects endogenous internal economic relations, including specifically the link or relationship between bank credit and the productive sectors.

Therefore, all countries aim to achieve growth in real productive sectors such as agriculture, industry and other economic sectors and to make them more sustainable. In this context, economic growth through the growth of the productive sectors is mainly one of the critical concepts that must be followed and reflected through macroeconomic indicators, including monetary indicators or variables. Monetary variables are very important to reflect the growth,

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<sup>1</sup>How to cite the article: Hassan S. A. Y., Al-Birmani S.M.A., November 2023; The Mediating Effect of Bank Credit Between Monetary Variables and Productive Sectors in Iraq Using the Path Analysis Model; *International Journal of Research in Social Sciences and Humanities*, Vol 13, Issue 4, 81-91, DOI: <http://doi.org/10.37648/ijrssh.v13i04.009>

development and well-being of economies. The stability of these indicators is also important and plays a major role, and it is effective in both the real and banking sectors. Accordingly, the instability of these indicators could lead to negative developments in economic stability and price stability, and may even lead to significant negative effects on the work of the banking sector and the productive sectors as well.

If the money supply decreases or the interest rate increases, it will have a negative impact on the link between bank credit and the productive sectors, which leads to a decline in economic growth and vice versa. As for changes in exchange rates, they have a significant impact on the productive sectors or the banking system. When the exchange rate rises, this leads to a decrease in the prices of local goods and services to become more competitive, and the demand for them increases, which leads to the revitalization of the productive sectors of the economy and vice versa. To withdraw financing or credit from the banking system automatically, (because the presence of active or effective productive sectors means the existence of an effective banking system), so the association here is inevitably direct. But in the Iraqi economy, these monetary variables are unstable, especially the exchange rate. There has been a decline in the value of the local currency against foreign currency in recent years, as a result of the government's devaluation of the Iraqi dinar, which led to significant negative effects on the Iraqi economy, and since the economy The Iraqi depends heavily on the oil sector in exchange for weakness in the real productive sectors. The instability of monetary variables will reflect negatively on these sectors, especially the banking sector. Therefore, it is necessary to study and discover the direct and indirect effects that may be caused by monetary changes or that may result from the change in these variables. On the productive sectors with and without bank credit in the Iraqi economy, especially for the period from 2004 to 2021.

## LITERATURE REVIEW

There are many studies that dealt with the subject from different aspects, but they did not take into account the intermediate variable, which is bank credit between monetary variables and productive sectors, nor did they use the path analysis model to measure the direct and indirect effects of monetary variables on productive sectors with and without bank credit, and these The studies are as follows.

(Moshabb, 2015), This studied aimed to demonstrate the effect of private bank credit provided by commercial banks on economic activity in Yemen for the period (2000-2012), using the causality of Cranger, Johansen, and incentive response functions. The study hypothesized that bank credit provided by Yemeni commercial banks to the private sector positively affects Yemeni economic activity. The study reached the following conclusions: that there is a unilateral effect relationship directed from private bank credit to GDP, and it also concluded that there is a long-term equilibrium relationship between the two variables, in addition to that, the study showed that there is little explanatory power of credit in explaining changes in GDP. Accordingly, the study recommended the need for the Central Bank of Yemen to review the supervisory tools related to credit facilities for the purpose of liberating commercial banks from all financial restriction policies, which encourages them to increase the volume of bank credit directed to the private sector in order to advance Yemeni economic activity.

(Hassan, 2022), The studied aimed to analyze the relationship between the monetary policy represented by the broad money supply and some of its indirect tools and the bank credit provided by commercial banks for the period (2005-2021). The study found a lack of consistency between the temporal trend of the broad money supply and the tools of monetary policy in bank credit during the same period, and therefore the study recommended easing rentierism in the Iraqi economy in order to enhance the impact of monetary policy in bank credit towards achieving monetary stability.

(Qasad, 2022), The studied sought to know the impact of monetary policy components on the Iraqi economic growth rate for the period (2000-2019). direct and significant effect in Iraq between the money supply and the growth rate, meaning that increasing the money supply by one unit will increase economic growth by (153%), and accordingly the study recommended the need for monetary policy to control the large monetary mass by achieving proportionality Balanced between the monetary mass and the Iraqi gross domestic product to reach the balance of the real and monetary sectors.

(Peykani, 2023), This studied investigated the effects of monetary policy on the real variables of the Iranian economy through the credit channel and the balance sheet channel for the period (1990-2020). The results of the study showed that, with the implementation of the restrictive monetary policy in the economy, all productive activities of enterprises decreased, which led to a decrease in family income, and in turn led to a decrease in family savings in the form of bank deposits, and since the most important sources of financing for banks are deposits, the ability of banks to make loans has shrunk. On the other hand, the restrained monetary shock has been associated with the depreciation of corporate securities. As a result, the amount of loans received by companies was reduced by the value of assets, which

led to a decrease in banks' demand for bank loans, and then to intensify the effects of the initial shock along with a decrease in the ability of banks to provide lending services. Moreover, the results indicated relative success. For the model in the macroeconomic simulation of Iran.

## **MATERIAL AND METHODS**

In this section, theoretical literature on the relationship between monetary variables, bank credit, and productive sectors will be presented, in addition to the path analysis model and some concepts related to it.

### **The Relationship Between Monetary Variables, Bank Credit and Productive Sectors**

#### **1. The relationship between interest rate and bank credit and production sectors**

When the central bank sends a signal of the nominal interest rate (the policy price), the real interest rate or the interest on bank credit granted to the productive sectors responds to the bank's interest rate signal, and then the productive sectors are affected by this mechanism. To clarify this mechanism, it can be included in two points, namely:

First: When the central bank raises the nominal interest rate, the real interest rate also rises (a positive relationship). High interest, that is, an increase in the cost of capital to obtain credit, and from here the commercial banks refrain from the volume of credit or loans towards their requester, which results in lower levels of investment and productive sectors as a result of the difficulty in obtaining financing by banks, and this contributes to a decline in demand at the macro level Low GDP and economic growth (Sayer, 2011: 12).

Second: Conversely, when the central bank lowers the nominal interest rate, the real interest rate also decreases (interest rates on credit decrease) (Shamkhi, 2022, P.1-2). Bank credit, which allows banks to respond to this demand, increases financing towards the loan applicant, and then increases the levels of investment or productive sectors and raises the level of gross domestic product and economic growth, but this may not happen much in revitalizing the productive sectors and economic growth or the exit of the economy from recession, Because the financial crisis after 2008 proved the inability of monetary policy to face the liquidity trap, despite the fact that developed countries cut nominal interest rates to zero, rather the real interest was negative at that time, Zero Low Bound, and thus monetary policy was paralyzed through its traditional tool. Interest in influencing the money supply, which prompted central banks to shift from the traditional interest rate tool to new tools, which is the policy of (quantitative easing), so it became called an unconventional monetary policy (Al-Dagher, 2019: 116-117).

#### **2. The relationship between money supply bank credit and productive sectors**

Monetary policy, through the money supply, affects bank credit and the productive sectors in two points, namely:

First: The restrictive monetary policy affects liquidity and the ability of banks to obtain credit, thus limiting credit to major borrowers, commercial companies and investors, which leads to an effective contraction in demand and investment. Thus, the effect of monetary policy through money supply on lending or credit depends on whether it is expansionary or contractionary monetary policy. (Hatem, Abdel-Saheb, 2017, P. 333). Therefore, monetary policy can affect productive sectors and the level of economic activity by changing the availability of bank credit through changes in the money supply. (Modugu and Dempere, 2022: 3-5). For example, Hernando and Martinez-Pages (2001) have argued that a restrictive monetary policy of reducing the money supply translates into a decrease in deposits with commercial banks, and this puts downward pressure on the amount of loanable funds to the extent that banks cannot compensate for this decrease in loanable funds, and there will be a decrease in the supply of bank credit, and some companies, consumers, and investors who depend on bank financing may not be able to access alternative sources of funds, and they were not able to compensate for the shortfall in the availability of this credit, and this may be forced to change their investment and spending decisions, If this is the case, the disturbances in bank credit will directly affect the decline in productive sectors such as agriculture, industry, and other sectors (Saleh and Al-Musawi, 2018, P. 404-405).

Second: Expansionary monetary policy, This policy is reflected in the increased money supply or the decrease in the rate of monetary policy, which represents a relaxation in monetary policy to the occurrence of a system to increase deposits with commercial banks and the volume of funds that banks have to lend. Thus, this mechanism allows monetary policy to operate without Looking at the interest rate, which implies that low interest rates may not be sufficient to stimulate investment or productive sectors (Ashoor, et al, 2021, P. 2-4).

### 3. The relationship between exchange rate bank credit and productive sectors

There are several cases that can be clarified to show the impact of exchange rate changes on bank credit and the productive sectors of the economy, namely:

First case: when the exchange rate is in a state of deterioration, that is, when the local exchange rate decreases, the value of the currency will rise (an inverse relationship). This situation is similar to the issue of inflation above, where the borrower benefits, who is the debtor or the customer, and the creditor, who is the lender or the credit-granting banks, is harmed, and thus this negatively affects the productive sectors, and here the commercial banks are in a position to reduce their credit towards the agricultural, industrial and other productive sectors. This means that the decline in the exchange rate leads to a decrease in bank credit, and then a decline in the productive sectors (a direct relationship) (Keshtgar and others, 2020: 41-43). On the accounting level, the balance sheet of banks has what is called the Unrealized Profits and Losses list, which is caused by the fluctuation of the value of the debt granted due to the fluctuation of the exchange rate, so the exchange rate decreases or the occurrence of inflation records Unrealized losses (Fadhila and Almsafir, 2015, P. 1559).

Second case: As for when the local exchange rate rises, the value of the currency will decrease, and here the situation will be in the interest of the lender (the creditor or the commercial banks that grant credit), and then the borrower or the debtor who will pay his debt installments will be harmed with a higher purchasing power and with a higher real interest, this situation allows the banks By extending more credit towards the productive sectors of the economy. In other words, the higher the exchange rate, the higher the bank credit and the higher the level of the productive sectors of the economy, and hence the increase in aggregate demand. And therefore, when that is recorded in the account of income or unrealized profits Unrealized Profits with commercial banks (Khudari et al, 2022).

Third case: In addition, exchange rate fluctuations play an important role in influencing the productive sectors of the economy and inflation expectations, especially in small, open economies in which foreign trade plays an important role. Investors in the resident, the demand for his assets decreases and money flows towards non-resident assets, and therefore the decrease in resident interest rates compared to non-resident ones results in a decrease in the exchange rate, which makes imports more expensive, while stimulating the export of productive sectors and resident assets, and then the demand increases (Salman, 2021, P. 121). On bank credit and revitalize these sectors. However, it must be noted that the depreciation of the exchange rate raises inflation as long as imports become more expensive in the local currency. In the other case, when the interest rate rises, the opposite is true (Al-Ani, 2019, P. 335-336).

#### Path Analysis Model

Path analysis is a statistical technique used to examine and test purported causal relationships between a set of variables. Causation is directional in nature and occurs when one variable (e.g. income) causes changes in another variable (e.g. consumption). The researcher identifies these relationships according to a theoretical model of interest to the researcher. The resulting path model and the results of a path analysis are usually presented together in the form of a path diagram. Although path analysis provides causal inferences about how variables are related, correlational data is actually used to perform the path analysis, and in many cases the results of the analysis provide information about the plausibility of the researcher's hypothesized model, but even when this information is not available, path analysis provides estimates of the relative strengths of causal effects and other associations between variables in the model, and these estimates are most useful to the extent that the researcher's specific model actually represents how the variables are related Right in the community of interest (Roy and Kathleen, 2007: 649). And Path analysis using Amos is a form of statistical analysis of multiple regression used to evaluate causal models by examining the relationships between a dependent variable and two or more independent variables. This method allows estimating both the magnitude and significance of causal links between variables. The pathway analysis model was developed by SEM Sewall Wright in Genetics and Biology in 1918 (Rick, 2023). Over time, this method was adopted in other physical and social sciences, including sociology, and today the researcher can perform path analysis with statistical software including SPSS, STATA, etc. This method is also known as Causal Modeling, and Analysis of Covariance Structures and latent variable models (Damon and others, 2019: 236).

#### 2. Terms used in the path analysis form

There are several terms used in the path analysis form that must be mentioned, namely: (Zaid and Bassiouni, 2021: 455-456).

1. Exogenous Variables, or what is called Independent variants: These are variables in which the change is attributed to a cause outside the causal model.
2. Endogenous Variables, or what is called dependent variables: These are variables in which the change is attributed to a cause within the causal model.
3. Intermediate variables: They are variables that mediate the relationship between the independent variables and the dependent variables, as the independent variable affects the dependent variable through them.
4. Residual Variables, or what is called random error: are other variables (outside the framework of the model) that affect the internal (dependent) variables, that is, they are variables that have not been entered into the model.
5. Direct impact (Direct Causation): The relationship between (X and Y) is a direct causal relationship if any change that occurs to the independent variable X leads to a direct change in the dependent variable Y, assuming the stability of the rest of the other variables outside form frame.
6. Indirect impact (Indirect causation): The relationship between (X and Y) is an indirect causal relationship if any change that occurs to the independent variable X leads to an indirect change in the dependent variable Y, through (Intermediate variables) with the assumption that all other variables outside the model window are constant. One of the main advantages of the path analysis model is that it takes into account the measurement of the effect of the independent variable on the dependent variable in the presence of the intermediate variable.








**2. Elements of the path analysis method**

The path analysis form consists of two main elements:

2. Path Diagram: A path diagram is defined as a schematic expression of a causal model, in other words, it is a graphic representation of the causal relationships between variables that shows the direction and strength of the relationship (Don, 2021: 199).

The path diagram provides (D. Betsy, 2022, 72), an image of the path model, and it is the graphic equivalent of describing the model with a set of equations, as the schematic diagrams of the path analysis model consist of several geometric shapes, which we will explain in Table (1) below (KAREN, 2013: 256).

**Table 1:** Geometric shapes used in structural modeling and their implications in Amos software

Geometric shape	its meanings
	This shape (squares or rectangles) is used to represent the measured variables, whether they are endogenous or exogenous.
	This circle or oval refers to latent variables, meaning that the variables inside the circle or oval are called latent variables.
	The single-headed arrow indicates the causal relationship, that is, the variable that the arrow comes out of affects the variable that the arrow reaches, that is, the effect is in one direction.
	These opposite arrows indicate a mutually influencing causal relationship (feedback).
	This type of two-headed figure indicates an associative, non-causal relationship.
	Construction error for latent variables.
	Measurement error of the observed variables.

2. Path coefficients: They are numerical estimates of the causal relationships between the variables in the path analysis, and they are interpreted as any amount of expected changes in the dependent variables due to one unit change in the independent variable, assuming that the rest of the other variables are constant. Therefore, the path coefficient is a

numerical indicator of the strength and direction of the relationships between pairs or several variables in a path analysis with any other variables that have direct paths to the same dependent or internal constant variable. And every coefficient of the path coefficient refers to the direct relationship between the original variable and the variable that receives the arrow (W. Paul and R. Burke, 2015: 316).

Thus again, path analysis is a set of statistical methods that aims to detect the direct and indirect effects of a set of observed variables. Path coefficients are standard regression coefficients (beta weights), that is, they are regression coefficients, and if non-normative path coefficients are included, they are usually called path regression coefficients.

## DESCRIPTION OF THE PATH ANALYSIS MODEL

After discussing the theoretical literature in Section 2, on the relationship between monetary variables, bank credit and the productive sectors, this section will focus on measuring the direct and indirect effects of monetary variables on bank credit and productive sectors in the Iraqi economy using the path analysis model method via IBM SPSS AMOS.

Based on the foregoing, the variables of the study can be described as follows:

- Monetary variables, which are (the interest rate of banks, or the interest rate on “credit” credit, the broad money supply MS2, and the parallel or real exchange rate).
- Bank Credit, which is a mediator variable, and it has two roles, as it is a dependent variable at times, and it is an independent variable at other times.
- The productive sectors except for the mining and quarries sector, which is as a variable dependent on the change in the independent variables, which are monetary variables, whether with or without bank credit.

Based on the foregoing, a table can be included showing the symbols used for the independent variables and the intermediate variable in addition to the dependent variable in the path analysis form.

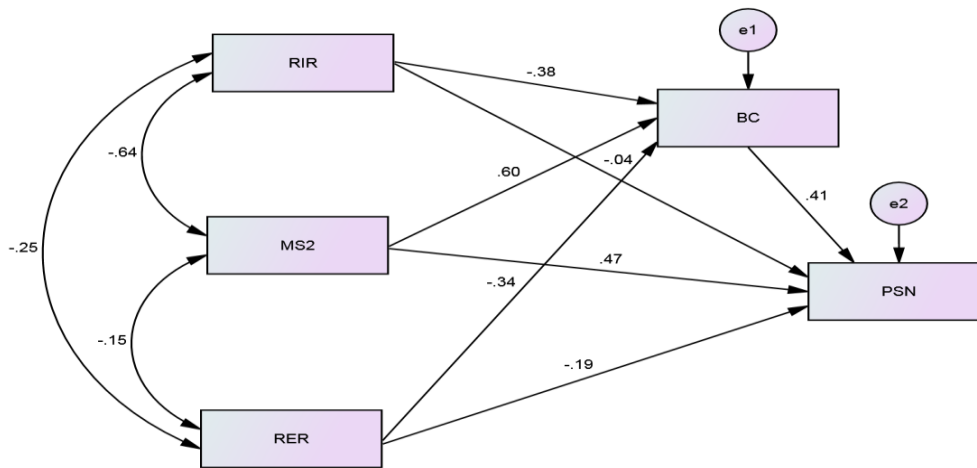
**Table 2:** The study variables in terms of (name, type, and code used) in the path analysis form

Sequence	Variable name		variable symbol	Variable type
1	Real Interest Rate	Monetary variables	PE	Independent
2	A broader money supply		PR	Independent
3	Real Exchange rate		ID	Independent
4	Bank Credit		BC	Dependent and Independent (Mediator)
5	Productive Sectors Non-oil		PSN	Dependent

## PRESENTATION AND DISCUSSION OF RESULTS

In this section, the results of the path analysis as in Scheme 1 and Table 2 will be presented, and later these results will be discussed.





Scheme 1: the results of the trajectory analysis

Table 2: Results of Direct Effects & Indirect Effects

Variable		Direct *	P**	Indirect	P***	S.E.	C.R.
BC	<--- RIR	-.383	***			704480.562	-7.314
BC	<--- MS <sub>2</sub>	.597	***			.045	11.637
BC	<--- RER	-.341	***			12203.720	-8.343
PSN	<--- BC	.409	.001			.049	3.257
PSN	<--- RER	-.190	.002	-.140	.047	7020.059	-3.116
PSN	<--- RIR	-.045	.540	-.157	.035	381334.043	-.613
PSN	<--- MS <sub>2</sub>	.469	***	.244	.039	.031	5.064

**The direct and indirect impact of the real interest rate (RIR) on the productive sectors (PSN) in the absence and presence of bank credit (BC)\*\*\*\*\***

**1. The direct effect of the real interest rate (RIR) on bank credit BC:** We note that there is a direct effect extending from the independent variable, which is the real interest rate (RIR), to bank credit BC by (-0.383). When the real interest rate increases by one unit, this leads to a decrease in bank credit by an amount (-0.383), meaning that there is an inverse relationship between the real interest rate and bank credit, and this is consistent with economic theory and the reality of the Iraqi economy, as the Central Bank of Iraq raised the nominal interest rate (the policy rate) after 2004, and as a result, the real interest increased. Imposed on bank credit to reduce inflation levels and withdraw the cash surplus from circulation, and therefore the increase in interest is a cost to the credit applicant, which ultimately leads to a decrease in bank credit, in addition to increasing the percentage of capital hedges, especially hedging for doubtful debts. According to the regulations issued based on Banking Law No. (94) for the year 2004, which is estimated at (50%) of the total bad credit and (100%) of the total bad credit, and in order to urge banks to move towards a market economy, the Central Bank of Iraq has adopted The policy of reducing the interest rate, to activate and support the productive sectors of the country, and this is what we will explain in the next point.

**2. The direct impact of bank credit BC on the productive sectors PSN:** We note that there is a direct effect extending from bank credit BC in turn as an independent variable to the dependent variable which is the productive sectors PSN by (0.41). When bank credit increases by one unit, this leads to an increase in the productive sectors by

- ⚙️ Some of the results in chart 1 are rounded numbers from table 2, because the path analysis model rounds them automatically.
- ⚙️⚙️ The stars in the table indicate the level of statistical significance at a value less than (5%), meaning it is very significant and less than (0.001).
- ⚙️⚙️⚙️ The P values for the indirect effect were extracted using the bootstrapping method.
- ⚙️⚙️⚙️⚙️ Before entering into the analysis, it must be noted that the direct effects all mean the absence of the role of the mediating variable, while the indirect effects indicate the presence of the role of the mediating variable in mediating between the independent and the dependent.

(0.41), meaning that there is a positive relationship between BC and PSN, and although the productive sectors in the Iraqi economy are weak, the construction sector accounts for the largest percentage of bank credit, due to the Collateral guarantees that this sector can provide compared to other sectors, while the construction sector Agriculture, industry, electricity and water have lower percentages of bank credit compared to the construction sector, and the productive sectors are weak sectors contributing to the gross domestic product, and the mining and quarries sector is the largest contribution to the generation of the country's gross domestic product.

**3. The direct impact of the real interest rate (RIR) on the productive sectors PSN:** We note that there is a direct effect extending from the independent variable, which is the real interest rate, RIR, to the dependent variable, which is the productive sectors, PSN, by (-0.045). When the real interest rate increases by one unit, this leads to a decrease in the sectors. Productivity by (-0.045), meaning that an increase in the real interest rate will lead to a decline in the productive sectors regardless of bank credit, which means in all cases that the productive sectors, although they are weak sectors in the Iraqi economy, are affected by changes in interest rates in a relationship negative. At the same time, it is an inverse relationship with a weak effect according to the aforementioned ratio, because the productive sectors are affected by changes in bank credit, and the latter is strongly linked to changes in interest rates with an inverse relationship, and in support of the above, we will show this when the type of mediation played by bank credit. In other words, despite the existence of the previous inverse relationship between RIR and PSN, the probability value was shown to be insignificant and greater than (5%) at Prob = 0.540, meaning that the real interest rate does not directly affect the productive sectors, but may It is indirectly through bank credit, which we will explain in Paragraph 4.1.4.

**4. The indirect effect of the real interest rate (RIR) on the productive sectors PSN in the absence and presence of bank credit BC:** We note that there is an indirect effect that extends from the independent variable, which is the real interest rate RIR, to the dependent variable, which is the productive sectors PSN, in the presence of the intermediate variable, which is bank credit BC by (-0.157), when the real interest rate increases by one unit, this leads to a decrease in the productive sectors with the presence of bank credit by (-0.157), meaning that there is an inverse effect between them, when the real interest rate increases and it is caused by an increase in the nominal interest rate or what is called the bank interest rate , which entails a decrease in bank credit, and therefore the latter decrease leads to a decline or decrease in the country's productive sectors by (-0.157).

Based on the foregoing, it can be said here that the real interest rate resulting from policy rate changes in the Iraqi economy has a significant impact on bank credit changes that are reflected in the productive sectors.

$$\begin{aligned} \text{Total effect} &= \text{Direct effect} + \text{Indirect effect} \\ &= -0.045 + (-0.157) \\ &= -0.202 \end{aligned}$$

As for the type of mediation, is it partial mediation or full mediation?

Table (2) shows that the direct effect of the real interest rate (RIR) on the PSN productive sectors is not significant and greater than 5% at a probability value of  $P = 0.540$ , while the indirect effect of the RIR on PSN is significant at  $P = 0.035$ . This means that the mediation is of the full type, that is, it is the bank credit BC that exercises a total role in influencing the productive sectors PSN, and not the direct impact of the interest rate on the productive sectors, in other words, that the productive sectors are not directly affected by the interest rate Real only through bank credit.

### **The direct and indirect impact of the broad money supply MS2 on the productive sectors PSN in the absence and presence of bank credit BC**

**1. The direct impact of money supply MS2 on bank credit BC:** We notice from chart (1) and table (2) that there is a direct effect extending from the independent variable, which is money supply MS2, to the dependent variable, which is bank credit BC by (0.60). Money supply by one unit, this leads to an increase in bank credit by (0.60), and this means that there is a direct relationship between money supply and bank credit. The more money supply increases, the more bank credit increases by (0.60). This mechanism is mostly an expansionary policy pursued by the Central Bank to target the productive sectors of the country, in other words, an increase in the money supply leads to a decrease in the interest rate, and since the latter is inversely related to bank credit as indicated in the first paragraph, this will lead to an increase in bank credit. It is a relationship that coincides with economic theory. However, it must be noted here that it is not important what the money supply leaves in terms of an increase in bank credit, but rather what the



latter practices in raising the level of the contribution of the productive sectors to the country's GDP, and this is what we will learn about in Paragraph 4.2.3.

**2. The direct impact of the money supply MS2 on the productive sectors PSN:** We note that there is a direct effect extending from the independent variable, which is the money supply MS2, to the dependent variable, which is the productive sectors PSN by (0.47). When the money supply increases by one unit, this leads to an increase in the productive sectors by (0.47). 0.47), which means that there is a direct relationship between the money supply and the productive sectors in the absence of the mediator, which is bank credit.

**3. The indirect effect of money supply MS2 on the productive sectors PSN in the presence of bank credit BC:** We note that there is a direct effect extending from the independent variable, which is the money supply MS2, to the dependent variable, which is the productive sectors PSN, in the presence of the intermediate variable, which is bank credit by (0.244), when the money supply increases By one unit, this leads to an increase in the productive sectors with the presence of bank credit by (0.244), meaning that the money supply contributes positively to the productive sectors through bank credit. Projects needed by Iraq.

In other words, the Central Bank's adoption of an expansionary monetary policy, represented by an increase in the money supply, is accompanied by a decrease in the interest rate, and then this leads to an increase in bank credit directed towards the productive sectors of all their classifications, whether (agricultural, industrial, electricity and water, or construction and building).

$$\begin{aligned} & . \text{ Total effect} = \text{Direct effect} + \text{Indirect effect} \\ & = 0.469 + 0.244 \\ & = 0.714 \end{aligned}$$

As for the type of mediation, is it partial mediation or full mediation?

The probability value of the direct impact of MS2 money supply on the PSN productive sectors showed that it is very significant and less than 0.001 as in Table 2, and the indirect effect is significant at a probability value of  $P = 0.039$ , and this means that the mediation is of the partial type, i.e. BC bank credit has played a partial role in influencing the country's productive sectors.

### **The direct and indirect impact of the parallel exchange rate RER on the productive sectors in the absence and presence of bank credit BC**

**1. The direct impact of the parallel exchange rate RER on bank credit BC:** We notice through the chart and the table itself that there is a direct effect extending from the independent variable, which is the parallel exchange rate RER, to bank credit BC by (-0.34), when the parallel exchange rate increases by one unit One that leads to a decrease in bank credit by (-0.34), meaning that there is an inverse relationship between RER and BC, and the reason for this is that there are factors resulting from instability within the macroeconomy that do not encourage the granting of bank credit on the one hand, or do not encourage taking Investment decisions are particularly desirable on the other hand, which are embodied by changes or price disturbances in the exchange markets.

**2. The direct impact of the parallel exchange rate RER on the productive sectors PSN:** We note that there is a direct impact extending from the independent variable, which is the RER parallel exchange rate, to the dependent variable, which is the PSN productive sectors by (-0.19). When the parallel exchange rate increases by one unit, this leads to this indicates a decrease in the productive sectors by (-0.19), meaning that there is an inverse relationship between RER and PSN.

The rise in the exchange rate, that is, the depreciation of the local currency, which means (an increase in the number of units of the local currency to obtain one unit of the foreign currency), is supposed to result in a decrease in the prices of goods and services at home to become more competitive, and an increase in the level of the country's productive sectors, But since there is a narrowing of the country's production base, i.e. (weakness of the productive sectors), imported goods are the most dominant in filling the local demand. Therefore, when the exchange rate increases in Iraq, this is reflected in an increase in the prices of imported goods and services in exchange for a decline in the productive sectors, and this which makes the inverse relationship between RER and PSN exist.

**3. The indirect effect of the parallel exchange rate RER on the productive sectors PSN in the presence of bank credit BC:** As we note that there is an indirect effect extending from the independent variable, which is the parallel

exchange rate RER, to the productive sectors PSN in the presence of the intermediate variable, which is bank credit by (-0.140), when an increase The parallel exchange rate by one unit, which leads to a decrease in the productive sectors with the presence of bank credit by (-0.140). In other words, there is also an inverse relationship between RER and PSN with the presence of BC.

And since the PSN productive sectors in the Iraqi economy are weak in meeting local demand in exchange for the dominance of imported goods and services in the Iraqi local markets, in addition to other factors resulting from instability within the overall economy that do not encourage the granting of bank credit as we have shown, this makes price changes in the markets Exchange as it happened at the end of the year 2020, and its reflection on the productive sectors of the country, with the presence of bank credit, an adverse effect between them.

$$\begin{aligned} \text{Total effect} &= \text{Direct effect} + \text{Indirect effect} \\ &= -0.190 + (-0.140) \\ &= -0.330 \end{aligned}$$

As for the type of mediation, is it partial mediation or full mediation?

Table (2) shows that the direct effect of the parallel RER exchange rate on PSN productive sectors is significant and less than 5% at a probability value of  $P = 0.002$ , and the indirect effect is significant and at a value of  $P = 0.047$ , which indicates that there is mediation Partial. In other words, BC bank credit has played a partial role in influencing the country's productive sectors.

## CONCLUSION

Based on the results reached using the path analysis model method, the impact of bank credit on the productive sectors has reached (0.41), and this means that directing bank credit towards the productive sectors is weak in the reality of the Iraqi economy despite the presence of this ratio, and this is due to several reasons. Including market risks or unstable expectations in the economy, as well as the weak credit rating of borrowers, on the one hand, and on the other hand, the monetary variables were not supportive in directing bank credit towards the development of productive sectors in the country's gross domestic product, because the results that were reflected in the direct and indirect effects Direct monetary changes had a negative impact on bank credit, which was reflected in the deterioration of the entire productive sectors of the Iraqi economy, especially since the exchange rate was highly volatile, which was reflected in a state of instability within the Iraqi economy, which caused its negative impact on bank credit and the productive sectors, whether with the presence of bank credit. Or without it, on the other hand, since the productive sectors are weak in meeting the internal domestic demand, this means that the Iraqi economy depends to a large extent on foreign imports to meet the country's domestic demand.

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