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Financial Variables and Their Effects on The Development of Bank Credit and Productive Sectors in Iraq Using a Path Analysis Model

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Abstract:

This study aims to measure and analyze the direct and indirect effects of the financial variables, namely (public spending, public revenues, internal debt, and external debt), on the non-oil productive sectors with and without bank credit as an intermediate variable, using quarterly data for the period (2004Q1–2021Q4), converted using Eviews 12. To measure the objective of the study, the path analysis method was used using IBM SPSS-AMOS. The study concluded that the direct and indirect effects of financial variables have a weak role in directing bank credit towards the productive sectors in Iraq, which amounted to (0.18), as a result of market risks or unstable expectations in the economy. In addition to the weak credit ratings of borrowers, this is on the one hand, and on the other hand, the majority of the credit granted by the Iraqi banking system has been directed towards the construction sector as a result of the guarantees that this sector can provide compared to other productive sectors. On the other hand, financial variables were not supportive in directing bank credit towards the development of these sectors in the country's GDP because the results reflected by the direct and indirect effects of financial variables were weak in supporting productive sectors with or without bank credit. (Especially since the local debt was competing with the private sector in obtaining bank credit, and this is called the effect of crowding out.)

Paper type: Research paper.

Keywords: Financial Variables, Bank Credit, Productive Sectors, Path Analysis Model.

1.Introduction

Fiscal policy variables are considered macroeconomic policies, and they have a significant impact on economic activity in general and on the banking sector in particular. Therefore, the financial variables represented by public spending, public revenues, the budget deficit, and what it means to have debt, whether internal or external, in addition to bank credit and the productive sectors of the economy, are among the most important topics in the economic arena. Theoretical and experimental literature is not conclusive about the nature of these variables, but it can play an important role in shaping the relationship between them. Financial variables have a close relationship with bank credit and the productive sectors of the economy, and bank credit, on the other hand, has a close link with the productive sectors. The credit provided by commercial banks plays an important and pivotal role in supporting productive sectors and economic growth. It is also considered a financial mediator between savers and investors, as capital is transferred from one person who has a cash surplus to another who needs this surplus to exploit it. in the production process and the use of human resources, and increase the productivity of capital. The process of granting bank credit is one of the main and important functions that commercial banks carry out to achieve their goals. The economic literature indicates that the rise in the degree of growth in bank credit leads to a direct rise in the levels of growth in the commodity productive sectors, all of which lead to growth in the gross domestic product. Schumpeter was the first to present this relationship in 1911, when he emphasized that the banker plays an important role in revitalizing the real productive sectors and thus the occurrence of economic growth. In other words, the link between bank credit and productive sectors expands and decreases with the degree of strength of the influence of nominal macroeconomic variables, including financial variables, as exogenous factors affecting economic relations, including specifically the link between bank credit and productive sectors as endogenous factors affected by economic variables. financial and monetary, either directly or indirectly.

Based on the identification of the link between bank credit and the productive sectors, the Keynesian theory confirmed that government intervention in economic activity through financial variables, especially public spending, and taxes, has a significant impact on bank credit and the productive sectors of the economy, as the expansion of public spending or The reduction in taxes is accompanied by an increase in the income of individuals and then an increase in the level of savings, which leads to an increase in the level of deposits with commercial banks, and in this case, commercial banks are in a position or opportunity that allows them to increase credit towards the various productive sectors and thus raise the level of growth and development. economic (assuming that the productive system is flexible and able to respond to these changes, which is the case in most developed countries, in addition to two other assumptions, namely, that there is no hoarding and that the interest rate is attractive to attract savers' money). On the other hand, this expansion of financial variables may lead to a cascading deficit in the public budget, forcing the government to borrow locally or externally. Suppose the government borrows locally, especially from the banking system. In that case, this leads to crowding out of the private sector, and in this aspect, there are two currents on the issue of government borrowing from the banking sector; some of them are performing and others are opponents, and they are the Keynesian current and the monetary current. The first went to support government borrowing under the pretext that the government does not crowd out the private sector, while the monetary current rejected that under the pretext of crowding out the private sector and worked to expel the private sector from financing, thus weakening the productive sectors. As for external government borrowing, its effect will be according to its uses. Either its purpose is limited to imports and does not affect the link between bank credit and the productive sectors, or it may be directed inward and affect this link.

Hence, it can be said from the foregoing that these variables are interrelated episodes, one after the other, so they must be taken into account when studying these effects, whether directly or indirectly. So, based on what has been said, the purpose of the study was to measure and analyze the direct and indirect effects of financial variables on the non-oil productive sectors with and without bank credit in the Iraqi economy for the period 2004–2021. Iraq has a problem with its productive sectors being weak or falling behind, which is why the study was done. The study starts with this problem, which casts a negative shadow on the reality of the Iraqi economy and makes it confined to one resource, which is the oil sector. Therefore, it is necessary to study and discover the direct and indirect effects that may result from changes in financial variables, specifically on the link between bank credit and the productive sectors of the Iraqi economy.

1.1. Literature Review

Many studies dealt with the subject from different angles, but they did not take into account the mediating variable, which is bank credit, between the financial variables and the productive sectors, nor did they use the path analysis model to measure the direct and indirect effects of financial variables on the productive sectors with and without bank credit. These studies are as follows: Munteanu and Göndör (2012) provided some empirical foundations for the argument that "cyclical fiscal policy does not help in reforming the banking system." Romania. If the study relied on market values to evaluate performance, residual income, market value added, earnings per share, and the price-to-earnings ratio, and according to this study, the evidence supports the claims that Romanian fiscal policy is procyclical and therefore destabilizing during the duration of the analysis, i.e., procyclical fiscal policy. It increases macroeconomic fluctuations and limits investment in real and human capital, and fiscal policy is positively related to investments, so some relationships between banking behavior and financial policy cycles can be considered, and the declining trend of the studied performance of banks can be considered a negative effect of reducing demand due to restrictive fiscal policy during the 2008 crisis.

Using the ARDL model, Marisa et al (2019) showed how the constant rise in government expenditure, bank lending, and population affected economic development in Indonesia from 2006 to 2016. According to the research, these factors affect Indonesia's economic growth. According to the study's findings, economic development in the Indonesian province of Aceh was mostly unaffected by population expansion but was positively impacted by government expenditure and bank lending. The research concluded that increasing government investment and bank lending should be prioritized in order to further boost economic development. The development of the regional economy in Indonesia might be accelerated by improving government budget management and increasing the amount of low-interest bank lending to SMEs.

In their study, Al-Baldawi et al (2019) aimed to comprehend the role that banks cash credit plays in reducing the negative effects of the decline in government spending rates on economic sectors in Iraq from 2014 to 2017. According to the study, the decrease in government spending in Iraq throughout the aforementioned time period has benefited certain economic sectors by limiting the negative effects. The study produced a variety of conclusions, the most important of which was that bank cash credit failed to reduce the effects of the economic crisis in certain places while succeeding in others. The study suggested raising the percentage of bank lending to assist the affected economic sectors in order to make up for the decline in government spending rates in these businesses. Fiscal policy has a favorable influence on bank lending in the Algerian economy. Maryam (2020) examined how it affected bank credit in Algeria from 1970 to 2015. Given that the public banks that make up Algeria's banking system are sponsored by the government, the fiscal policy directly affects the volume of bank lending in Algeria in the short term while gradually losing its effectiveness over time. The financial industry is undergoing significant changes, and there is a serious and open atmosphere.

Hassan (2022) analyzed 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 monetary policy tools in bank credit during the same period, and therefore the study recommended mitigating rentierism in the Iraqi economy in order to enhance the impact of monetary policy in bank credit towards achieving monetary stability. The problem of this research lies in the fact that the Iraqi economy suffers from weakness in the productive sectors in exchange for the dominance of the oil sector, which makes the Iraqi economy more vulnerable to shocks and puts the state at the forefront of the test of absorbing these shocks through its macroeconomic policy (financial and monetary), and from here it will reflect These variables have their effects on the link between bank credit and the productive sectors; that is, this link expands and decreases with the degree of strength of the influence of nominal macroeconomic variables (financial and monetary), as they are exogenous factors that affect economic relations by being endogenous factors, specifically the link between bank credit and sector productivity that generates national income. The objective of this research is to measure and analyze the direct and indirect effects of financial and monetary variables on productive sectors with and without bank credit by using the path analysis model method through IBM SPSS AMOS software.

2. Material and Methods

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

2.1. The relationship between financial variables, bank credit and productive sectors

2.1.1. The relationship between public expenditures, bank credit and productive sectors

The government uses its public expenditures as a tool to achieve the goals of fiscal policy because of their impact in various fields, especially their impact on economic variables, especially since the increase in investment spending increases productive capacity, which positively affects the national product (Ali and Muhammad, 2021). The expansion of public spending generates an increase in income, an increase in the level of savings, and thus an increase in deposits with commercial banks (Al-Ani and Hamad, 2018). In light of an appropriate economic environment that allows responding to this increased public spending, in addition to the presence of government support that provides services in all their forms and creates an attractive infrastructure for investments, whether it is agricultural, manufacturing, or other productive sectors (Shamkhi et al, 2022), commercial banks here play an important role as an intermediary in financing these projects. or the real productive sectors, thus raising the level of gross domestic product and achieving economic growth (Marisa et al, 2019). On the other hand, the effect may move in the opposite direction from the productive sectors to public spending through an increase in the incomes of the factors of production. This means that there is a direct relationship between expansionary public spending and bank credit, in turn, as key players in activating the level of productive sectors; this means that commercial banks play an important role in promoting economic development (Khudari, 2022), and vice versa. In other words, the impact of public spending on bank credit and the productive sectors is not a direct relationship but takes place through a variable (bank deposits), which is why the researcher included this variable to show the relationship between public spending and bank credit (Majeed et al, 2022).

2.1.2. Analysis of the relationship between public revenues, bank credit and productive sectors

Public revenues can affect bank credit through tax revenues and domain revenue. When tax revenues rise, they lead to a decrease in income and then a decrease in the ability of individuals to save (Al-Ani and Muhi, 2019). Deposits with commercial banks decrease, and thus bank credit decreases. When the latter decreases, the credit directed towards the sectors decreases. Productivity will decrease and economic growth will decline (Restrepo, 2019), and the opposite is true when tax revenues decrease. While the decline in oil revenues leads to a decline in public revenues and thus affects public expenditures by declining, this is reflected in the decrease in bank credit as a result of the decline in deposits and the decrease in bank liquidity, which leads to the decline of productive sectors (Tigran and Hesse, 2009). On the other hand, part of the public revenues may go as deposits by the government with its banks, which are allocations from revenues that have not yet been spent, which leads to a decrease in bank credit and thus a decrease in the growth of productive sectors (Al-Birmani and Abdullah, 2019).

2.1.3. The relationship between domestic debt, bank credit and productive sectors

Bank credit and the productive sectors of the economy are significantly impacted by government borrowing, particularly from commercial banks, to finance the overall budget deficit (Al-Kubaisi and Hassan, 2014). Bank credit declined in the private sector at a time when the government borrowed from commercial banks and lacked cash reserves, which led to a decline in the economy's productive sectors as a result of the competition the government created with the private sector (Emran and Farazi, 2009). The opposite, however, is true when bank cash reserves are in excess. Additionally, the situation didn't end there. Instead, it is possible to consider how the central bank feels about this government borrowing from private banks. The commercial banks in this situation cannot decrease their loans to the private sector when the central bank supplies banks with liquidity by regulating its quantitative tools. Therefore, there was no adverse effect on the economy's productive sectors (Ismail, 2003).

2.1.4. The Relationship Between external debt, bank credit and productive sectors

Government borrowing from abroad and its reflection on bank credit and the productive sectors of the economy depend on the situation in which these borrowed funds are directed, whether inward or outward for import. When the new money goes inside, the bank credit and the productive sectors of the economy are affected if this money is directed towards supporting the productive sectors by providing infrastructure and investment. In contrast, when the borrowed money goes abroad again, for example, for imports, the bank credit and the productive sectors are not affected as long as there is no change in the money supply (Ali, 1970).

2.2. Path Analysis Model

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 for 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, analysis of covariance structures, and latent variable modeling.

2.2.1. Terms used in the path analysis form

There are several terms used in the path analysis model that must be referred to, namely: (Abu Zayd, et al, 2021).

- i. Exogenous variables, or the so-called independent variants, are variables in which the change is attributed to a cause outside the causal model.
- ii. Endogenous variables, or so-called dependent variables: These are variables whose change is attributed to a cause within the causal model.
- iii. Intermediate variables: They are variables that mediate the relationship between the independent variables and the dependent variables, as through them the independent variable affects the dependent variable.
- iv. 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.
- v. Direct impact (direct causality): 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 the framework of the model.
- vi. 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. intermediate variables) with the assumption that all other variables outside the model 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.

2.2.2. Mathematical characterization of the path analysis model

The model seeks to discover and explain the underlying mechanism of an observed relationship between a dependent and independent variable by including a third explanatory variable, which is usually known as the intermediate variable. This can be illustrated by diagram (1) (Wayne et al., 2012).

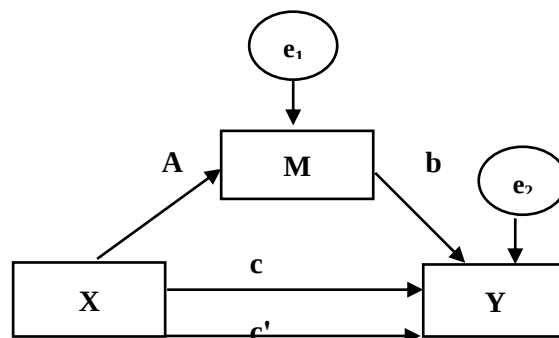


Figure 1: Path analysis model of the direct and indirect effect through the mediating variable
Since:

Variable X: is the original independent variable

Variable M: is the Mediate variable

Variable Y: is the dependent variable

c = Direct Effect

$a*b$ = Indirect effect

$ab + c$ = Total Effect

$e_1 e_2$ = residual variables.

Therefore, Figure (1) presents the mediating variable model, which enables the independent variable (X) to cause the mediator (M) and the resulting intermediate variable (M) to cause the dependent variable (Y), namely:

Independent variable $\longrightarrow$ median variable $\longrightarrow$ dependent variable

Hence it can be said, that the relationship between X and Y is affected by direct and intermediate influence which indirectly causes the effect of X on Y through M.

That is, Figure (1) can be displayed in several cases, namely:

- the effect of the independent variable X on the dependent variable Y, in the absence of the intermediate variable M, which is a direct relationship between them.
- the effect of the independent variable X on the intermediate variable M, which is also a direct relationship.
- the effect of the intermediate variable M on the dependent variable Y, which is also a direct relationship.
- the effect of the independent variable X on the dependent variable Y in the presence of the intermediate variable M, which is an indirect relationship.

Several main methods are commonly used to analyze the statistical mediation model between variables, and these methods are:

- i. The causal (first) step.
- ii. Difference in transactions (step two).
- iii. Multiply coefficients (the third step). The required information used in the three methods is mainly obtained from the four equations shown below:

$$Y = d1 + c X + e1 \quad \dots (1)$$

$$M = d2 + a X + e2 \quad \dots (2)$$

$$Y = d3 + c'X + b M + e3 \quad \dots (3)$$

$$Y = d4 + b M + e4 \quad \dots (4)$$

Since:

Y: represents the dependent variable.

M: indicates the intermediate variable.

X: represents the independent variable.

Coefficient c: measures the direct effect of X on Y, without the presence of M.

Coefficient a: measures the direct effect of X on M.

Coefficient 'c': measures the indirect effect of X on Y in the presence or absence of M.

Coefficient b: measures the effect of M on Y adjusted for X.

e1, e2, e3, and e4: These symbols indicate the remaining values.

d1, d2, d3 as well as d4: These symbols refer to the fixed term.

Based on the foregoing, the mediator effect refers to the effect of the independent variable on the outcome variable (dependent), and the size of the indirect effect is measured by the product of the coefficients $a*b$, and the mediator effect is also referred to as the indirect effect, and some researchers prefer the general term "indirect effect." Because the mediating effect means that there is an effect that must be mediated, and the direct effect c is the residual effect of the independent variable on the dependent that is not mediated by the variable M, and this means that the model analyzes the direct effect c, the mediating effect $a*b$, and the indirect effect c': ($c' = a*b + c$). Thus, the total effect equals the indirect effect plus the direct effect. Meaning: (Wayne, OP. Cit, 2012).

Total effect = Direct effect + Indirect effect

Total effect= $c + c'$

This means again, the total effect of the total direct effect is added to Holk Hit $a * b$, the indirect effect.

2.2.3. Description of the path analysis model

- i. After we discussed in Section 2 the theoretical literature on the relationship between financial variables, bank credit, and productive sectors, this section will focus on measuring the direct and indirect effects of financial variables on bank credit and productive sectors in the Iraqi economy according to the following points below:
- ii. The variables used in the study models were described by formulating them with mathematical equations and linear formulas only, because one of the assumptions of the path analysis model is that the equations are in linear formulas only.
- iii. In this section, the path analysis model method will be used because this model takes into account the role of the mediating variable.
- iv. For point No. 2, the SPSS program was used via Amos to measure the direct effect of the independent variables on the dependent variable in the absence of the mediating variable and the indirect effect of the independent variables on the dependent variable in the presence of the mediating variable.
- v. The study used the bootstrapping method to extract the significant or non-significant levels of the indirect effect.
- vi. Quarterly data covering the period (2004 Q1–2021 Q4) were relied upon and converted using the Eviews12 software, i.e., 72 observations, to reach the best results. Based on the foregoing, the variables of the study can be described as follows:

First: the financial variables, namely (public expenditure, public revenues (oil and non-oil revenues), internal debt, in addition to external debt), which are independent variables.

Second: bank credit, which is like a mediator variable and has two roles as it is a dependent variable at one time and an independent variable at another time. The bank deposit variable was also added as an intermediate variable between public spending and bank credit. Third: the productive sectors other than the mining and quarries sector (that is, except for the oil sector), which is a dependent variable for the change in the independent variables (financial variables), in the absence and presence of the mediating variable, which is 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 1: The study variables in terms of (name, type, and code used) in the path analysis form

Sequence	Variable name	variable symbol	Variable type
1	Public Expenditure	PE	Independent
2	Public Revenues	PR	Independent
3	Internal Debt	ID	Independent
4	External Debt	ED	Independent
5	Bank Deposits	D	Mediator between PE & PR
6	Bank Credit	BC	Dependent and Independent (Mediator)
7	Productive Sectors Non-oil	PSN	Dependent

3. Discussion of Results

In this section, the results of the path analysis will be presented as in Figure 2 and Table 2, and then these results will be discussed. These results were extracted using IBM SPSS-AMOS.

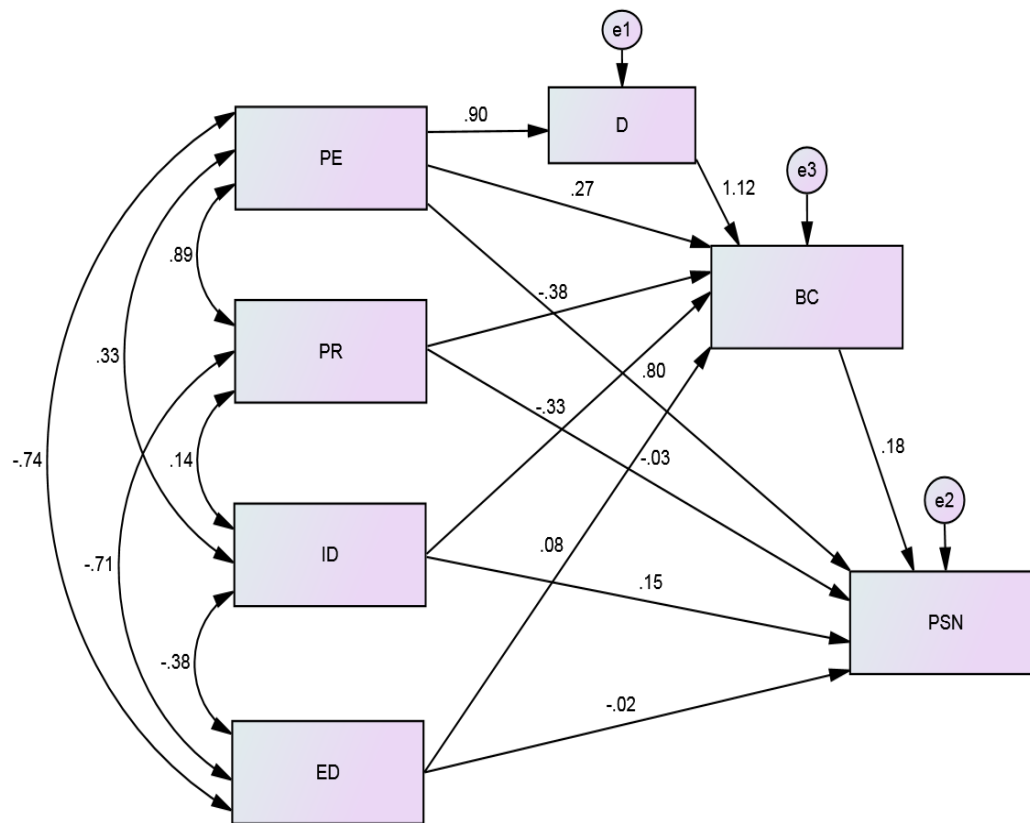


Figure 2: the results of the trajectory analysis

Table 2: Results of Direct Effects & Indirect Effects

Variable			Direct [•]	P ^{••}	Indirect	P ^{••••}	S.E.	C.R.
D	←	PE	.899	***			.050	16.927
BC	←	D	1.123	***			.095	17.027
BC	←	PE	.272	.004	1.010	.004	.129	2.865
BC	←	PR	-.375	***			.105	-5.196
BC	←	ID	-.333	***			.059	-9.604
BC	←	ED	.085	.005			.079	1.863
PSN	←	BC	.175	***			.011	5.033
PSN	←	PR	-.034	.492	-.066	.021	.023	-.686
PSN	←	ID	.153	***	-.058	.053	.014	5.977
PSN	←	ED	-.020	.497	.015	.015	.017	-.680
PSN	←	PE	.805	***	.225	.025	.029	12.140

3.1. The direct and indirect impact of public spending PE on the productive sectors PSN in the absence and presence of bank credit BC^{••••}

• Some of the results in chart 2 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.

3.1.1. Direct Effect of Public Expenditure PE on Bank Credit BC: We notice through Chart 2 and Table 2 that there is a direct effect extending from the independent variable, which is public expenditure, PE, to the intermediate variable, which is bank credit, BC, by 0.27, meaning that there is a direct and direct effect between public spending and bank credit when public expenditure, PE, increases by an amount. One unit increases bank credit by 0.27. This is supportive of the economic theory, as the increase in public expenditures leads to an increase in the incomes of individuals (because public expenditures are an important source of income generation in society), and then accordingly, the levels of savings and deposits in commercial banks increase, and then the level of cash reserves increases, and thus credit increases. From the foregoing, it appears that the direct impact of public spending on bank credit is weak, but what happens when the bank deposit variable D is added according to the previous mechanism?

When bank deposits D were added as an intermediate variable linking public spending PE and bank credit BC, the previous mechanism became completely different, and Figure 2 and Table 2 illustrate this. When bank deposits D were added as an intermediate variable linking public spending PE and bank credit BC, the previous mechanism became completely different. As we note that there is a direct effect between public spending PE and bank deposits D, when PE increases by one unit, this leads to an increase in bank deposits D by 0.90, meaning that there is a strong direct effect between public spending and bank deposits, and then we notice the direct effect. The second is between bank deposits D and bank credit BC. When bank deposits increase by one unit, this leads to an increase in bank credit by 1.12, which are all direct effects that explain the transition between the aforementioned variables. Based on the foregoing, the transmission mechanism of the direct effects described above shows or clarifies that public spending PE has a weak impact on bank credit BC, which amounted to (0.27), while other direct effects transmitted from PE to bank deposits D and then to BC They are strong direct influences among themselves.

After clarifying all of the above, we will know the indirect effect that public spending PE has on bank credit BC through the intermediate variable, which is bank deposits D. That is, is there an indirect effect of public spending on bank credit in the presence of bank deposits? This is what we will be able to know in the next point.

3.1.2. The indirect effect of public spending PE on bank credit BC: As we note that there is an indirect effect extending from public spending to bank credit in the presence of bank deposits D by an amount of (1.010), which is a high-strength effect between PE and BC in the presence of D by the same amount, when it rises PE by one unit, it increases BC by (1.010). This is in addition to any direct (non-mediated) effect that PE may have on BC.

With regard to the type of mediation, is it partial mediation or full mediation? Table 2 shows that the direct effect of public spending PE on bank credit BC is significant and less than 5% at a probability value of $P = 0.004$, and the indirect effect of PE on BC is also significant at a probability value of $P = 0.004$, which means that mediation here is of a partial type, meaning that bank deposits D play a partial role in influencing bank credit D.

Once again, we can summarize from the foregoing, that the direct effect of public spending PE on bank credit BC is a weak effect in the absence of bank deposits D, which amounted to (0.27), while the transmission of the effect of public spending on bank credit in the presence of the intermediate variable bank deposits D is Indirect and high-strength impact, which amounted to (1.010). This means that any increase in public expenditures (especially since expenditures in Iraq are mainly current expenditures) will lead to an increase in deposits with commercial banks by (0.90), and accordingly, bank deposits will lead to an increase in bank credit by (0.90). And then, accordingly, bank deposits will lead to an increase in bank credit by (1.12), and when multiplying the two coefficients, we will get the indirect effect of PE on BC. That is, if:

✿ 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.

- The direct effect of PE on D is (0.90).

- The direct effect of D on BC is (1.12).

When multiplied by the coefficients, the following results:

$$0.90 * 1.12 = 1.010$$

So, 1.010 is the indirect effect of PE on BC in the presence of D.

But it must be noted here, despite this exponential tripartite relationship in the indirect impact of public spending PE leading to an increase in bank credit BC in the presence of bank deposits D, but the bank credit was directed to where? This is what we will be able to find out in point number 4.1.3.

3.1.3. The direct impact of BC bank credit on the productive sectors PSN: We note that there is also a direct effect extending from the intermediate variable, which is bank credit BC, to the dependent variable, which is the productive sectors, PSN, by 0.18, which is a weak percentage affecting the productive sectors, which include agriculture, forestry, fishing, manufacturing, electricity and water, construction, and building. When bank credit BC increases by one unit, this leads to an increase in bank credit of 0.18, and bank credit directed towards these sectors is weak and low. The largest percentage of bank credit is acquired by the construction and building sector due to the collateral guarantees that this sector can provide. Compared to these other sectors, in addition to the weak credit rating of borrowers and the difficulty of evaluating guarantees in exchange for granting credit are other reasons that led to the weakness of directing bank credit to these sectors, and most commercial banks, especially private banks, do not have a high solvency that enables them to expand their credit activity and guarantee deposits. We should also not forget that there is a part of the bank credit that goes towards the other distribution and service sectors of the GDP.

We summarize from the foregoing: that the productive sectors PSN acquired a weak percentage of bank credit BC, which is (0.18).

3.1.4. The direct impact of PE public spending on the productive sectors PSN: As we note that there is a direct effect that extends from the independent variable, which is public spending, PE, to the dependent variable, which is the productive sectors, PSN, by (0.805), meaning that there is a direct and direct effect between public spending and the productive sectors in the absence of bank credit. When public spending PE increases by one unit, this leads to an increase in the productive sectors PSN by (0.805), but in the Iraqi economy and despite this direct effect, the reality indicates that the productive sectors are a weak contribution to the country's GDP, and this is due to several reasons. Including (financial and administrative corruption related to the suspension of most of the projects or production sectors spent by the government, that is, despite the increase in public expenditures to these sectors, they may be fictitious expenditures spent towards these sectors, but there is no significant implementation of them or they are idle and suspended, in addition to This is because the security tensions that the country witnessed, especially in the period of 2014 and beyond, also led to the cessation of most projects or economic sectors in Iraq.

3.1.5. The indirect impact of public spending PE on the productive sectors PSN in the presence of bank credit BC: The indirect effect indicates the influence of the independent variable, which is public spending PE, on the dependent variable, which is the productive sectors PSN, through the intermediate variable, which is bank credit BC, as we note that there is a direct effect extending from public spending to the productive sectors in the presence of bank credit by 0.225, which is a weak percentage in the presence of the mediator. When public spending (PE) increases by one unit, this leads to an increase in the productive sectors in the presence of bank credit of 0.225. This was in support of Paragraph 4.1.2. because the direct impact of bank credit on the productivity sector is weak, which was 0.18.

As for the total effect, it is the direct effect added to the mechanism of the indirect effect, that is:
 Total effect = Direct effect + Indirect effect
 $= 0.225 + 0.805$
 $= 1.03$

As for the type of mediation, is it partial mediation or full mediation? Table 2 shows that the direct effect of public spending PE on PSN productive sectors is very significant, and the indirect effect of PE on PSN is also significant at a probability value of $P = 0.025$, which means that the mediation here is of the type Partial, that is, the BC bank credit plays a partial role in influencing the PSN productive sectors.

3.2. The direct and indirect impact of general public revenues PR on the productive sectors PSN in the absence and presence of bank credit BC

3.2.1. The direct impact of public revenues PR on bank credit BC: Chart 2 and Table 2 show that there is a direct effect extending from the independent variable, which is public revenues PR, to the mediating variable, which is bank credit BC, by -0.38 , meaning that there is a negative (inverse) effect between public revenues and bank credit. When public revenues increase by one unit, this leads to a decrease in bank credit of (-0.38) , which is a weak reverse effect, meaning that when public revenues increase, bank credit decreases, but by a weak rate, and the reason for that is that public revenues in Iraq are mainly oil revenues and constitute about more than 90% of public revenues, while the remainder is due to non-oil revenues, and therefore the increase in public revenues and the surplus in the general budget as a result of the increase in oil prices may be used to increase government deposits. With banks, when government deposits exceed their debts, this leads to a reduction in the credit base of banks; that is, bank credit decreases.

3.2.2. The direct impact of public revenues PR on the productive sectors PSN: The chart and the table itself show that there is a direct effect extending from the independent variable, which is the public revenues, PR, to the dependent variable, which is the productive sectors, PSN, in the absence of the bank credit mediator by (-0.034) , meaning that there is a direct inverse effect between PR and PSN when public revenues increase by an amount. One unit, this leads to a decrease in the productive sectors by (-0.034) , meaning that public revenues do not contribute to increasing the productive sectors of the country, which is a realistic matter in the Iraqi economy, and even the investment expenditures generated as part of public revenues do not contribute to raising the level of productive sectors such as agriculture, industry, and other productive sectors, which contribute to the formation of the gross domestic product (GDP), as a result of the financial and administrative corruption associated with it and other reasons previously mentioned. Based on the foregoing, and despite the existence of the inverse relationship between PR and PSN, the probability value showed that it is not significant at $P = 0.492$, meaning that the increase in public revenues does not contribute to revitalizing the economic sectors of the country.

3.2.3. The indirect impact of public revenues PR on the productive sectors PSN in the presence of bank credit BC: We note that there is an indirect effect that extends from the independent variable, which is public revenues PR, to the dependent variable, which is the productive PSN sectors, in the presence of the mediating variable, which is bank credit BC, by (-0.066) , so at Increasing public revenues by one unit leads to a decline in the productive sectors with the presence of bank credit by -0.066 . This inverse relationship of the indirect effect coincides with the inverse relationship of the direct effect that has been previously explained. That is, in the sense that there is an inverse or negative relationship between public revenues PR and the productive sectors, except for the mining and quarries PSN sector, whether for the direct or indirect effect. The more public revenues increase, whether directly in the presence of bank credit or indirectly in its absence, the more productive sectors will decline, as a result of the reasons that have been clarified in Paragraph 3.2.1.

$$\begin{aligned}\text{Total effect} &= \text{Direct effect} + \text{Indirect effect} \\ &= -0.034 + (-0.006) \\ &= -0.100\end{aligned}$$

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

The direct impact of public revenues PR on PSN productive sectors is not significant and greater than 5% at a probability value of $P = 0.492$ as in Table 2, while the indirect effect was significant at a probability value of $P = 0.021$, which means that The mediation here is of the full type, that is, the bank credit BC plays a total role in influencing the productive sectors PSN, which amounted to (0.18) and replaced the independent variable, which is PR, but despite this mediation, it has a weak percentage of influence on PSN.

3.3. The direct and indirect impact of internal debt ID on the productive sectors PSN in the absence and presence of bank credit BC

3.3.1. The direct impact of internal debt ID on bank credit BC: Chart 2 and Table 2 show that there is a direct effect extending from the independent variable, which is internal debt ID, to the intermediate variable, which is bank credit BC, by (-0.33). When internal debt increases by one unit, this leads to This leads to a decrease in bank credit of -0.33. That is, in the sense that there is an inverse relationship between them, the more internal debt increases, this leads to a decline in bank credit, as the state's general budget has witnessed large deficits in some years, which forced the Iraqi government to turn towards internal borrowing to bridge that deficit, and the government used to issue remittances and bonds with commercial banks and the Central Bank to finance the public budget deficits, and this indicates that the government is crowding out the private sector in obtaining bank credit.

3.3.2. The direct impact of the internal debt ID on the productive sectors, PSN: We note that there is a direct effect extending from the independent variable, which is the internal debt, ID, to the dependent variable, which is the productive sectors except for the mining and quarries sector, PSN, in the absence of the intermediate variable, which is bank credit BC by (0.15), when the internal debt increases. By one unit, this leads to an increase in the productive sectors by 0.15, meaning that there is a direct relationship between them, but it has a weak effect.

3.3.3. The indirect effect of the internal debt ID on the productive sectors PSN in the presence of bank credit BC: We note that there is an indirect effect that extends from the independent variable, which is the internal debt ID, to the dependent variable, which is the productive sector PSN, in the presence of the mediating variable, which is the bank credit BC, by 0.05. internal debt by one unit. This leads to a decrease in the productive sectors with the presence of bank credit of -0.05. This opposite result coincided with Paragraph 4.3.1. We have clarified that the Iraqi government's resort to internal borrowing, especially from commercial banks, is the main reason for filling the deficits. In the general budget, which led to a decrease in bank credit, and as a result of this mechanism, the previous inverse relationship has negatively affected the productive sectors such as agriculture, industry, and other sectors by the same amount, meaning that the internal government debt, in turn, as an independent variable, has indirectly led to a decline in the productive sectors and not revitalized them despite the existence of the mediator, which is bank credit. Total effect = direct effect + indirect effect

$$\begin{aligned}&= 0.153 + (-0.058) \\ &= 0.095\end{aligned}$$

As for the type of mediation, is it partial mediation or full mediation? Table 2 shows that the direct effect of internal debt (ID) on PSN productive sectors is statistically significant and very significant. The indirect effect of ID on PSN was significant at a probability value of $P = 0.053$, which means that mediation is partial. This means that BC bank credit plays a small role in affecting the productive sectors of PSN, which was 0.18, but it is still a small percentage that affects PSN.

3.4. The direct and indirect impact of external debt ED on the productive sectors PSN in the absence and presence of bank credit BC

3.4.1. The direct impact of external debt ED on bank credit BC: Table 2 and Figure 2 show that there is a direct effect extending from the independent variable, which is external debt ED, to the mediating variable, which is bank credit BC, by 0.085. When external debt increases by one unit, this leads to an increase in credit. banker by (0.085). That is, in the sense that there is a direct relationship between them, the more external debt increases, the more this leads to an increase in bank credit, but it is a weak percentage. The state's general budget has witnessed large deficits in some years, which forced the Iraqi government to go towards external borrowing to bridge that deficit, and when entering foreign currency Inside the country, as a result of external borrowing, it needs the exchange rate to convert the foreign currency into a local currency, so most of the external debt is to finance public expenditures and bridge the budget deficit, and then this new monetary addition will increase part of the deposits with banks through public expenditures, resulting in an increase in cash reserves with banks and then an increase in bank credit.

3.4.2. The direct impact of the external debt ED on the productive sectors PSN: We note that there is a direct effect extending from the independent variable, which is the external debt ED, to the dependent variable, which is the productive sector PSN, by -0.020. When the external debt increases by one unit, this leads to a decrease in the productive sectors in the absence of bank credit by (-0.020), and despite that, it is an inverse relationship with a weak effect, and since the productive sectors in the Iraqi economy are weak in the composition of the gross domestic product, the new cash available will lead to an increase in aggregate demand without an increase in the productive sectors, which This mechanism causes an increase in the monetary mass and thus the occurrence of inflation since the productive sectors do not respond to the spending increase resulting from the money, meaning that this new cash money will turn into a demand for imported consumer goods and not into a demand for local goods since the latter is very weak in meeting the local demand and thus negatively reflects on the productive sectors of the country.

3.4.3. The indirect effect of the external debt ED on the productive sectors PSN in the presence of bank credit BC: We note that there is an indirect effect that extends from the independent variable, which is the external debt ED, to the dependent variable, which is the productive sector PSN, in the presence of the mediating variable, which is the bank credit BC, by 0.015. The external debt is one unit in the presence of bank credit, which leads to an increase in the productive sectors by (0.015), and despite this direct relationship, it is a very weak relationship, which means that the results are identical to the reality of the Iraqi economy.

Total effect = Direct effect + Indirect effect

$$= -0.020 + 0.015$$

$$= -0.005$$

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

At a probability value of $P = 0.497$, the direct effect of ED external debt on PSN production sectors wasn't significant and was greater than 5%. However, the indirect effect of ED on PSN was significant at a probability value of $P = 0.015$, which shows that mediation here is full, that is, the BC bank credit has played a total role in influencing the PSN productive sectors, which had reached 0.18 and replaced the independent variable, which is ED, but despite that, it is a weak percentage of influence on PSN.

4. Conclusion

Based on the results of the path analysis model, the effect of bank credit on the productive sectors is weak, with a value of 0.18. This means that directing bank credit towards the productive sectors is weak because of market risks or unstable expectations in the economy. This weak credit rating of borrowers on the one hand, and on the other hand, the majority of credit granted by the Iraqi banking system has been directed towards the construction and building sector as a result of the guarantees that this sector can provide compared to other productive sectors, and the financial variables on the other hand were not supportive in directing credit banking towards the development of these sectors in the gross domestic product of the state because the results reflected by the direct and indirect effects of financial variables are very weak in supporting the productive sectors, whether with the presence or absence of bank credit. (Especially since the local debt was competing with the private sector in obtaining bank credit, and this is called the effect of crowding out.)

References

1. Al-Ani, E.A. and Muhi, B. (2019), Analysis of the Consistency Between the Tariff and the Exchange Rate and Their Reflection on the Trade Balance in Iraq, *Journal of Economics and Administrative Sciences*, Iraq, Baghdad, Vol. 25, No. 115.
2. Al-Ani, E.A. and Hamad, K. (2018), The Role of the Government Securities Market on Iraqi Credit Worthiness, *Journal of Economics and Administrative Sciences*, Iraq, Baghdad, Vol. 24, No. 102.
3. Al-Baldawi, R.I. and Ismail, H.A. (2019), Analysis of the Interaction Between Bank Cash Credit and Government Spending in Iraq for the Period 2014–2017, *Iraqi Journal of Economic Sciences*, Al-Mustansiriya University, College of Administration and Economics, Iraq, Vol. 17, No. 61.
4. Al-Birmani, S.A. and Abdullah, H. (2019), Measurement and Analysis of Oil Price Fluctuations and Trends of Government Expenditure on Agriculture and Industry in Iraq for the Period (2006–2016), *Journal of Economics and Administrative Sciences*, Iraq, Baghdad, Vol. 25, No. 113.
5. Ali, A.A. (1970) *Studies in Money and Monetary Theory*, Al-Ani Press, Iraq-Baghdad, first edition.
6. Al-Kubaisi, M.S. and Hassan, N. (2014), Measuring and Analyzing the Causal Relationship between Investing Government Expenditure and Non-Oil GDP in Iraq for the Period (1990–2011), *Journal of Economics and Administrative Sciences*, Iraq, Baghdad, Vol. 20, No. 78.
7. Emran, M. and Farazi, S. (2009), *Lazy Banks? Government Borrowing and Private Credit in Developing Countries*, Institute for International Economic Policy. Working Paper Series, No.
8. Hassan, H. (2022) The role of monetary policy in enhancing bank credit in Iraq for the period: 2005/2021, *Iraqi Journal of Economic Sciences*, Al-Mustansiriya University, College of Administration and Economics, without vol, No .75.
9. Ismail, A. (2003) *The Theory of Government Expenditure – A Study in Its Legal, Financial and Economic Aspects*, University House for Printing, Publishing and Translation – Iraq – Baghdad.
10. Khudari, M. and Sapuan, N. and Fadhil, M. (2022), The Impact of Political Stability and Macroeconomic Variables on Foreign Direct Investment in Turkey, *International Conference on Business and Technology*, Springer, Vol. 488,
11. Majeed, O. (2023) The food gap of the most important agricultural products in Iraq for the period 2003-2020 and ways to face it, *Journal of Namibian Studies*, Vol.33, On Available: <https://namibianstudies.com/index.php/JNS/article/view/550>
12. Majeed, O. and Farhan, M. and Salloum, T. (2002), THE IMPACT OF DUMPING POLICY ON THE FOOD GAP OF CHICKEN MEAT IN IRAQ FOR THE PERIOD (2004-2019) - TURKISH IMPORTS OF CHICKEN MEAT A CASE STUDY, *International Journal of Professional Business Review: Int. J. Prof.. Bus. Review*, Vol 7, No 3.

13. Marisa, M. and Shabri A. and Majid, T. (2019), How Important are the Government Expenditure and Bank Lending in Promoting Regional Economic Growth?, East African Scholars Journal of Economics, Business and Management, Vol 2, No 3.
14. Maryam, H. (2020) The Impact of Fiscal Policy on the Volume of Bank Credit in Algeria – An Analytical Study for the Period 1970-2015, Journal of Banking Financial Economics and Business Administration Vol 9, No 2, Abu Bakr Belkaid University of Tlemcen.
15. Munteanu, A. and Göndör, M. (2012), Fiscal Policy and Performance of Banking Systems Interactions, The case of Romania, Procedia Economics and Finance, Petru Maior University, Vol 3. On Available: <https://www.researchgate.net/publication/257744500>
16. Rashwan, A., Nasr, B. and Abd al-Rahim, A. (2021), Using the Path Analysis Method to Determine the Factors Affecting the Inflation Rate in Egypt, Journal of Financial and Administrative Research, Port Said University, Vol 22, No 3.
17. Restrepo, F. (2019) The Effects of Taxing Bank Transactions on Bank Credit and Industrial Growth: Evidence from Latin America, Latin, Journal of International Money and Finance.
18. Rick, H. (2023), Handbook of Structural Equation Modeling, Guilford Publications, USA, Second Edition.
19. Shamkhi, M., Ahmed, D. and Majeed, O. (2022), The Effectiveness of the Manufacturing Industry in Iraq, Journal Homepage, Vol. 60, Part 3.
20. Tigran P. and Heiko H. (2009) Oil Prices and Bank Profitability: Evidence from Major Oil-Exporting Countries in the Middle East and North Africa, IMF Working Papers
21. Wayne, F., John, A. and Irving, B. (2012), Handbook of Psychology, Research Methods in Psychology, John Wiley & Sons, USA, First Edition.

المتغيرات المالية وآثارها على تطور حركتي الائتمان المصرفي والقطاعات الإنتاجية في العراق باستخدام نموذج تحليل المسار

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هذا العمل مرخص تحت اتفاقية المشاع الإبداعي نسب المُصنَّف - غير تجاري - الترخيص العمومي الدولي 4.0
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مستخلص البحث:

هدفت الدراسة إلى قياس وتحليل الآثار المباشرة وغير المباشرة للمتغيرات المالية (الإنتاج العام، الإيرادات العامة، الدين الداخلي، الدين الخارجي) على القطاعات الإنتاجية غير النفطية مع الائتمان المصرفي وبدونه كمتغير وسيط، وذلك باستخدام بيانات ربع سنوية للمدة (2021Q4-2004Q1)، وتم تحويلها باستخدام Eviews12، ومن أجل قياس هدف الدراسة، تم استخدام أسلوب نموذج تحليل المسار باستخدام IBM SPSS-AMOS، وخلصت الدراسة إلى أن الآثار المباشرة وغير المباشرة للمتغيرات المالية لها دور ضعيف في توجيه الائتمان المصرفي نحو القطاعات الإنتاجية في العراق والتي بلغت (0.18) نتيجة لمخاطر السوق أو عدم استقرار التوقعات في الاقتصاد، بالإضافة إلى ضعف التصنيف الائتماني للمقترضين هذا من جانب، ومن جانب آخر فإن غالبية الائتمان الممنوح من الجهاز المصرفي العراقي قد وجه صوب قطاع التشييد والبناء نتيجة الضمانات التي يستطيع هذا القطاع توفيرها مقارنة بالقطاعات الإنتاجية الأخرى. كما أن المتغيرات المالية من ناحية أخرى لم تكن داعمة في توجيه الائتمان المصرفي نحو تنمية هذه القطاعات في الناتج المحلي الإجمالي للدولة، لأن النتائج التي عكستها الآثار المباشرة وغير المباشرة للمتغيرات المالية ضعيفة في دعم القطاعات الإنتاجية مع أو بدون الائتمان المصرفي. (لا سيما وأن الدين المحلي كان ينافس القطاع الخاص في الحصول على الائتمان المصرفي وهذا ما يسمى بأثر المزاحمة).

نوع البحث: ورقة بحثية.

المصطلحات الرئيسية للبحث: المتغيرات المالية، الائتمان المصرفي، القطاعات الإنتاجية، نموذج تحليل المسار.