

# Measuring the Impact of oil Revenues on Monetary Policy Tools in Iraq for the Period (2003-2023)

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## Abstract

*Monetary policy is the axis around which various economic policies revolve, despite their different intellectual approaches, due to its direct impact that overlaps with all economic aspects of society. Monetary policy gains its strength from controlling money, as the latter is the axis in employing specific resources to satisfy scarce needs, meaning that money is the essence of the economy, and other economic concepts are only reflections of it. Production is money that depends on the interaction of desire with ability, saving is money, investment is money, and even economic problems are money. Poverty is nothing but its scarcity, wealth is nothing but its abundance, and the absence of justice is nothing but its absence in distribution. However, this straight direction of monetary policy is exposed to many challenges that reflect a trend from a means of achieving economic prosperity to a tool for deepening economic backwardness, and the reflection of rentier behavior is one of them, and even the most important in particular. Therefore, to create a clear picture of the adverse impact of oil rents, we must stop at the station of rentier effects on quantitative tools, to know the level of influence or not, so that this standard model is the basic starting point for moving towards developing quantitative tools for monetary policy in the Iraqi economy after describing the levels of rentier reflection on the indirect tools of monetary policy in its two aspects, the general aggregate and the specialized detailed.*

**Keywords:** Oil revenues, Monetary policy, Quantitative tools, Indirect tools, Impact of quantitative tools, Reflection of oil rent.

## Introduction

The study gains its importance from the centrality of monetary policy in the economy in general, and its impact on many macroeconomic variables. There is no development of economic indicators in Iraq except with the development of policy. In addition, it is the first study to measure the effects of the reverse paths of oil rents on their quantitative tools in the Iraqi economy.

### Study Problem

The monetary authority suffers from the lack of influence of its quantitative tools on the nominal stabilizers of monetary policy, and thus the lack of complete control over macroeconomic variables, and this weak relationship between quantitative tools and macroeconomic variables arises due to the adverse effects of the rentier state on monetary policy in the Iraqi economy, so the basic problem of the study is how to overcome this rentier link between oil revenues and quantitative tools?

### Study Objective

The study aims to shed light on the impact of oil revenues on the quantitative variables of monetary policy in Iraq in the period (2003-2023).

### Study hypothesis

The study assumes that the Iraqi economy suffers from the reflection of the rentier nature on the quantitative tools of monetary policy, which greatly reduced the effectiveness of the latter, as the dominance of the rentier nature of the Iraqi economy, expressed by oil revenues, led to a decline in the levels of effectiveness of the quantitative tools of monetary policy in the nominal stabilizers in the Iraqi economy.

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### *Study method*

The study adopted the standard statistical method in Bayesian statistics to measure the impact of oil revenues on the paths of the quantitative tools of monetary policy of the Central Bank of Iraq for the period (2003-2023).

### *Temporal and spatial boundaries of the study*

The study dealt with the analysis of monetary policy in the Iraqi economy for the period (2003-2023). The reason for choosing this period is that the Iraqi economy witnessed fundamental transformations in it, starting with the transformation of the system from socialism to the trend towards market reforms, and the transformation of monetary policy from clear subordination to the Ministry of Finance to apparent independence, the most prominent features of which were the emergence of the new Central Bank Law, in addition to many stations that it went through, whether political, economic or even social, and the reflection of that on many of the macroeconomic variables that the study will address for the mentioned period.

### *The first section: The concept and tools of monetary policy*

In this section, the researcher addresses the most important intellectual stations that took it upon themselves to clarify the literature of monetary policy, starting from the concept and its development over time, arriving at the management of the monetary authority, then moving on to explaining the most important tools of monetary policy, and how you can use those tools, whether in their contractionary or expansionary form. Therefore, this research was divided into the following demands:

#### *First: Definition of Monetary Policy*

Monetary policy is a concept that has been linked to money after its development with the development of man and his various needs and the expansion of the gap between needs and requirements. Various definitions have emerged for this concept, varying and multiple among themselves, but they all fall within the field of managing money and controlling economic stability.

When browsing what economists have concluded about the concept of monetary policy, we must go back to the eighteenth century, specifically to the writings of the founder of modern economics, the Scottish scholar Adam Smith, who showed in his book implicit indications about monetary policy in terms of its connection with the movement of money between different economies. He defined the wealth of countries by their ability to trade and eliminate economic isolation. This matter touches on the essence of monetary policy in the impact of the degree of economic exposure of countries on the movement of their monetary policy, as will become clear in the pages of the following study.

These ideas expanded to reach the famous equation of trade exchange of the economist Fisher in the nineteenth century, whose theory of trade exchanges is the first to link the two different sides of the economy: the price side and the monetary side. His theory reflects a basic aspect of monetary policy, which is the balance between the two sides as a basis for building economic stability, money and the price level. Although Fisher did not say that this is the responsibility of monetary policy, he directly indicated the necessity of creating an economic balance between money and the economy to maintain economic stability, from the effects of excessive money issuance, represented by the price increase in the general price level associated with the increase in money, or from the economic recession resulting from reducing the level of money in economic activity and entering the cycle of economic recession (Marouf, 2005, 242).

This limited view of monetary policy continued with the continuation of the classical view of economics, so we find that writers tended to assume that the monetary authority is an authority to achieve the principle of balance between price stability and the quantity of money, so we find that the economist Kent defined it as a set of means and tools used by the monetary authority to monitor and balance the money supply in the economy with the aim of achieving economic goals and maintaining comprehensive use, as Arthur defined it as the measures taken by the monetary authority to regulate the money supply (Al-Duri and Al-

Samarrai, 2006, 186). After reviewing the previous definitions, the researcher adopts the following definition of monetary policy as a set of goals and means taken by the Central Bank of Iraq to influence the macroeconomic variables according to the goals set for it.

### *Second: Quantitative tools of monetary policy*

*Indirect monetary policy tools can be explained as follows:*

#### *Open market operations*

Open market operations are defined as the monetary authority represented by the central bank influencing government securities markets in order to achieve economic goals (Al-Samarrai and Al-Douri, 2006, 205). Others define it as the central bank having the initiative to influence the levels of money in the economy by influencing securities (Ghadeer, 2010, 44). The contractionary purpose of monetary policy can be achieved by the central bank entering as a seller of securities, which leads to an increase in their supply in the markets and a decrease in their price. This results in two basic matters:

First: The expected return on the bond increases, based on the inverse relationship between the bond price and the expected financial return from it. A low-priced bond will have a high financial return rate, and vice versa (Baji, 2014, 35).

The second: is the indirect impact of open market operations on the level of money, and what is meant by the last trend is the impact on an intermediate monetary variable and the transfer of that impact to another intermediate variable and then the impact on the level of economic activity. The opposite occurs when adopting the expansionary behavior of monetary policy through the open market operations tool, as the central bank enters as a buyer of securities and thus injects economic activity with an additional monetary mass that contributes to stimulating the basic economic indicators to get out of the recession and revive the economic reality.

#### *Legal Reserve Ratio*

The legal reserve is defined as a percentage of cash deposits that banks are required to keep with the monetary authority represented by the central bank (Ghazlan and Al-Sariti, 2010, 301), and it is also defined as deducting a percentage of the total deposits of commercial banks and depositing them in the account of the central bank according to the economic situation.

This tool is the most widely used monetary policy tool in developing countries, due to its lack of the restriction of the development of financial markets imposed on the work of the open market operations tool, so many researchers describe it as a focal point for the work of monetary policy in developing countries (Al-Wazni and Al-Rifai, 2007, 237).

The mechanism for the transfer of the effect of the legal reserve ratio is from the side of the impact on the level of credit granted by the impact on the multiplier of money creation at commercial banks. These operations can be explained in terms of expansionary and contractionary monetary policy, as follows. If the central bank wants to adopt a contractionary policy to curb inflation levels, it will raise the legal reserve ratio and thus impact economic activity through two basic aspects:

**The first:** The researcher calls it the partial effect of the legal reserve, which means the effect of the legal reserve on the bank as a single institution and not on the economy as an integrated system of institutions, in which the commercial bank is only one part. The increase in this percentage means deducting a larger part of the funds that commercial banks direct towards borrowing and reducing excess reserves, and thus they will seek to protect themselves by raising interest rates to reduce borrowing from them on the one hand and to attract savings to confront the decline in it on the other hand (Al-Rifai, 2007 98), and thus the deflationary effect is transferred to the economy and the overall demand side is reduced to achieve deflationary purposes.

The researcher believes that considering this channel to transfer the effect of the interest channel can take more complex models when the legal reserve increases, as if the commercial bank were to confront the decreases in the reserve by selling securities, which is a protective behavior specific to the bank, but it represents a conflict with the contractionary behavior of monetary policy, because the repeated selling of bonds by banks to confront the decrease in excess reserves leads to a significant decrease in bond prices and thus a series of negative interactions in the economy. On the one hand, the central bank may be forced to confront these price decreases in bonds by purchasing part of them, and as previously explained, purchasing is an expansionary behavior of monetary policy, and thus the opposing force in the central bank increases and thus the conflict and fluctuation of the results in economic activity occurs in a way that may be higher than the economy's ability to absorb it. The same is true if the central bank does not purchase these bonds, then the low prices of the bonds will be reflected in a decrease in the level of bank capital, and at a rate that varies according to the level of reliance on securities, and thus the emergence of other negative repercussions on economic activity.

This effect resulting from raising the legal reserve can be called the partial effect of the legal reserve. Second: The researcher applies the name of the total effect of the legal reserve to it because raising it leads to an effect on the monetary multiplier and thus an effect on the ability of commercial banks to grant credit. It may be said that this effect is similar to the previous effect in limiting the granting of credit. The answer to that is that the effect in second is a coercive procedure resulting from a change in the value of the money creation multiplier in the economy and is not a partial procedure related to the bank's own ability to create money.

*The second topic: Measuring the impact of oil revenues on quantitative tools in the Iraqi economy*

The first model for measuring the impact of oil revenues on quantitative variables of monetary policy can be described as follows:

*First: Independent variables*

It is the variable that affects the model and is not affected by it, meaning that its value is determined outside the model, and is represented by oil revenues in the first model, as it reveals the rentier behavior of the Iraqi economy and is the main influencer in most of its tools, and is not affected by it, but is determined according to the quantity of production that is described as stable in the short term, and between prices the basic determinant for determining the value of oil revenues as mentioned above.

*Second: Dependent variables*

These are the variables that affect the model and are affected by the value of the independent variable. They are also called internal variables whose value is determined within the standard model, and represent the quantitative tools of monetary policy as follows:

Open market operations (OMP)

Legal reserve (Rr)

Foreign currency buying and selling window (Fc)

*Third: Interpretation of standard results*

This is the last station at which the standard model stops, and represents the goal for which the study proceeded after the theoretical completion and realistic interpretation of its variables. After entering the variables referred to previously in the standard model, the results referred to in the table below appear to us.

**Table (16):** Measuring the impact of oil revenues on monetary policy tools in Iraq

	Year	Oil	OMO	Fc	Rr
<b>Constant</b>	0.944	0.25	0.014	0.718	0.452
<b>year-lag1</b>	1	0	0	0	0
<b>Oil-lag1</b>	0.008	0.916	0.037	-0.004	0.039
<b>OMO-lag1</b>	0.15	0.102	0.946	0.001	0.071
<b>Fc-lag1</b>	-0.004	-0.068	0.058	0.673	-0.174
<b>Rr-lag1</b>	0.021	-0.086	-0.078	-0.17	0.685

From the data in the previous table, it is clear that there is a correlation between the rentier nature of the Iraqi economy, represented by oil revenues, and the quantitative monetary policy tools. The relationship between them can be described as follows:

*The impact of oil revenues on open market operations*

From the results shown in the previous table, it is clear that there is a direct correlation of (0.037), meaning that an increase in oil revenues by (1%) will lead to an increase in open market operations by (0.037%), which is a low percentage. The direct relationship between the two variables poses many questions. If oil revenues, which are the main source of funding for the budget, are increasing, why do open market operations increase with them?

Economic logic requires that the relationship between them be inverse, as resorting to increasing open market operations when oil revenue levels decrease and vice versa. The main purpose of open market operations is to finance government lending by issuing papers and trading them in the secondary market, in order to prevent dealing with them in the primary market, as was previously shown. Therefore, it may be said that there is no economic meaning to increasing their levels directly.

The researcher believes that this question, despite its economic logic, contradicts the reality that was analyzed. When the open market operations were analyzed in the second semester of the study, it became clear that there was a difference between them and other monetary policy tools, which indicates the existence of different relationships that govern the course of this tool. In periods of expansion in monetary policy tools, we see that there is an increase in open market rates that indicate contractionary behavior. In other periods of the study, monetary policy tools tended toward contraction, but this was accompanied by a decrease in sales of open market operations that indicate expansionary behavior. As for the relationship with various revenues, the subject is very similar.

The levels of the relationship between the two variables varied between the direct relationship that appeared in nine years of the study, and the inverse relationship that appeared in the rest of it. The researcher wants to point out that there is a theoretical disagreement in the essence of open market operations, which are not absolutely consistent with economic logic, nor even with the data of the economic reality of Iraq. Therefore, the levels of correlation between oil revenues and open market operations appeared low, not exceeding (0.037), meaning that the absence of a realistic economic ideology for open market operations is the main reason for the appearance of a small effect of this tool. As for the reason for the inverse relationship, the researcher believes that it is the result of many points that can be pointed out as follows:

*Rentier thinking of the financial authority*

Open market operations, as previously shown, consist of two sides: transfers from the Ministry of Finance and operations from the Central Bank. It is known that these two tools were legislated by the Iraqi government after the year (2003) to restructure the government debt on the Ministry of Finance and to feed the general budget expenditures. Therefore, this tool is linked to the reason for which it was legislated, and it increases with the increase in the government's need for it. It is known through the analysis of public expenditure data in the Iraqi economy that the levels of government expenditures have increased at positive rates during most of the study years, which means that the need for government financing has also increased, despite the increases in oil revenues. Rentier behavior in the Iraqi economy, which is based on the liquidation of wealth, does not only recognize the wealth of the present, but rather expands expenditures to ensure encroachment on the wealth of future generations, thereby violating the essence of sustainable development. Achieving the current needs of the Iraqi state is the most important, even if it harms the fate of future generations! Therefore, the researcher believes that the rentier mentality that ruled the Iraqi state always thinks about expanding its expenditures, and therefore the need for open market operations will continue and in a direct manner as long as the rentier mentality prevails in the Iraqi budget, which is the main reason for the emergence of the inverse relationship.

*The planned and self-financing deficit in the budget*

The levels of the deficit in the general budget, according to the explanation in the previous point, were increasing during most of the study years, and at different rates, and the increase in the deficit is closely linked to oil revenues and to the expansion of expenditures, as was explained. Therefore, the increase in the deficit means an increase in the levels of internal debt, which is met by the prohibition of direct lending in the Central Bank Law No. (56) of (2004). Therefore, the increase in the levels of the planned deficit led to an increase in the levels of open market operations during the study period in a direct manner.

In addition to the planned deficit, the increase in the levels of the self-deficit, i.e. the existence of a period of time between the collection of revenue and its spending, because Iraq's financial accounts in dollars are deposited in the American and European foreign banks, and the existence of any delay in the arrival of these revenues to the Iraqi state means an increase in the levels of the self-deficit in the general budget, and thus going to open market operations to finance it.

*Lack of control over the monetary base*

The money supply variable, as previously explained, is an external variable whose level is determined by global oil prices, and the central bank does not have a direct influence on the levels of the monetary base, i.e. it is directly and completely linked to oil revenues. It is known that the levels of the monetary base have increased during the study period, and therefore the central bank will increase open market operations, specifically central bank transfers, in order to absorb the excess cash liquidity that is injected into economic activity, i.e. the direct relationship here is to affect liquidity levels.

The researcher sees the three reasons above as the most important reasons that led to the deviation of the direction of open market operations from logical inverse to actual directness, and that this transition between the two parties has deprived this tool of a direct influence on the variables of economic reality in general and the nominal stabilizers of monetary policy in particular, as will become clear later.

*The impact of oil revenues on the foreign currency window*

When reviewing the standard analysis between oil revenues and the foreign currency window, it becomes clear that there is a negative correlation between the two variables, indicating the existence of a weak and descriptive inverse relationship of (-0.004), i.e. a change in oil revenues by (1%) will lead to a change in the currency buying and selling window inversely by (0.004%).



The researcher believes that the reason for this inverse relationship is the impact of speculation on exchange rates. It is known that exchange rates in the Iraqi economy are managed by a managed float system, in which the monetary authority intervenes in the supply side of foreign currency without having a direct influence in determining the demand sides. The first is characterized by monopoly because it reflects the rentier nature of the economy, as the private sector does not participate in the supply of foreign currency in the auction. The demand side is characterized by being composed of: demand for the purpose of import and personal purposes, in addition to demand for the purpose of speculation and monopoly profit that arises from the price difference between the official and market exchange rates.

The source of the negative relationship is the motive for monopolistic profit, i.e. the speculative aspect. If oil revenues rise, the monetary authority is given a wide space to intervene in increasing the levels of total supply of foreign currency regardless of the high levels of total demand, without the increases in demand for foreign currency causing the depletion of the reserve because every increase in demand levels is met by an increase in the levels of supply of foreign currency resulting from the increase in oil revenues. Consequently, market signals regarding exchange rates will tend to stabilize, and perhaps even tend to decline, which leads to a reduction in demand for foreign currency for the purpose of speculation. If the latter constitutes a high percentage of demand for foreign currency in the window, this will lead to a decrease in the levels of demand for window sales of foreign currency when oil revenue levels rise.

The opposite happens when oil revenue levels decrease, which results in a decrease in the central bank's purchases of foreign currency resulting from oil exports. Consequently, the central bank's ability to feed the total supply side of foreign currency will decrease. If this is accompanied by an increase in the levels of demand for foreign currency, its exchange rates will tend to rise in response to the excess demand for it. In this case, the central bank has no choice but to increase the supply side of foreign reserves, but at calculated rates to contain the increasing rise in exchange rates. However, in the face of rising exchange rates and the widening gap between the two prices, the demand for foreign currency increases for speculative purposes, which leads to an increase in the demand side for it. The window's sales side of foreign currency then rises to satisfy the excess market demand in the economy and prevent its reflection on the rise in exchange rates in the parallel market. The opposite happens when oil revenue levels decrease, which results in a decrease in the central bank's purchases of foreign currency resulting from oil exports. Consequently, the central bank's ability to feed the total supply side of foreign currency will decrease. If this is accompanied by an increase in the levels of demand for foreign currency, its exchange rates will tend to rise in response to the excess demand for it. In this case, the central bank has no choice but to increase the supply side of foreign reserves, but at calculated rates to contain the increasing rise in exchange rates. However, in the face of rising exchange rates and the widening gap between the two prices, demand for foreign currency increases for speculative purposes, which leads to an increase in the demand side for it. The window's sales side of foreign currency then rises to satisfy the excess market demand in the economy and prevent its reflection on the rise in exchange rates in the parallel market.

### *Third: The impact of oil revenues on the legal reserve*

Oil revenues are directly related to the levels of the legal reserve, as the correlation coefficient between them reached (0.039), which is a very low percentage, meaning that a change in the level of oil revenues by (1%) will lead to a change in the legal reserve by an opposite percentage of (0.039%).

The researcher believes that the reason for the emergence of the direct relationship is the government's dominance over economic activity in Iraq and the consideration of government spending as the main resource for economic activity, whether direct government or private through the multiplier effect in the Iraqi economy. When oil revenues decrease, this will lead to a decrease in the levels of government spending by the Iraqi government, and thus a decrease in investment and consumption levels according to the multiplier effect in the economy. However, these effects are cumulative and increasing, which leads to a decrease in the rates of economic activity within Iraq in general. This results in a decrease in private investment and thus a decrease in the levels of investment loans, and an increase in the levels of surplus reserves and thus a decrease in the levels of legal reserves as a result of the inverse relationship between them. This is due to the increase in the financial vessel imposed on the legal reserve ratio due to the low

demand for credit in the economy. The opposite happens when oil revenues rise, as it will lead to raising government spending levels and thus directly impacting government investment and consumption levels, which have a positive impact on national income levels through the multiplier effect. The occurrence of these cumulative increases in national income will stimulate the private investment and consumer sector, some of which depends on loans from commercial banks, which will result in a decrease in the levels of surplus reserves and an increase in the levels of legal reserves accordingly, due to the decrease in the financial base imposed on it due to the increase in demand for credit, as was previously shown.

The researcher believes that there is another effect of this inverse relationship, which is the effect of expectations in the Iraqi economy, as the latter is directly linked to the government due to the rentier nature that governs it as was previously clear, and therefore the optimistic and pessimistic expectations depend mainly on the activity of the government sector.

When oil revenues increase and government spending expands, the repercussions on the direction of economic activity will be positive, reflected directly in increasing levels of investment and consumption based on loans, which increases levels of demand for credit, and then the levels of excess reserves decrease from the side of demand for them, but the levels of the marginal propensity to save in this hypothesis will rise, so if the levels of savings are greater than the levels of investment, then the levels of the legal reserve of banks will rise.

The opposite happens when oil revenues decrease and internal and external debt levels increase to meet this spending. Therefore, the pessimistic outlook of the markets will expand in scope and directly influence the regulation of credit demand levels, whether to feed the consumer or investment side, in addition to the decrease in savings levels. This results in banks seeking to reduce costs, given that the decrease in credit demand represents a decrease in the general income of the bank as a commercial institution. Therefore, it will seek to reduce cost levels in the short term to reach the break-even point. The aspect of reducing interest on deposits represents one of the clearest examples of reducing costs, which causes a decrease in directing money towards savings, in addition to withdrawing it from banks towards investment in other assets, which results in a decrease in credit pool levels and a decrease in legal reserve levels accordingly.

That is, the direct relationship between the levels of oil revenues and the legal reserve has become clear through the previous effect, but the researcher believes that the low levels of this effect will be reflected in the future in restricting this tool in influencing the levels of market interest, and thus it is possible that it will lose its direct effect on the internal nominal stabilizer of the monetary policy of the Central Bank of Iraq.

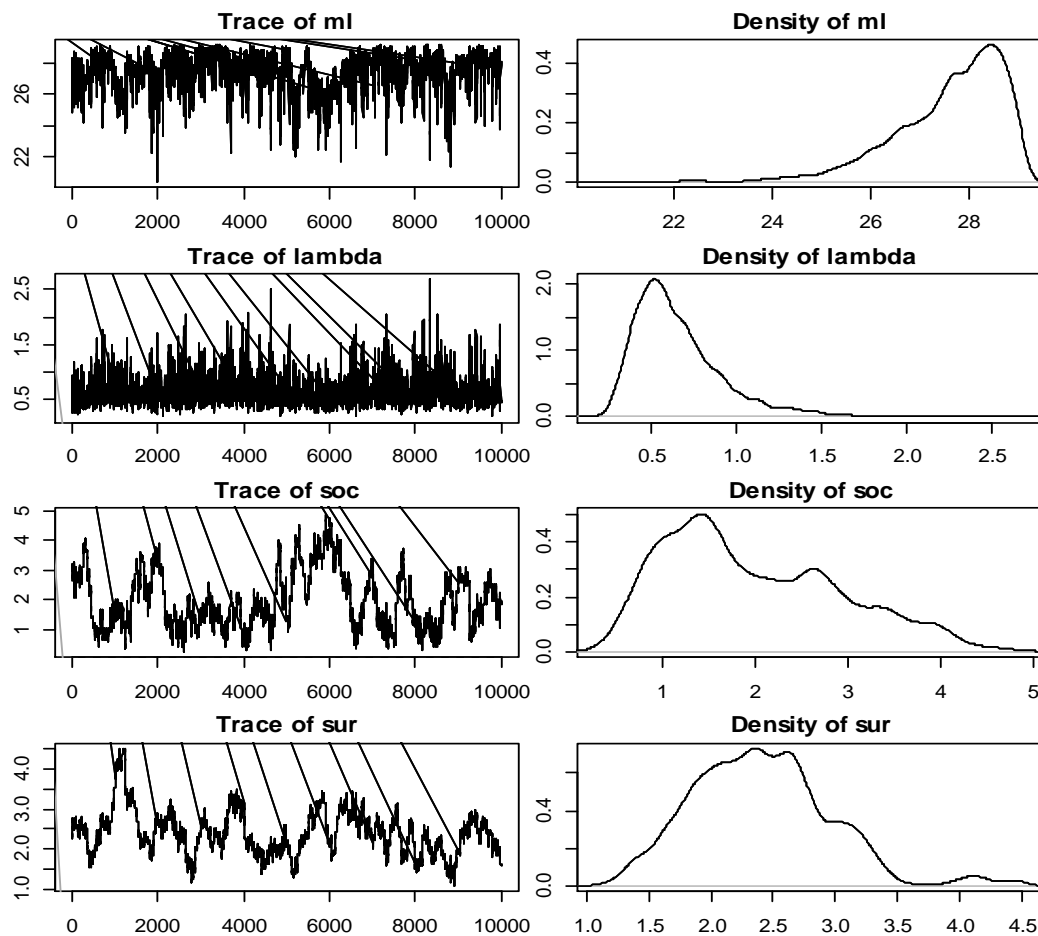
#### *Fourth: Probability distribution of parameters*

Bayesian statistics depends on the distribution of its parameters on Markov chains and Monte Carlo simulation, and the former is known to be random processes that have the (MARKOV) property of the model, where the future direction is known for each time period in the standard model.

The maximum probability density of the parameters that have been processed hierarchically can be illustrated in the figure below, where a good convergence of the Markov chain Monte Carlo (MCMC) algorithm can be verified through the left part of the figure below.



Figure (6): Representation of the effects and density of parameters in the model of the impact of oil revenues on quantitative tools



Representation of traces and densities of hierarchically-processed hyper-parameters and ML

The probability density coefficient corresponding to the first lag of the rent variable, i.e. the oil revenue coefficient in the Iraqi economy, can also be represented as shown in the figure below, and it is consistent with the natural law density in the standard model of the impact of oil rent on the indirect variables of the monetary authority in Iraq.

#### *Fifth: The impact of the oil shock on quantitative tools in Iraq*

One of the most important characteristics of the Bayesian estimation of the model is the latter's ability to create a mental image of causing a shock in the independent variable on the dependent variables, and this aspect is pivotal in the Iraqi economy because the aspect of external shocks and repercussions is the prevailing characteristic of its path. On the one hand, its economy depends on a resource characterized by its value being determined externally according to the forces of global demand and supply, and on the other hand, the Iraqi economy does not have sufficient flexibility to absorb external shocks, so the slightest impact on the values of external variables will lead to multiplier effects in the Iraqi economy, and from here the necessity of building a shock model and its centrality in forming a complete picture of the impact of rentier behavior on quantitative tools emerges.

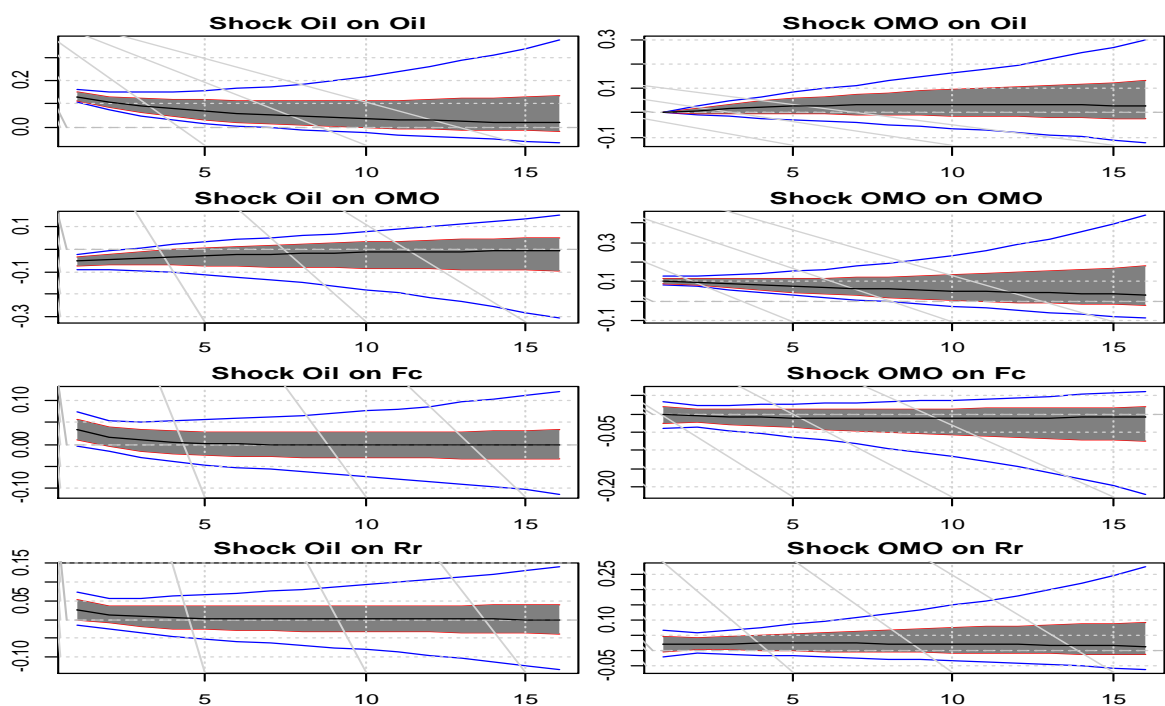
By tracking the impact of the shock in oil revenues on the quantitative variables of monetary policy, the following becomes clear:

The impact of the shock in oil revenues leads to a slight growth in the level of open market operations in the short and medium term, reaching a state of relative stability in the long term. The researcher believes that the main reason for this is the link between oil revenues and the Ministry of Finance's transfers, which made the latter grow at simple rates because they represent part of open market operations. The reason for their stability is due to the adaptation of government spending rates in the long term.

A shock in the level of oil revenues leads to a decreasing decline in foreign currency sales in the short term, which then begins to stabilize after the seventh year until the end of the fifteenth year. The reason for this is the direct correlation between oil revenues as the main financier of open market operations. The dollar sold by the Central Bank is the natural source of rent for the Iraqi economy. Therefore, any decline in its level will inevitably lead to a decline in window sales in the short term, leading to adaptation to low rates in the short term, and the option of adjusting the exchange rate is one of the means of this adaptation.

A shock to oil revenue levels leads to a decline in legal reserve levels during the first five years, i.e. the short-term impact period, after which it begins to decline at a slight rate until the seventh year, witnessing relative stability extending from the seventh year until the end of the period. The reason for this is the ability of oil revenues to influence the level of public and private economic activity, increase investment rates and consumption based on banking activity, and increase levels of demand for credit and their direct impact on excess reserves and legal reserve levels, as mentioned above.

**Figure (8): The impact of the shock in oil revenues on the quantitative tools of monetary policy**



Representations of the impulse response function (IRF) of the model variables.

#### *Sixth: Predicting the level of oil revenues and the quantitative tools of the monetary authority*

Building a complete picture of the present requires taking it as a starting point for the future. After the researcher has completed measuring the impact on the indirect tools of the monetary authority and the impact of the shock on them, it is necessary to move on to the future prediction of the study variables, whether at the level of the independent variable, which is the rentier behavior of monetary policy expressed by oil revenues, or at the level of the quantitative variables of monetary policy, noting that the prediction range extends for approximately seven years from the end of the study period.

By reviewing the future forecast of the variables under study, it becomes clear that the path of monetary policy tools and oil revenues will proceed in the years (2024-2031) as follows:

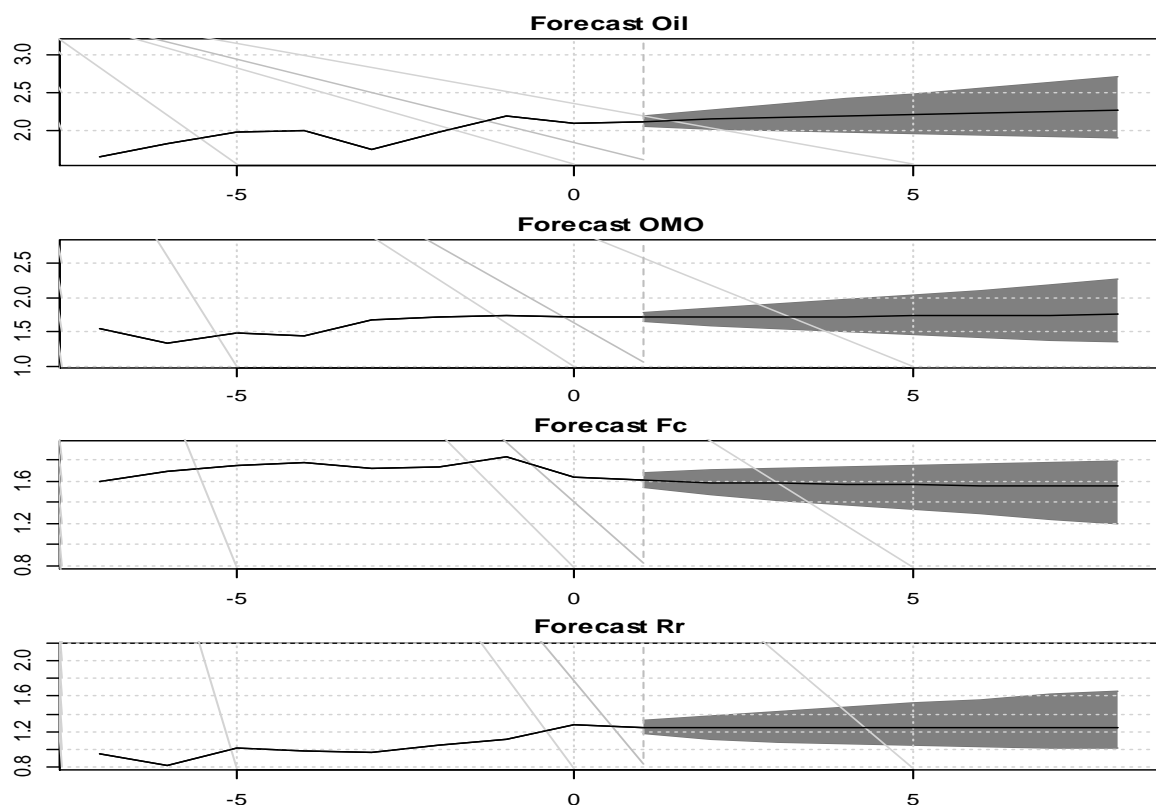
Oil revenues will increase between (2) and (2.5), and their increase levels will reach from (250) trillion dinars to (300) trillion dinars during the years (2024-2031), which indicates an increase in government spending levels and an increase in rentier dominance over the variables of the Iraqi economy.

Open market operations will increase from (1.5) to (2), i.e. open market operations will reach (75-102) trillion dinars during the years (2024-2031), which indicates an increase in domestic debt levels and an increase in reliance on trading securities in the secondary market to finance the government deficit. Therefore, the researcher does not see a disconnect between the impact of oil revenues on the economic direction of open market operations.

Sales levels from the foreign currency window will decrease by a maximum of (1.6) degrees, and the researcher believes that the dollar exchange rates will rise due to the increase in surplus demand, which is met by a decrease in the levels of dollar supply, which is reflected in an increase in exchange rates in parallel markets for the mentioned period.

A very slight increase in the legal reserve ratio, reaching (1.2), which indicates stability in the direction of commercial banks' business and their failure to move towards increasing their levels of financing economic activity in its investment and consumer aspects.

**Figure (9): Predicting the values of quantitative tools and oil revenues for the period (2024-2031)**



Forecast of the oil revenue, open market operations, foreign currency and Reserve requirement by 2031

The previous values of quantitative tools and oil revenues reflect the trend of monetary policy towards stagnation and stability during the short-term levels, and its failure to move towards renewal and disengagement from the behavior of the rentier state, which has caused monetary policy to lose its great

influence on economic activity and transferred it to a variable dependent on the influence resulting from the fluctuation of oil revenues.

## Conclusions

Oil revenues were directly related to open market operations by (0.037), meaning that an increase in oil revenues by (1%) will lead to an increase in open market operations by (0.037%). Open market operations, as previously shown, consist of two sides: transfers from the Ministry of Finance and operations of the Central Bank. It is known that these two tools were legislated by the Iraqi government after the year (2003) to restructure the government debt on the Ministry of Finance and to feed the general budget expenditures. Therefore, this tool is linked to the reason for which it was legislated, so it increases with the increase in the government's need for it. It is known that the levels of government expenditures have increased at positive rates during most of the study years, which means that the need for government financing has also increased, despite the increases in oil revenues, as rentier behavior in the Iraqi economy, in addition to the increase in the levels of the planned deficit in the general budget, and therefore the increase in the latter means an increase in the levels of internal debt, which led to an increase in the levels of open market operations during the study period.

The foreign currency selling window was inversely related to oil revenues, amounting to (-0.004). The reason for this inverse relationship is the impact of speculation on exchange rates. It is known that exchange rates in the Iraqi economy are managed by a managed float system, in which the monetary authority intervenes in the supply side of foreign currency without having a direct influence in determining the demand sides. The first side is characterized by monopoly because it reflects the rentier nature of the economy, as the private sector does not participate in the supply of foreign currency in the auction. The demand side is also characterized by being composed of: demand for import purposes and personal purposes, in addition to demand for speculation purposes and monopoly profit that arises from the price difference between the official and market exchange rates.

Oil revenues are directly related to the levels of legal reserves, as the correlation coefficient between them reached (0.039), which is a very low percentage. The reason for the emergence of the direct relationship is the government's dominance over economic activity in Iraq and the consideration of government spending as the main resource for economic activity, whether direct government or private through the multiplier effect in the Iraqi economy. When oil revenues decrease, this will lead to a decrease in the levels of government spending by the Iraqi government, and thus a decrease in investment and consumption levels according to the multiplier effect in the economy. However, these effects are cumulative and increasing, which leads to a decrease in economic activity rates within Iraq in general. This results in a decrease in private investment and thus a decrease in levels of investment loans, and an increase in levels of surplus reserves and thus a decrease in levels of legal reserves as a result of the inverse relationship between them. This is due to the increase in the financial vessel imposed on the legal reserve ratio due to the low demand for credit in the economy.

The forecast levels of the variables under study revealed that oil revenues will increase between (2) and (2.5), and their increase levels will reach from (250) trillion dinars to (300) trillion dinars during the years (2024-2031), and that open market operations will increase from (1.5) to (2), i.e. open market operations will reach during the years (2024-2031), and sales levels from the foreign currency window will decrease by a maximum of (1.6) degrees, while the legal reserve may witness a slight increase to (1.2).

## Recommendations

Identify the reasons for the legal restriction of the work of the monetary authority and legislate laws that contribute to the development of the work environment of the quantitative tools of monetary policy, whether at the level of laws and legislation regulating the tools or at the level of the nominal stabilizers of the monetary authority.

Work to change the percentage of contribution of the real sectors in the Iraqi economy. Reducing the percentages of rentier control in the economy, in addition to activating the basic sectors such as agriculture, industry and the financial sectors, is a basic condition for developing monetary policy. Indeed, it is not possible to talk about development or even the great effectiveness of the Central Bank without making a fundamental and comprehensive change in the percentages of participation of the real and monetary sectors in the formation of the gross domestic product.

Comprehensive reform of the economic joints that led to the decline in the effectiveness of monetary policy, such as working to activate the financial market, reduce the monetary impact of fiscal policy, and reduce the feeding of consumer expenditures that feed the gap in local demand. Carrying out these reforms requires the presence of things that Iraq lacks, both government and people, even if they exist in thought. The will for economic reform is a complex link that begins with developing the private sector in a real, not media-based, way, changing habits and consumption patterns, reducing dependence on oil resources, and other reforms.

Reformulating the objectives of monetary policy in a way that brings them closer to realistic rather than theoretical objectives, and the necessity of abandoning the objectives that require the redistribution of the productive apparatus in accordance with economic objectives. This matter is within the jurisdiction of the state alone, as the transition from the area of influence of economic policies to the total supply requires a real government decision and high coordination between economic policies, because talking about reforming the productive apparatus of the Iraqi economy means abandoning the rentier nature that the economy has always lived with and has become rooted in the souls of society. It is an area that the Central Bank of Iraq alone cannot achieve, but rather it is a coordination area between all economic policies.

Striving to achieve monetary stability, which represents a complete economic system that starts from preserving the Iraqi dinar, through combating inflation levels, the output gap, and the inflationary gap, ending with maintaining low exchange rate rates that help the productive apparatus and do not restrict it, as mentioned previously.

Striving to achieve financial inclusion by influencing the levels of banking services and increasing the impact on the factors that attract bank deposits, and the factors that motivate project financing through banks in order to complete the financial cycle and increase banks' control over liquidity levels in the Iraqi economy.

Working to increase the levels of monetary depth in the Iraqi economy, represented by increasing the levels of the ratio of broad money supply to output and increasing the level of credit granted by the private sector to the gross domestic product, which is considered the intellectual basis for increasing the effectiveness of monetary policy tools in the Iraqi economy.

Striving to keep pace with global financial progress by monitoring money laundering operations and financing terrorist operations and keeping pace with global methods because they are the current global challenge for the work of many global central banks.

Activating economic studies on the impact of digital currencies on the economy, and the efforts of some countries to establish central banks for them, as keeping pace with developments in this field is a weapon for the monetary authority to overcome its future backwardness, and increase the level of its economic effectiveness.

Seeking to develop the banking system in the Iraqi economy by enacting laws that facilitate its work at a level that does not harm quality and within international standards, and keeping pace with new international trends in money management in a way that reduces the cost of keeping it and wastes the alternative opportunity for investment, in addition to seeking to open branches of foreign banks in Iraq to increase the movement of investment capital towards the banking sector in Iraq.

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