THE ROLE OF OIL REVENUES TO ENHANCE INTERNATIONAL RESERVES IN IRAQ FOR THE PERIOD (2004-2021)

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Abstract: The important of oil revenues and their role in strengthening international reserves is one of the important topics that have aroused the interest of many researchers, because the revenues from exporting oil crude are subject to fluctuations in size due to their impact on several factors including oil prices crude global and the quantities exported
and the Iraqi economy is one of the unilateral rentier economies is dependent on only one resource, so it has become necessary to maintain international reserves of an optimal size because of their important role in facing internal and external shocks The problem of the study was the extent of the impact of oil revenues on international reserves in the Iraqi economy for the period (2004-2021).
The research study relied on the descriptive and analytical method, and modern standard approaches were used (vector auto regression Model) (VAR), and the use of data on oil revenues and international reserves for the period (2004-2021) through the use of the statistical program (Eviews12).
The study reached a set of conclusions: There is a significant impact of oil revenues in Iraq on the formation and of international reserves, where the relationship between them is positive. The higher the oil revenues, the higher the international reserves, which is a strong relationship, as the decline in international reserves cannot be compensated for, except through the increase in revenues. oil resulting from the rise in oil prices.and the establishment of an investment fund to invest the surplus from international reserves and reduce the opportunity cost.
Keywords: oil revenues, international reserves, oil price. Public revenues , Inflation

INTRODUCTION:

Oil prices witnessed fluctuations in prices, and this affects the oil revenues belonging to Iraq, and since oil exports are the main dominant exports over and therefore the increase or decrease in revenues affects negatively or positively according to the nature of the change witnessed by this sector, and these revenues are also the main source in financing public budgets And that the surplus of those revenues leads to the accumulation of international reserves, in which interest has increased, especially in developing countries with a rentier economy, as a source of safety in the event that economy is exposed to internal or external shocks due to the fluctuation of oil revenues, because international reserves have an important role in supporting the local currency, as well Providing liquidity and is considered a safety tool for external investors, as it has a role in achieving economic stability, and maintaining an appropriate level of international reserves increases the confidence of foreign investors in that country, and international reserves consist of basic elements (Foreign currencies, gold, special drawing rights, and the position International Monetary Fund reserves, other assets).

The importance of the research: It stems from the importance of international reserves in facing internal and external shocks and is considered as a cover for the local currency and enhancing confidence in the economy, and because Iraq depends on the export of a unilateral commodity, oil this made oil revenues a major role in the formation and of those reservesits growth.

Research problem: - The Iraqi economy depends by more than (95%) of the oil revenues resulting from the export of crude oil to global markets, and these revenues are exposed to severe

fluctuations for several factors, including the most important crude oil prices and the quantities exported, and therefore the following questions can be asked:

1- Do oil revenues affect the formation of international reserves in Iraq?

2- Do oil prices affect international reserves in Iraq?

Research objectives: The study aims to:

1- Statement of the relationship between oil revenues and international reserves in Iraq

2- Analysis of the relationship between crude oil prices and oil revenues

3- Statement of the components of international reserves in Iraq

The hypothesis of the study: - Oil revenues have an important and significant role in the formation of international reserves, as they generate financial surpluses. One of the two hypotheses can be proven:

1- It assumes that there is a statistically significant relationship between oil revenues and international reserves in Iraq.

2- It assumes that there is no statistically significant relationship between oil revenues and international reserves in Iraq.

The limits of the study :

1- Time period: (2004-2021).

2- Spatial borders: the Iraqi economy.

The first topic / conceptual framework for oil revenues and oil prices

First: 1- Oil revenues:

Public revenues are defined as the revenues obtained by the state or any official or unofficial entity from selling or renting the natural or non-natural resources it owns from its various sources. These revenues may be cash or in-kind (goods or services), but most of those Revenues are cash (Amara 31: 2015-32)

Oil revenues are defined as: they represent the financial revenues obtained by the countries that export oil, and that these revenues are closely linked to oil prices and the quantity of production, and the value of this revenue increases with the increase in the price and vice versa (Al-Shara, Hilal 133: 2019)

Muhammad defined it as: It is the financial returns of the producing and exporting countries of crude oil, and that the volume of those revenues obtained in exchange for oil is directly proportional to the rise or fall of oil prices and the degree of national control over those resources and the level of total production, so the stability of all factors leads to an increase in those returns (Muhammad, Jameel 307:2022).

Amin also defined it as "taxes that are paid to the state that owns the natural resources that lie within its lands in order to obtain licenses to exploit the subsoil in the stages of oil research and production, which differ from one country to another and according to the type and quantity of production. Through the above definitions, we can extract the most important common points Among them, which is specified (Amin 6:2016):-

A-   What is meant by oil revenue is limited to the countries producing and exporting crude oil exclusively, because oil is the main source of wealth in oil-producing countries, and this concept does not apply to countries that produce oil for domestic consumption only.

B-   Oil is a depleted natural resource, which makes oil-exporting countries gain legitimacy in obtaining oil rents, and for these countries to obtain a revenue that partially compensates them for the depletion of this natural wealth.

C-   Oil revenue does not come except for the production and export of crude oil which is carried out by various parties some of which are national or part of them are national, and the other is foreign, because oil-producing countries for the purpose of export, such as OPEC members, seek to increase their incomes because oil revenues depend on the state to finance the general budget. Low production seeks to increase oil investments without relying on these revenues to finance their budgets.

2-   Oil price: -It is the value of the oil commodity or monetary forms expressed in US dollars, and it is measured in units of a barrel that is equivalent to 159 liters and component (42) gallons in

a specific place and time, and that the oil price is subject to shocks of rise and fall (Daadoush 7:2020), and the drop in oil prices affects the investment expansion in Old and new oil production fields, assuming that other factors are constant (Salama 2015-18:19) and that the price of any commodity is determined in the majority as a result of the interaction between demand and supply for this commodity, as this interaction leads to the arrival of a specific price at which the quantity demanded is equal to the quantity supplied and economically it is The market is balanced and the price in this case is called the equilibrium price or the market price (Al-Sammak 1980: 177). The volatility of the oil price is one of the most important factors influencing the economy because oil is the largest commodity that is commercially exchanged, whether in terms of volume or in terms of the influencing value of this commodity over the rest of the commodities (Al-Shammari, Al-Nidawi (2012: 258).

3-   Factors determining oil revenues: There are several factors affecting oil revenues, including the fluctuation of oil prices, oil production and export capacity, inflation, and exchange rates

A-   **Nominal oil prices**: The rise and fall of oil prices affects oil revenues directly, and this fluctuation in oil prices is reflected positively and negatively in oil revenues. If the rise in nominal oil prices had a positive effect and vice versa.

B-   **Real oil prices**: These prices depend on the stability of the US dollar. Its decline negatively affects the real value of oil revenues, meaning that the purchasing power of oil revenues will lose a lot of gains as a result of the dollar's decline because the oil-exporting countries use the dollar as the official currency to settle their oil exports (Nashur 1:2012)

C-   **Production and export capacity**: It the amount of supplies available now and in the future, and as it is known that the increase in production capacity requires huge capital expenditures in order to discover more new fields and put what they contain to the market to meet the demand for it (Abu Miri 78: 2016).

D-   **Inflation**: It is defined as the rise in the price level of goods and services accompanied by a decrease in the purchasing power of the monetary currency. It is also known that the increase in the monetary mass in a country leads to a rise in the general level of prices of goods and services. There is a direct relationship between oil revenues and inflation if other factors remain constant. And inflation affects through erosion the real value of oil revenues, and this leads to higher production costs and lower profits (Jamil, Muhammad 2022: 307,308).

E-   **Fluctuation in the exchange rate of global currencies**:- It means the change in the parity rate between currencies with each other, as it is known that oil prices are denominated in dollars (Dawood 1054:2016).

Second / The conceptual framework of international reserves

1-   The concept of international reserves

The definitions of the concept of international reserves varied from one source to another, or from one researcher to another, according to the researcher's point of view or the goals he is working to achieve, but most of these definitions give the same meaning and content (Al-Khayyat et al. 10: 2019)

  It was defined as the external assets readily available and controlled by the monetary authorities to meet the financing needs in the balance of payments as well as to intervene in the exchange market to influence the exchange rates and for other related purposes such as maintaining confidence in the currency and the economy. The concept of international reserves is based on the framework of the general budget, with assets being considered Reserve is a general concept that does not include an external commitment to the monetary authority (IMF 3: 2013*)

It is also known: it is all the assets owned by the monetary authority, which can be used directly or through the possibility of their confirmed transfer to other assets to support the external balance in case of deficit, and international money is the broadest definition of it (Ali 404: 2015)

It is also known as foreign liquid assets, foreign currencies, foreign currency bonds, and gold under control (Josha 1:2007).

It is also known as the external assets subject to the control and control of the monetary authorities and at their disposal, and they include foreign currency, gold, deposits abroad, withdrawal rights, debt instruments issued by foreign entities, and the reserve position with the International Monetary Fund, which means participation in the fund's capital, and usable credit facilities or Fund loans (Ali 263:2021).

2-   Components or elements of international reserves:

International reserves consist of financial assets and internationally accepted means of payment, which address imbalances and are acceptable to remove the deficit when the sum of bigger. debtor side is On the part of the creditor in the balance of current and capital transactions, that is, the arithmetic settlement of that deficit that was recorded in the balance of payments of a country, and the components of international reserves developed through the development of international economic relations under the gold standard system, as the volume of international liquidity depends on an essential element, which is monetary gold available to them, as this system included the conditions to achieve a balance between the two countries, (Abdul Qader, Belkacem 223: 2018), we can indicate the elements of the reserves as follows:

A-   **Gold**: It is considered one of the basic elements of international reserves and was used in monetary exchange and settlement of international payments for the period (1870-1914) (Al-Shammari and Hamza 375: 2015) and what the monetary authorities own or any entities under the direct and actual control of the authorities and keep as a reserve asset. As for other non-monetary gold, owned by any party, which may include any commercial gold balance owned by merchants or companies for the purpose of trading in it, it is not included in the international reserves, and transactions are made in monetary gold only between the authorities and the corresponding authorities in the economies or other organizations. International monetary gold is considered a reserve asset and there are no corresponding financial liabilities (Yusuf 2008: 12).

B-   **Special Drawing Rights** :- They are book loans used by the International Monetary Fund that are granted to members of this new system voluntarily. It is an account unit that has a legal basis and is not a metal or paper currency. The issuance of Special Drawing Rights (Ajam 236: 2013), also known as paper gold, and the emergence of these rights came in the monetary crisis that was ravaging the monetary system that was established under the Bretton Woods Agreement during the period (1965-1971) if it meant the dollar from an actual crisis and its cause The inability of the United States of America to fix the dollar internationally is the reason for the emergence and creation of these new reserve units, which were considered among its elements (Al-Issawi 110: 2012), as the International Monetary Fund in 1970 allocated special drawing units with member countries and in agreement with the major industrial countries that are members of the Fund And consider it as a reserve currency, and these countries are the United States, Germany, France, Japan and the United Kingdom, (Hosni, Abdel-Al 2010: 77).

C-   **Foreign Currencies**:- Foreign currencies have become a percentage of the monetary cover, and it means strong, convertible foreign currencies such as the dollar, the euro and the Japanese yen (IMF 2013), and what the world witnessed towards economic openness, global transformation and market liberalization, the importance of dealing in currencies emerged and became one of the necessities of operations International trade, which is foreign currencies between countries of the world that are required to receive part of the value of their exports of these goods and capital in specific foreign currencies. (Fatis 25: 2017) , Among the types of foreign currencies are the following:

1- US dollar: After the end of World War II, the US dollar played the role of the dominant and dominant, and international banks used it as the basis for most of the assets and liabilities, and it achieved the status of the dominant currency. As the currency of the largest economy in the world on the one hand, and the United States of America fixed its member states' currency equivalent to the US dollar and kept the dollar as a balance in its reserves in addition to gold for the purpose of interfering in exchange rates and maintaining the stability of the value of its currency on the other hand (Al-Issawi 301 :2012) One of the most important reasons Which prompted the countries of the world to keep the dollar as a reserve currency:

A- The international pricing process: The US dollar is one of the main pricing currencies, such as gold, oil, natural gas, and others. Therefore, countries need the US dollar currency in order to pay the value of what they import from other countries, as countries that export strategic commodities reinvest their cash reserves in dollars in the economy. The American.

B - The US dollar is considered a safe haven in crises: The dollar is considered a safe currency despite the crises that afflicted the United States of America in 2008. The percentage of the dollar in the currency basket increased by (50%).

C - The US dollar is one of the investment tools in international financial assets: - The US debt is one of the most important and most traded debt instruments in the world.

D - The dollar is the main currency in the exchange market between two different currencies, one of which cannot be converted into the other.

C- The dollar is the currency of international exchange for the private sector, as it is held by individuals and institutions all over the world. (Fatis 26: 2017).

H - The US dollar is the currency of intervention in maintaining the prices of other currencies.

G - The payment process in the oil trade, and it is considered the basis in the oil trade and determining its prices in US dollars (Mousa et al. 2012: 111).

2- **The pound sterling**: - The pound sterling was able to occupy, for a long period of time that extended from (1900-1918), an advanced place in the formation of international reserves, as it represented the undisputed leading currency at the time, and the United Kingdom was the only one that took it upon itself to manage the helm of the monetary system International, as the pound sterling does not depend on the capabilities of the productive apparatus in England as much as it relies on the hegemony of the United Kingdom and its great military control as well as political control, and it is based on gold only theoretically because its reserves of gold were small in relation to the size of the issue (Al-Issawi, Al-Owaidi 47: 2014) And in the period (1949-1967) and after the successive decline in the value of the sterling, it affected the technical position of the sterling as a leading currency and a means of payment, and thus gave up the lead in favor of the US dollar (Zarari 79: 2016).

3- **The Japanese Yen (YEN):** The Japanese yen occupies the third place on the list of the most traded currencies in the world, due to the high interest rate, which amounts to (0.5%).It traded around the clock (Al-Kayed 117: 2010), and it is considered one of the most stable currencies relatively against the US dollar in the face of the successive declines in interest rates in Japan, and this reflected the increasing expansion in the Japanese current account surplus (Al-Naqash 106: 2006).

4 - **The EURO**: The efforts of the European countries were directed towards the birth of the unified monetary unit of the European countries known as the Euro. The birth of this currency came to confirm the success of the European experience that was planned for more than 50 years and dealt with on the first of January 2002 (Al-Hajjar: 210: 2003), where the euro has become one of the pillars of international reserves and liquidity maintained by central banks because the European Union has a clear weight in the global economy and trade. (Al-Shammari, Hamza 2015: 337).

D-   Reserves with the International Monetary Fund: It is defined as the amounts in foreign currency that a member state of the International Monetary Fund may withdraw in a specified period under the loan agreement in the account of public resources readily available to the member state and which are readily available to the monetary authorities to meet balance of payments financing and other needs (IMF2013: 21-22), and reserves are considered International is one of the tools to implement monetary policy and control and control the local exchange rates, and it is mainly done in countries that fix exchange rates and use reserves through purchases or sales of the leading currency in the exchange market in order to stabilize exchange rates at the target level, and this policy is used in Countries that follow a floating or managed exchange system. Therefore, international reserves are considered essential in the work of the currency selling window in countries whose economies are characterized by unilateralism. The public sector is the basis for the formation of international reserves. This, in turn, generates pressure on the reserves in order to continue the work of the window to control the stability of exchange rates and maintain

local liquidity. However, continuing with this procedure may cause the international reserves to risk declining and the failure of the monetary authorities' ability to achieve their goals (Al-Mayahi, Shendi 184 :2022).

E-   **Other reserve assets**: It includes all liquid, available and placed assets at the disposal of the monetary authorities, but it is not included in other asset and reserve categories and includes the following (IMF 23: 2013):

1- The total net market value of financial derivatives, including forward contracts, future contracts, swaps and options contracts with non-residents.

2- Financial derivatives complementing the evaluation of the assets available to the Monetary Authority, which enjoy high liquidity and depend on foreign currencies.

3- Short-term loans in foreign currencies to non-residents that are due for repayment from the Monetary Authority.

4- Long-term loans that can be recovered easily to meet imbalances in the balance of payments (Al-Fatlawi 17: 2017).

5- Other unsecured financial assets that are available for immediate use (such as shares of non-tradable investment funds).

6- Buying back liquid and available assets on demand that are controlled by the monetary authorities (Al-Araji, Al-Mamouri 499: 2021).

3: The link between international reserves and oil revenues:

The motive for countries to possess international reserves is liquidity, insurance, and hedging for the unexpected (23: Manchev 2009), and that those international reserves in foreign currency are appropriate and enhance confidence in the ability of the authorities to pay their financial obligations in a timely manner, and also to support the local currency and increase confidence in it and made it available Sufficient time to absorb shocks and face disasters and emergencies, as well as the impact of those reserves on their fluctuations and economic crises (Al-Shazly 2014:8). Oil revenues for rentier countries are considered one of the most important revenues that have a major role in determining the level of domestic production and spending levels, and it is also considered the main source of foreign currencies. If the proportionality between the flow of local currency and income, as well as the private sector's demand for currency, remains within the ranges that allow an increase in those international reserves in normal conditions, and in the event that oil revenues do not fall to lower levels than it was in the past (Ali 198: 2018), crude oil is considered a source to commodity and monetary capital, as it contributed at a high rate to the process of capital accumulation, especially in countries producing and exporting petroleum commodities in their various forms. The added value of oil is high, even if it varied from one production stage to another. Manufactured products are like oil derivatives, and the financial aspect of oil is represented in what it obtains from oil financial revenues in its various forms and types in the economies of the oil-producing and exporting countries, where the economy of these countries depends mainly and primarily on oil because it is the main source (Makhlefi 2014: 35) of foreign trade as it is an engine of growth And economic development through its impact on regulating the exploitation of economic resources, if foreign trade positively affects the process of capital accumulation and investment, and crude oil exports are the main engine of the economic development process, because the revenues from oil exports have a major role in bridging the imbalance in the production structures And that increasing oil exports is the main factor for the success of development efforts, creating job opportunities, and fixing the deficit in the balance of payments (Abu Miri 2016: 130-131), and oil revenues are associated with crude oil prices in a direct relationship, so the more oil exports increase, the greater the surplus in the current account balance It is also considered one of the main and important sectors in the formation of the gross domestic product of the oil-exporting countries and vice versa. The lower the oil prices, the lower the oil revenues, which constitute the bulk of the general revenues of the oil-exporting countries, which leads to a decrease in the current account balance (Al-Janabi, Al-Jabri 34:2020) And that rentier economies that depend on one sector and the export of a single commodity and neglect other sectors that help obtain foreign currency due to its importance as a source of income and

revenue, this economy is more vulnerable to internal and external shocks, so the importance of forming international reserves to face these conditions and imbalances and will make them less impactful Compared with those countries that do not possess reserves, and here their role in rentier economies is motivated by the precautionary reserve (Al-Fatlawi 73: 2017), and one of the most important reasons for the rise in the monetary basis of international reserves is associated with a surplus in the balance of payments, and when there is a deficit in the general budget due to a decrease in Oil revenues, that is, the source of foreign currency, lies in the main function of the international reserves in filling that deficit in the event that the volume of reserves exceeds the size of the deficit and achieves stability (Ali 2018: 106-107).

second topic: Analysis of the reality of oil revenues in Iraq for the period (2004-2021)

1- Oil revenues: The oil industries generate much more revenues for governments than other types of industries generate, which makes the governments of oil-producing countries have more revenues than the governments of similar countries that do not have oil (Nashwati 2014: 63,64) and that one of the most important reasons In increasing the volume of oil revenues and their sources are the nature of the oil itself with its unusual constituents and features and the government's ownership of the oil reserves, as the profits of the oil industry have increased since the seventies of the twentieth century with the government's control over it greatly (Nashwati 69: 2014), and that oil revenues depend on the basis of oil prices The higher the price, the higher the revenue, and vice versa. The greater the volume of sales (oil exports), the higher the return, i.e. they are directly related. We note that oil revenues in the Arab oil-exporting countries fluctuate constantly for two reasons: the decrease in the volume of exports and the decline in oil prices (Atika 1991: 113-114).

Table (1) Iraqi oil revenues and oil revenues of the OPEC countries for the period (2004-2021)

The year	Iraqi oil prices (in dollars)	Iraq's oil revenues (billion dollars)	The year	Iraqi oil prices (in dollars)	Iraq's oil revenues (billion dollars)
2004	36.05	17.751	2013	105.9	89.402
2005	50.64	22.950	2014	96.2	83.561
2006	61.08	29.500	2015	49.5	54.394
2007	69.08	37.300	2016	40.7	43.753
2008	94.45	58.200	2017	52.4	59.730
2009	61.06	39.307	2018	69.8	89..218
2010	77.4	51.589	2019	64	80.027
2011	107.4	83.006	2020	41.5	44.128
2012	109.55	94.103	2021	69.9	79.7888

- Prepared by researchers based on:

A– OPEC-Annual Statistical Bulletin 2004- and 2021.

B– The Central Bank of Iraq / statistical report for the period (2004-2021).

We note from the table that Iraqi oil revenues in 2004 amounted to (17.751) billion dollars, and in 2004 the oil revenues became (22.950) billion dollars due to the rise in oil prices, as oil prices reached from (36.05) dollars to (50.64) dollars, and the increase in revenues continued Oil prices increased in 2006 and became (29.500) billion due to the rise in oil prices from (50.64) to (61.08) dollars, which is the reason for the increase in those revenues. Oil prices are due to political conflicts and instability, as well as OPEC's reduction of the oil export ceiling for the purpose of achieving a balance between demand and supply. In 2009, it decreased to (39.307) billion dollars. And oil revenues increased in the years 2010 and 2011 to (51.589 and 83.006) billion dollars, respectively, while in 2012 oil revenues reached (94.103) billion dollars, which is the highest level of revenues during the period (2004 to 2012) due to the increase in oil exports as well as The high level of prices (109.55) dollars per barrel, which is the highest level of prices during the study

period. The reason for the high prices comes due to the imposition of sanctions on Iran, as well as after working on licensing rounds and attracting investment of foreign companies operating in Iraq. In 2013, there was a slight decline in oil prices, which led This led to a decrease in oil revenues, which became (89.402) billion dollars, and in 2014 oil prices fell, and this in turn led to a decrease in those revenues to (83.561) billion dollars, and in 2015 oil revenues became (54.394) billion dollars due to the entry of terrorist groups into Iraqi territory. Due to the decline in global demand, this led to a decrease in oil prices (49.5) dollars per barrel, which affected the revenues negatively. As for the period (2017-2021), oil prices witnessed a state of disparity between ups and downs, and this affected oil revenues. In 2017, oil revenues increased and were estimated at (59.730) billion dollars due to the rise in oil prices, as it became (52.4) dollars. In 2018, oil revenues increased to (89.218) billion dollars due to the rise in oil prices, as the price reached (69.8) dollars per barrel with the increase in oil exports. In 2019, the revenues decreased to (80.027) billion dollars, but the decline in oil prices caused the decline in oil revenues. In 2020, it became (44.128) billion dollars due to the spread of the Corona epidemic and the turmoil in the oil markets, and oil prices fell to (41.5) dollars, in 2021 after the Corona pandemic receded and the closure restrictions on the oil markets were eased, as prices rose again and became (69.9). Dollars Oil revenues amounted to (79.788) billion dollars

2-Components of international reserves in Iraq for the period (2004-2021):-

The international reserves of the Central Bank of Iraq consist of international reserve investments in Iraq with foreign central banks and international financial institutions, gold, special drawing rights (SDR), and foreign exchange in the treasury of the Central Bank of Iraq

Table (2) The main components of international reserves in Iraq for the period (2004-2021) (Billion dollar)

The year	Foreign cash in bank vaults	Special drawing rights(SDR)	gold	Balances in foreign banks (Investments)	Foreign reserves
2004	1.92	0.736	0.079	6.66	9.395
2005	2.687	0.666	0.097	8.8	12.25
2006	2.623	0.635	0.108	14.594	17.96
2007	1.32	0.129	0.152	28.85	30.451
2008	3.20	0.399	0.162	45.56	49.321
2009	1.634	2.087	0.208	40.406	44.335
2010	1.31	2.037	0.265	47.03	50.642
2011	1.32	2	0.294	57.42	61.034
2012	1.98	1.986	1.59	64.77	70.326
2013	4.58	1.822	1.631	69.71	77.743
2014	5.12	0.96	3.4	55.64	65.120
2015	1.78	---------	3.046	48.54	53.366
2016	1.96	---------	3.316	38.94	44.216
2017	1.46	---------	3.723	42.99	48.173
2018	2.06	---------	3.940	57.88	63.880
2019	0.98	---------	4.678	61.50	67.158
2020	3.37	---------	5.855	44.77	53.995
2021	1.68	--------	5.774	55.92	63.374

- Prepared by researchers based on:

A-   The Central Bank of Iraq / statistics and research / annual statistical report, annual monetary policy report for different years (2004-2021).

C–   The Central Bank of Iraq / basic financial indicators.

D–   The ratios are calculated by the researchers.

We note from Table No. (2) the fluctuation of international reserves if the total international reserves in 2004 amounted to (9.395) billion dollars, and the balances in foreign banks developed in 2005 to (8.8) billion dollars, and the gold reserves were (0.097) billion dollars, which It began to grow during the study period, as it recorded in 2021 (5.774) billion dollars, but in 2009 and due to the global financial crisis, foreign exchange and bank treasuries decreased, reaching (1.634) billion dollars compared to 2008, which was (3.20) billion dollars, while it returned Increasing, as it recorded in 2014 (5.12) billion dollars, which is the highest balance in the search period, as the value of gold recorded (1.631) billion dollars, and the special drawing rights were (1.822) billion dollars in 2013, as Iraq ranked (37) among (100) countries possess international reserves of gold, according to the World Central Bank's report on reserves, and the Central Bank of Iraq announced during the month of March 2014 the purchase of (36) tons of gold to achieve its reserve capacity, as well as achieving financial safety in Iraq in diversifying its reserves (Fahd, Return 132:2022) The components of international reserves began to grow after 2016, as in 2019 the balances in foreign banks amounted to (61.50) billion dollars, while the gold reserves amounted to (4.678) billion dollars, but in 2020 these components decreased, as the balances in foreign banks were recorded Foreign banks reached (44.77) billion dollars, and the reason for this decline is attributed to the Corona pandemic and its impact on the global economy, and in 2021, due to the receding of the pandemic, international reserves increased, and the balances in foreign banks recorded (55.92) billion dollars

The third topic: the standard model for estimating the impact of oil revenues on foreign reserves in Iraq for the period (2004-2021)

First: Standard model description

To measure the impact of oil revenues on strengthening international reserves in Iraq, the VAR model is relied upon to study the dynamic relationship and shocks between variables.

This stage is one of the important stages in building the standard model, so these variables are described as follows

 1. **Independent Variables** : It includes the oil revenue variable, which was expressed(OR**)**

2. Dependent Variables: Include variable international reserves and divided into

- Total International Reserves IR
- Foreign exchange at the Central Bank FOC
- Balances in foreign countries EB

3- **Random Vriabels** :- They are real random variables that include other factors that did not appear in the model but affect the dependent variables and are denoted by the symbol Ui

quarterly series of (72) observations has been adopted from 2004-2021, based on official data and statistics issued by the Ministry of Planning and reports of the Central Bank of Iraq.

Second: The theoretical relationship between the variables of the model

With the aim of determining the nature of the relationship between the variables of the model and the statement of the impact of the independent variable on the components of international reserves in Iraq. The VAR vector was relied on, and the general form of the model consists of the following equation:

$$(Y_t) = (\alpha_0) + (\emptyset_i)(Y_{t-1}) + (\vartheta_i)(Y_{t-1}) + (U_t)$$

Yt: represents the vector of internal variables studied by the model (IR, EB, FOC, OIR)

  (α0): represents the intersection boundary vector (fixed limit)

∅ i: represents the short-term coefficient matrix

  ϑi: represents the long-run coefficient matrix, Ut: represents the vector of the random variable

According to economic theory and economic literature, the natural relationship between the independent variable OIR is a direct relationship with all dependent variables, and therefore it is expected that the value of the parameters will be positive when oil revenues rise, meaning that the increase in oil revenues will reflect positively on international reserves.

Third:-Measuring the impact of oil revenues on some international reserves in Iraq for the period (2004-2021)

the standard relationship between the independent variable OIR and the components of international reserves will be estimated and analyzed Vector Autoregressive Model To measure the dynamic relationship between variables.

correlation coefficient matrix

The nature and direction of the relationship between the variables can be known through the correlation coefficient matrix and the correlation coefficient has been calculated correlation between them, as shown in Table (3).

Table (3) Matrix of correlation coefficients between variables

EB	FOC	IR	OIR	
0.72058660990751	0.23722489131779	0.70619129633746	1	OIR
0.99604389488207	0.18597837329569	1	0.70619129633746	IR
0.12628555782975	1	0.18597837329569	0.23722489131779	FOC
1	0.12628555782975	0.99604389488207	0.72058660990751	EB

Source: The work of the researchers based on the results of the program Eveiws12

We notice from the table that there is a positive correlation between the variables of the study. In addition to the existence of varying degrees of correlation between them. The relationship was positive and somewhat strong between oil revenues (OIR) and total international reserves (IR), amounting to about 0.71%. While the relationship of oil revenues was positive and weak with foreign exchange FOC, where the strength of the correlation between them was about 0.24%. While it was strong with external balances EB about 0.72%. This relationship was expected because of the rentier Iraqi economy and its dependence on a single source of foreign exchange, which is oil revenues.

1-   **Unit root test**:

A-   Test (ADF):- Before starting the estimation of the standard model, Stillness tests were conducted for the model variables to ensure that the variables are free from the unit root. There are several tests used to detect the problem of the unit root(ADF ,PP) And at different ranks.

Table (4) shows the results of the static test for the model variables according to the ADF test at the 1%, 5% and 10% level of significance. Where we note that all independent variables are not static at the level and at all levels of significance because the value of the T-test statistic for the test was smaller than the tabular value, in addition to that the P-value was greater than 0.05. When taking the first difference, we notice that it stabilized at a significant level of 1%, 5%, and 10%, where the P-value was less than 0.05 in the absence of a categorical and time trend. Which means rejecting the null hypothesis and accepting the alternative hypothesis, which states that the variables remain stationary at their first differences, and based on that, the variables are integrated of degree I~1).

Table (4) ADF test results for model variables

Variables	Level		1st Difference		test Equation
	t- test	Prob	t- test	Prob	
OIR	0.763407 -	0.9638	8.306624 -	0.000	None
IR	1.672678 -	0.7531	8.306624 -	0.000	None
EOC	2.818386 -	0.1958	8.306624 -	0.000	None
EB	1.012741 -	0.2602	8.306624 -	0.000	None

Source: The work of the researchers based on the results of the program Eveiws12

B-   Test(PP):

We note from Table (5) the results of the sleep test for the variables of the model according to the PP test at the level of significance 1%, 5% and 10%. All independent variables are not static at the level and at all levels of significance because the value of the T-test statistic for the test was smaller than the tabular value, in addition to that the P-value was greater than 0.05. When taking the first difference, we notice that it stabilized at a significant level of 1%, 5%, and 10%, where the P-value was less than 0.05.

In the absence of a categorical and time direction. Which means rejecting the null hypothesis and accepting the alternative hypothesis, which states that the variables are stationary at their first differences, and based on that, the variables are stationary of degree I~1).

Table (5) PP test results for model variables

Variables	Level		1st Difference		test Equation
	t- test	Prob	t- test	Prob	
OIR	0.703397 -	0.9687	8.306624 -	0.000	None
IR	1.665430 -	0.7562	8.306624 -	0.000	None
EOC	3.009590 -	0.1370	8.306624 -	0.000	None
EB	1.732316 -	0.7265	8.306624 -	0.000	None

Source: The work of the researchers based on the results of the Eveiws12

Figure (1) Stability of the model variables
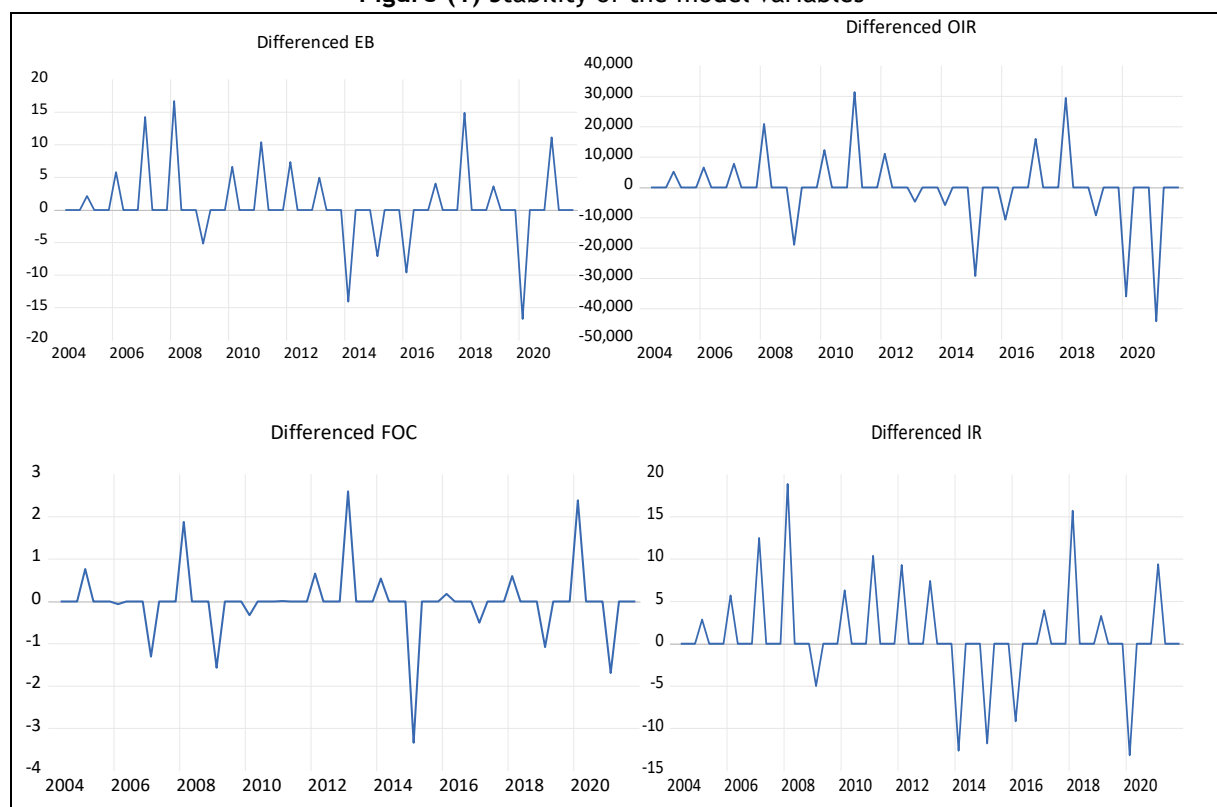
Source: The work of the researchers based on the results of the Eveiws12

C- Co-integration Test:

After revealing the static of the variables and their absence from the root of the unit after taking the first difference to it, that is, they are integrated of the same degree, the next step comes, which is to reveal the possibility of a joint integration relationship between oil revenues and the

components of international reserves, and thus the existence of a long-term equilibrium relationship between them. For the purpose of the co-integration test, the (Johansson and Juse lius: 1990) test was used to determine the number of co-integration vectors of the model. The Johansson test is based on the λ (trace test) and the (Maximum eigenvalues test).

We notice from Table (5) that there is at least one vector of co-integration. As we notice from the results of the table that the calculated value λ of the first vector is (91.37), which is greater than the critical value (69.81) at a significant level of 5%, and the significant probability value was 0.0004. On the other hand, the calculated value for the maximum value of the first vector was 51.60, which is greater than the critical value of 33.87687 at a significant level of 5% with a probability of 0.0002. Based on these results, the null hypothesis (r≤0) was rejected and the alternative hypothesis (r=1) was accepted, which stipulates a vector of co-integration, that is, the existence of a long-term equilibrium relationship between the variables of the model.

Table (5) impact test and the maximum value of the Johansen-Josselius test

Sample (adjusted): 2004Q4 2021Q4				
Included observations: 69 after adjustments				
Trend assumption: Linear deterministic trend``				
Series: OIR IR FOC EB				
Lags interval (in first differences): 1 to 2				
Unrestricted Cointegration Rank Test (Trace)				
	0.05	Trace		Hypothesized
Prob.**	Critical Value	Statistic	Eigenvalue	No. of CE(s)
0.0027	47.85613	54.91181	0.284063	None *
0.9368	29.79707	11.85456	0.102413	At most 1
0.8688	15.49471	4.399468	0.061649	At most 2
0.9244	3.841465	0.008909	0.000129	At most 3

Trace test indicates no cointegration at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)				
	0.05	Max-Eigen		Hypothesized
Prob.**	Critical Value	Statistic	Eigenvalue	No. of CE(s)
0.0110	27.58434	33.05725	0.284063	None*
0.9338	21.13162	7.455093	0.102413	At most 1
0.8160	14.26460	4.390558	0.061649	At most 2
0.9244	3.841465	0.008909	0.000129	At most 3

Max-eigenvalue test indicates no cointegration at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Source: The work of the researchers based on the results of the Eveiws12 program

D-Vector Auto Regressive Model Estimation (VAR).

After conducting the cointegration test relationship between the variables of the model and making sure that there is at least one vector of cointegration, and in the light of what Cranger came up with, the VAR model can be built in the case of cointegration by taking the first difference of the variables with a time delay to the extent of error correction.

Before starting to build the model, it is necessary to determine the optimal delay periods for the model, which represent the number of integration relationships between the variables depending on the smallest value of the approved criteria (AIC, SC, HI). The results of Table (6) indicate that the best deceleration of the model was at the second deceleration, at the second quarter.

Table (6) Optimum slowing periods for the model

`VAR Lag Order Selection Criteria
Endogenous variables: OIR IR EB
Exogenous variables: C
Sample: 2004Q1 2021Q4
Included observations: 66

HQ	SC	AIC	FPE	LR	LogL	Lag
34.91750	34.97770	34.87817	2.82e+11	NA	-1147.980	0
30.30465	30.72606	30.02935	1.76e+09	331.7911	-971.3812	1
30.19755*	29.95675*	29.73685*	2.21e+09	2.525491	-969.9686	2
30.62956	31.23157	30.23627	2.74e+09	3.685102	-967.7970	3
30.90122	31.68383	30.38994	3.22e+09	6.310032	-963.8682	4
30.36611	31.32932	29.79943	1.70e+09*	46.29132*	-933.3159	5
30.72652	31.87034	29.97927	2.21e+09	1.423975	-932.3161	6

Source: The work of the researchers based on the results of the Eveiws12 program

Based on the foregoing, the VAR model consists of four simultaneous equations, where all variables are considered internal at the beginning of the analysis. Each of the variables has a special equation, as shown in Table (7).

Table (7) the results of estimating the VAR model for the studied variables

		Vector Error Correction Estimates		
		Date: 04/07/23 Time: 22:27		
		Sample (adjusted): 2004Q4 2021Q4		
	Included observations: 69 after adjustments			
	Standard errors in ( ) & t-statistics in [ ]			
D(EB)	D(FOC)	D(IR)	D(OIR)	Error Correction:

6.19E-06	1.75E-06	9.05E-06	- 0.026379	CointEq1
(5.0E-06)	(4.0E-07)	(4.9E-06)	(0.00999)	
[1.24037]	[4.42014]	[1.84868]	[2.63993]	
-9.69E-06	-1.14E-06	-1.80E-05	0.107864	D(OIR(-1))
(8.1E-05)	(6.4E-06)	(7.9E-05)	(0.16157)	
[-0.12019]	[-0.17818]	[-0.22752]	[0.66759]	
-6.20E-06	-1.51E-06	-1.79E-05	0.106124	D(OIR(-2))
(8.0E-05)	(6.4E-06)	(7.9E-05)	(0.16117)	
[-0.07707]	[-0.23630]	[-0.22699]	[0.65846]	
0.068134	-0.185893	-0.292769	-16.18948	D(IR(-1))
(1.18870)	(0.09449)	(1.16686)	[0.02326]	
[0.05732]	[-1.96737]	[-0.25090]	(2.38134)	
-0.238860	-0.074253	-0.533777	55.38200	D(IR(-2))
(1.19227)	(0.09477)	(1.17037)	[0.00678]	
[-0.20034]	[-0.78349]	[-0.45608]	(2.38850)	
-0.154961	0.751506	0.653891	1.18151	D(FOC(-1))
(2.16931)	(0.17244)	(2.12946)	(0.04583)	
[-0.07143]	[4.35817]	[0.30707]	[0.34933]	
0.976166	0.285651	1.680580	25.08156	D(FOC(-2))
(2.34466)	(0.18637)	(2.30159)	(0.009712)	
[0.41634]	[1.53267]	[0.73018]	[0.53398]	
-0.133477	0.172496	0.206156	81.13310	D(EB(-1))
(1.16932)	(0.09295)	(1.14784)	[0.02509]	
[-0.11415]	[1.85584]	[0.17960]	(2.34252)	
0.169400	0.061760	0.446700	152.4646	D(EB(-2))
(1.16799)	(0.09284)	(1.14654)	[0.03467]	
[0.14504]	[0.66522]	[0.38961]	(2.33986)	
0.805085	0.009047	0.937909	-194.6688	C
(0.68795)	(0.05468)	(0.67531)	(1378.18)	
[1.17027]	[0.16545]	[1.38886]	[-0.14125]	
0.027858	0.112277	0.064279	0.705458	R-squared
-0.120435	0.430019	-0.078458	-0.023138	Adj. R-squared
1689.806	10.67699	1628.296	6.78E+09	Sum sq. resids
5.351708	0.425401	5.253402	10721.21	S.E. equation
0.187857	6.700258	0.450335	0.829130	F-statistic
-208.2468	-33.52924	-206.9676	-732.8237	Log likelihood
6.325994	1.261717	6.288915	21.53112	Akaike AIC
6.649778	1.585501	6.612698	21.85490	Schwarz SC
0.713913	-0.028116	0.782304	-256.1045	Mean dependent
5.055906	0.563467	5.058702	10599.28	S.D. dependent

Source: The work of the researchers based on the results of the Eveiws12 program
It is clear from the table (7) that there are a number of estimates that are proportional to the number of variables, but there is only one equation, which is the first equation, the oil revenue equation, which agrees with theoretical and statistical logic.

As the error limit coefficient has met the acceptance conditions. Its value was negative and significant, amounting to about (-0.026379), and this indicates the existence of a long-term equilibrium relationship between oil revenues and total international reserves, foreign exchange and investments abroad. As for the parameters of the model, they reflect the short-term relationship between the variables.

The short-term relationship shows that there is a positive and significant relationship between OIR and IR, as it reached in the first quarter of the year around -16.18948, and this means that an increase in oil revenues by 1% leads to a decrease in the total international reserves of about 16.1%. While the relationship was positive in the second quarter, it amounted to about 55.38200, because oil imports do not enter the state treasury until three months after the export and sale of oil has passed. Therefore, the positive impact of oil revenues does not appear until the second quarter of the year, and that the nature of the rentier economy makes it the only source of international reserves It is oil revenue

As for the relationship of OIR and FOC, it was also in the first period positive, but of moderate strength despite its significant value. In the second period, the relationship was stronger, reaching about 1.18151 and 25.08156, respectively, meaning that the increase in oil revenues leads to an increase in foreign exchange in the fund in the second quarter more than the quarter the first. While the impact of oil revenues was very large on the balances in foreign banks, as the impact in the first quarter amounted to about 81.13310 billion and in the second quarter about 152.4646 billion. This is due to the fact that these reserves are investments abroad and are growing at a faster rate than the growth of oil revenues.

We also note that the impact of this component of the reserves is greater than the impact of the total international reserves themselves

The explanatory power of the model was about 0.71, meaning that about 71% of the changes in the dependent variable (international reserves and their components) were caused by the independent variable (oil revenues), in addition to the significance of the model through the F-test statistic.

E- Model validity test(VAR):- For the purpose of ensuring the validity of the model and before moving on to study the dynamic property of the model, we use a set of statistical tests such as the model stability test, the LM test, and the homogeneity of variance.

1- The stability of the residuals: We notice from Figure (2) that all the roots are located inside the circle and that the residuals are stable and distributed normally.

Figure 18: Stability of the remainder of the model

Inverse Roots of AR Characteristic Polynomial
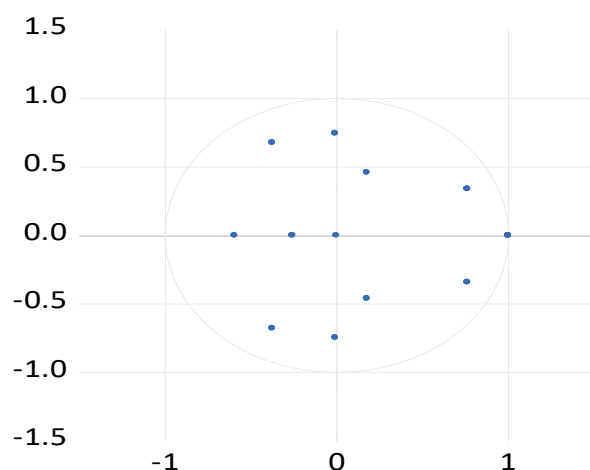
Source: The researchers' work was based on the results of the Eveiws12 program

2-Tast (L M):

From Table (8), we note that the model variables are free from the autocorrelation problem, because the probability value of the LM test was greater than 0.05, which means accepting the null hypothesis, that is, there is no serial correlation between the variables.

Table (8) LM test

Prob.	Df	Rao F-stat	Prob.	df	LRE* stat	Lag
0.5068	(25, 20.1)	1.433674	0.4183	25	32.34514	1
0.8218	(25, 20.1)	1.291377	0.2144	25	30.26957	2
0.1320	(25, 20.1)	1.635578	0.8069	25	35.07407	3

•   Source: The researcher's work based on the results of the Eveiws12 program

1-   Contrast stability test:

From the results of Table (24), we find that the variance of the model was constant, and this is evident through the probability value of the test that was 0.7590, which is greater than 0.05, and thus accepting the null hypothesis that assumes the stability of the homogeneity of the variance of the model

Table (9) The variance homogeneity stability test of the model

| VEC Residual Heteroskedasticity Tests (Levels and Squares)		
	Joint test:	
Prob.	Df	Chi-sq
0.7590	330	355.6230

•   Source: The researcher's work based on the results of the Eveiws12 program

F-The immediate response function of the VAR model:

The VAR models and ECM models allow the analysis of random shocks, by measuring the effect of a shock in one variable on the rest of the other variables. Figure (3) shows the response of the variable ir to a shock in oil revenues that was positive at the beginning of the period and reached its lowest value in the third period, then it began to rise significantly to period end.

As for the response of the FOC to the shock in oil revenues, it was negative in the first and second periods, and reached its lowest value in the third period, after which it began to increase significantly positively until the end of the period.

As for the response of EB to one shock in oil revenues, it was positive and significantly increased, reaching the lowest positive value in the third period, then rising again until the end of the time period.

Table (3) The function of responding to the variables of international reserves to oil revenue shocks
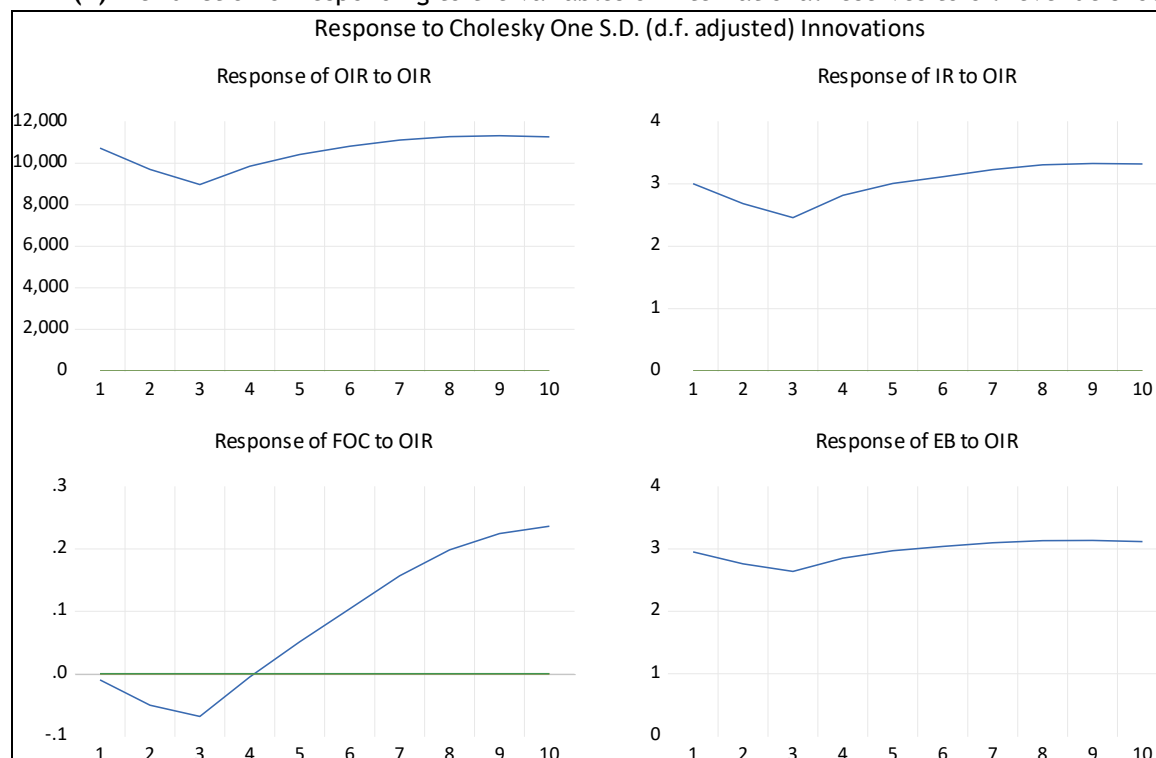
Source: The researcher's work based on the results of the Eveiws12 program

CONCLUSIONS:

1- There is a significant impact of oil revenues in Iraq on the formation and strengthening of international reserves, where the relationship between them is positive. The higher the oil revenues, the higher the international reserves, which is a strong relationship, as the decline in international reserves cannot be compensated for, except through the increase in revenues. oil resulting from the rise in oil prices.

2- Iraq relies heavily on the revenues generated from foreign trade, because Iraq relies on the export of one unilateral commodity, and oil exports reach from the total Iraqi exports (75-95%).

3- The results of the static tests showed that the studied variables were not static at the level in each of the ADF and PP tests, and were stable after taking the first difference.

4- The Johansen-Gesselius cointegration test revealed that there is at least one vector of cointegration between the variables, which means that there is a long-term equilibrium relationship in the studied variables.

5- The results of the VAR error-correction model showed that there is a long-term relationship between oil revenues and the components of international reserves, through the adjustment limit parameter, which was negative and significant. There was also a direct and significant short-term relationship between oil revenues and the components of reserves. The other is because this component is investments abroad, and investments usually grow faster than the rest of the components. So the effect was positive and significant.

6- The response function showed that there is an immediate positive response with the total reserves and reserves of foreign banks (investments) to one positive shock in oil revenues and it was fluctuating in most periods.

As for the response of the FOC (Foreign Exchange at the Central Bank) to the shock in oil revenues, it was negative in the first and second periods, and reached its lowest value in the third period, after which it began to increase significantly positively until the end of the period.

Recommendations:

1- The need to diversify the sources of income in the Iraqi economy from the rest of the productive sectors in addition to the oil sector, such as the industrial sector and the agricultural sector, which help to provide goods and services in order to mitigate the external shocks that the Iraqi economy is exposed to in the event of low oil prices, in addition to activating the tax law in all Its details, especially the customs tariff and other types of taxes to enhance public revenues.

2- Establishing a sovereign fund in order to invest the surplus from international reserves, as a sovereign wealth fund to compensate or mitigate the opportunity cost, and this sovereign fund can also be considered an additional financial source added to the state's resources in order to achieve economic stability for the state in the event that oil revenues are subject to fluctuation.

Supporting the private sector by directing the surplus of international reserves to domestic investment, and this in turn leads to economic growth that contributes to supporting the Central Bank in foreign currencies instead of the private sector's reliance on foreign currency that comes from oil revenues on.

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