

PalArch's Journal of Archaeology
of Egypt / Egyptology

The Impact of Oil Price Fluctuations on The Fiscal Deficit and Surplus of The Public Budget in Iraq For The Period 2004-2019

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Inst. Diao Hussain Saud, Dr. Amro Husham Mohammed, Reiam Ali Talib. The Impact of Oil Price Fluctuations on The Fiscal Deficit and Surplus of The Public Budget in Iraq For The Period 2004-2019 -- PalArch's Journal of Archaeology of Egypt/Egyptology 17(5), 1334-1345. ISSN 1567-214x

Keywords: oil prices, deficit or surplus, public budget.

Abstract:

The study aims to shed light on the study and analysis of the impact of global oil price fluctuations on the state of deficit and financial abundance of the public budget in Iraq for the period 2004-2019, and the results of the research showed that there is a positive relationship between oil prices and public expenditures in the short term, while the inverse relationship between prices Oil, public expenditures and long-term deficit or surplus, and the researcher recommends the need to diversify the sources of public revenues and establish a sovereign fund for Iraq for the purpose of investing surpluses of oil financial resources in years of financial hardship.

Introduction:

The general budget is a financial tool used to achieve economic stability and achieve economic development, but the general definition of the state's public budget does not deviate from the framework of being (a document that includes an estimate of the state's expenditures and revenues for a specific and future period of time, usually one year, which is estimated in light of the goals of the state's philosophy) The public budget may be designed with a deficit, but it ends with a surplus or vice versa, especially in the case of rentier countries such as Iraq, and the state of deficit in the public budget expresses a state of imbalance between the two sides of public expenditures and public revenues (i.e. between government expenditures and revenues) in favor of the public expenditures at the expense of public revenues.

The importance of research: The fact that the existence of a deficit in the public budget and its transformation into a long-term deficit will place a burden on the economy in general and the public finances of the government in particular, which calls for structural reforms that affect the structure of local consumption and production and may be painful for many segments of society that may suffer from Decline in their standard of living and the increase in poverty levels and rates in the country.

Research problem: Given the dependence of government finances on oil revenues and the latter's connection with the global oil market, price fluctuations cause economic shocks to the macro and financial economy and delay economic development, as well as the state of contraction in the economy and the increase in poverty rates as a result of the decline in government spending, both current and investment.

Research hypothesis: It depends on the existence of an inverse relationship between high oil prices and the decrease in the public budget deficit in Iraq due to the dependence of public revenues on a large percentage of oil revenues, which in turn represents a constraint on public expenditures indirectly.

Research objective: The research aims to analyze the effect of the relationship between crude oil prices and the public budget deficit or surplus, and to determine the direction of the relationship and its causality. As well as ways to finance the public budget deficit.

Research methodology: The researcher relied on the descriptive and analytical approach to data for the phenomenon under discussion, also using the quantitative approach to measure the impact of world oil prices on the deficit or surplus of the public budget in Iraq for the period 2004-2019.

Research limits: The time limits determine the temporal dimension of the research for the period (2004-2019) and the spatial limits were in Iraq.

The first axis: the conceptual framework for the disruption of the public budget and the impact of oil price fluctuations on it.

First: Public budget imbalance

The budget deficit can be defined as a non-positive economic and financial situation that affects the financial budget due to a deficiency in its composition, when an increase in public expenditures occurs in exchange for a decrease in revenues, and the institution becomes unable to provide the appropriate means and solutions to address the deficit or imbalance, which leads to turmoil Economic activity, and its negative impact, resulting in an increase in debt ratios and loans resulting from the budget, leading to an increase in the accumulated deficit ratio. Due to the inability to repay the value of the loans (Muhammad, Dawood, 2019: 27).

The size of the deficit is often seen as an important political and economic issue, and there is no specific account of the causes that lead to the occurrence of government budget deficits, due to the multiplicity and widening of the budget deficit patterns, such as organized deficits, structural deficits, accumulated deficits, temporary deficits, etc. The government budget deficit is the increase in public expenditures and the decrease in public revenues, the most common of which is the structural deficit, which occurs if public revenues do not continuously cover public expenditures, and this situation is due to an increase in government spending, at a rate that increases the financial

capacity of the economy and its bearing of burdens, and indicates the existence of A defect in the structure of the national economy itself so that it is difficult to solve this deficit if only financial means are used, and this is the financial reality that most countries with a rentier economy like Iraq suffer from, as the government is often forced to spend more than the revenues from rentier sales (oil) Which is an indication of the existence of a uneven financial deficit and of the structural pattern, which pushes those governments to move towards external borrowing and the use of other international financing tools in the event that the used means are exhausted. To alleviate the financial deficit by reducing public expenditures or increasing non-rent income.

And when the deficit continues for years and government debt accumulates, interactions between the public budget, operations and monetary policies become complicated towards more financial dominance over the monetary decision, as foreign currency operations are from the oil source and are usually the ones that govern the monetary basis, while the deficit shows the importance of government debt in the balance sheet To the central bank. With the increase in the size of the debt, the central bank faces the conflict between the interest rate consistent with the objectives of monetary policy and the cost of debt expenditures that the Ministry of Finance is trying to reduce and not increase steadily (Ali, 2015: 6). Thus, it may affect the local currency exchange rate, or increase the monetization of government debt by the central bank by purchasing treasury transfers or government bonds, which increases inflation (although the Central Bank Law in Iraq prevents this directly, but it is allowed from the secondary market).

Second: traditional and emerging factors in the global oil market:

Some of the traditional factors affecting the global oil market - in the short term - can be limited to the most important of them (Ali, 2016: 5-9):

- 1 -Expectation component, whether it is positive or negative expectations for the future of the global economy or some global political crises.
- 2 -Global economic growth in general, and in the advanced industrial countries (and storage developments in the United States) the most consuming oil, in addition to emerging economies such as China and India.
- 3 -The exchange rate of the dollar against other major currencies, especially the euro.
- 4 -Weather and seasonal fluctuations (for example, a hurricane hits an oil-producing region or a snowstorm that sweeps large areas in developed countries).
- 5- Another important reason is the global oil stocks and their developments, up and down, and what this could leave on the fluctuations of the oil market through the inverse relationship between oil stocks and its price.

As for the emerging factors affecting global oil markets, the most important of them can be summarized:

- 1 -It must be pointed out here to the role of the political factor in activating the trend towards oil production from unconventional sources such as shale oil and shale gas. The encouraging policy adopted by the Republicans had an important role in this increase by raising the slogan “drill baby drill” (Luft & Korin, 2012) ,: 34), not to mention the demand that comes primarily from the growth in the transport sector.

2 -A new energy strategy to preserve the environment: Environmental damage is one of the urgent reasons for applying energy efficiency, conservation and sustainability at the present time, in order to reduce the negative impact on the environment from emissions of carbon dioxide, nitrogen oxides, sulfur oxides and others in quantities exceeding the natural carrying capacity of ecosystems (Environmental) causes air pollution, global warming and climate change. Fears of environmental damage to fossil fuels have resulted in resorting to alternative technologies for clean energy, or the so-called green energy, such as using natural gas, liquefied gas, utilizing solar energy, wind and sea energy, geothermal energy for the earth and organic energy.

3 -Energy management policy to support the finances of consuming and producing countries: Energy subsidies include consumption subsidies and production subsidies, and consumption subsidies are divided into two components; The first is pre-tax support (if the price paid by companies and households is lower than the cost of supply and distribution), and the second is tax support (if taxes are sub-optimal) (International Monetary Fund, 2013: 5-6).

4 -Preserving depleted resources (oil): It is legitimate for developing countries that have natural resources to oblige the entities affiliated with multinational companies participating in the exploitation of their resources to pay a fair tax amount, and to avoid tampering with their capital structure for tax purposes (Arezki, 2013: 27) And perhaps Iraq followed the example of many of these countries after 2010 when it granted the right to production and development to some international oil companies through what are known as licensing rounds, and despite the success of these rounds in doubling the ceiling of Iraq's oil production from (2.2) two million and two hundred thousand barrels / day To about (4.0) four million barrels / day, but it raised the cost of producing a barrel of oil in Iraq from about 3 dollars to 10 dollars a barrel, and the total costs paid to foreign companies to contract reached (74.7 billion dollars) except for the net profits of these companies, which amounted to 7 One billion dollars during the period 2010-2018 (oil licensing contracts: their money and what they owe (<https://iier.org/ar/indications>)). The government's general budget has also been tied up with a financial record exceeding (11 trillion) eleven trillion Iraqi dinars, which is more than(9 billion US dollars) and that (at an exchange rate of 1200 dinars: 1 dollar) in 2020.

Third: Indicators on the general budget in Iraq:

The sources of feeding the public budget deficit are multiple and are generated as a result of several reasons, including a decline in public revenues, whether they are rentier, as in the case of the Iraqi economy, or even a relative decline in taxes in the event of an economic contraction in economies that rely on taxes as a basic resource to build their public budgets, or a sudden increase in The public expenditures side to meet urgent economic requirements, such as saving the economy from a severe recession, a developmental renaissance, facing a state of war, natural disasters, social pressures or political turmoil, among others. In both cases, that is, when there is an imbalance in one of the two lines of the general budget, borrowing that may be internal or external is usually used to cover these fluctuations.

The Iraqi economy was subjected to a double shock at the end of 2014 due to military expenditures and the devastation that afflicted three of its governorates on the one hand, and the sharp drop in oil prices on the other hand, and such events are known in economics as external shocks, and it is sufficient for either

of these shocks to have wide negative effects. The scope in any economy can be exposed to it, so how with this double shock. As a result of the failure to diversify the financial resources that the government depends on in building its federal budget, Iraq was forced to resort to the International Monetary Fund to borrow from it as a result of the financial distress that the Iraqi economy was exposed to, and the fund estimated this gap at 50 billion dollars between 2016-2019. This agreement, which enables Iraq to obtain the required loans according to the SBA agreement with the Fund, obliges Iraq to “issue the Financial Management Law, introduce the Integrity Commission as an active party in the independent follow-up process, and adopt the United Nations anti-corruption document, accompanied by amending the Central Bank Law and restricting the Ministry of Finance to the basics. And subjecting external and internal debts to scrutiny (Saleh, 2020: 23).

Fourth: Indicators of deficit and surplus in the Iraqi public budget and the price of a barrel of oil

It is evident from Table (1), which shows oil prices and the general budget in Iraq for the period 2004-2019, as there is a decrease in public expenditures during the period of research, despite the increase in public revenues, but public expenditures have decreased to (26375175) million dinars in the year 2005 Which led to an increase in the budget surplus to (14127715) million dinars, then the public revenues began to rise in the following years, but it decreased to (55209353) million dinars in 2009 after it was (80252182) million dinars in 2008, in contrast, it decreased Public expenditures amounted to (52567025) million dinars in 2009, after it was (59403375) million dinars in 2008, and the reason for this is due to the decline in oil prices due to the impact of the global financial crisis, as the price per barrel reached (37) dollars at the beginning of 2009, As for the years 2014-2016, public revenues decreased due to the decline in global oil prices, which affected the decrease in public expenditures, but after that they increased to (107567032) million dinars in the year 2019, in contrast, public expenditures rose to (111723523) million dinars, which led to high deficit Budget to (-4156491) color dinars.

Table (1): Oil prices and the general budget in Iraq for the period 2004-2019

Years	Oil Prices in Iraqi Dinars (2)	Oil revenue(2)	General revenue (3)	Overhead (4)	Deficit or surplus (5)	Rate (2) / (3)
2004	52.4	32627203	32982739	32117491	865248	98.92
2005	74.4	39448000	40502820	26375175	14127715	97.40
2006	89.6	46873000	49063361	38806679	10248866	95.54
2007	86.7	51949000	54599451	39031232	15568219	95.15
2008	112.6	76297000	80252182	59403375	20848807	95.07
2009	71.4	50190000	55209353	52567025	2642328	90.91
2010	90.6	63594000	70178223	70134201	44022	90.62
2011	120.5	98242000	108807392	78757666	30049726	90.29
2012	124.7	111326000	119817224	105139575	14677648	92.91
2013	120.1	105451000	113840076	119128000	-5360605	92.63
2014	110.6	100778000	105364301	113473517	-8086894	95.65

2015	52.1	51313000	72546345	70397515	-3927264	70.73
2016	42.8	44267000	53413446	67067437	-12658160	82.88
2017	58.6	65155000	77335955	75490115	1932057	84.25
2018	74018	99288000	106569834	80873189	25696645	93.16
2019	77266	92787000	107567032	111723523	-4156491	86.1

Reference: Central Bank of Iraq, Ministry of Planning, Ministry of Finance - Annual reports and bulletins for the period 2004-2019.

The second axis: estimating the relationship between oil prices and the general budget in Iraq For the period 2004-2019

First: Study variables

In order to choose the hypotheses of the study and achieve its objectives, the model was described as follows:

Table (2) Description of the model variables

The period	The Centre	The Symobles	Model variables
2004-2019	Independent	OIL	Oil prices
	Dependent	RE	General revenue
	Dependent	EX	Overhead
	Dependent	DB	The public budget deficit

Reference: This is presented by the researchers

First, we estimate the regression equation in order to obtain the initial form of the relationship between the variables of the model, as in the equation below:

$$RE, EX, DB = f(OIL)$$

$$RE, EX, DB = b_0 + b_1 OIL$$

Second: The results of the time-series stability test:

During the study period, the data were converted into semi-annual data in order to expand the sample size and reach the most accurate results through the Eviews 9 program. On this basis, tests were conducted on time series in order to reach stability.

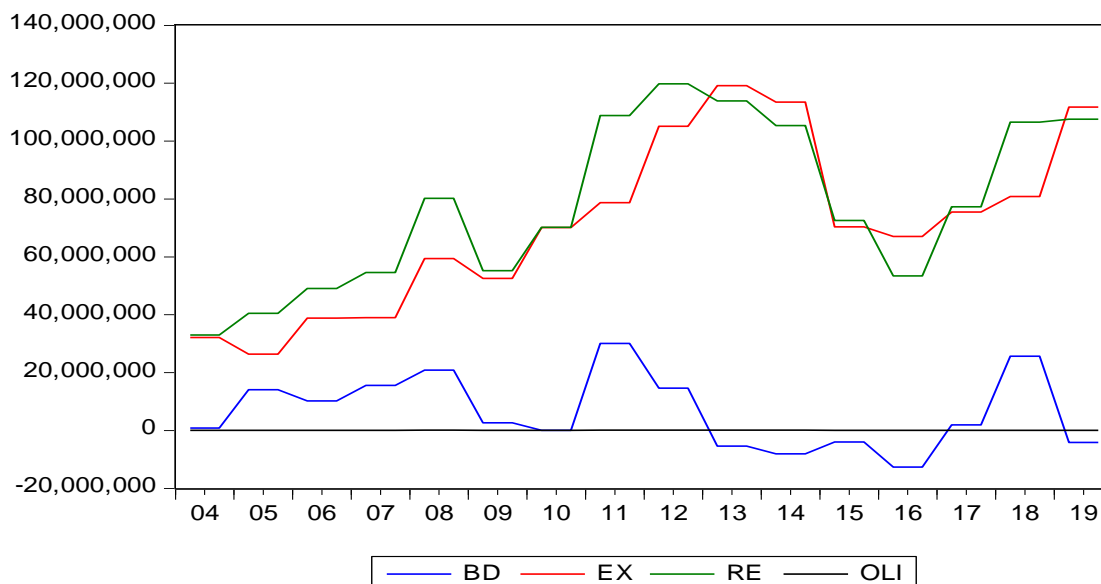
Table (3) Philips-Brown test results (unit root test)

(Variables)	(Level)			(1st difference)			Degree of integration
	Fixed limit only	Fixed bounda ry and general trend	No limit, no general directi on	Fixed limit only	Fixed boundary and general trend	No fixed boundar y, no general direction	
	p-value	p-value	p-value	p-value	p- value	p-value	
OLI	0.2298	0.4824	0.5624	0.0001	0.0008	0.0000	I(I)
RE	0.3817	0.5609	0.7511	0.0001	0.0007	0.0000	I(I)
EX	0.6738	0.6445	0.8499	0.0001	0.0006	0.0000	I(1)
DB	0.0670	0.1423	0.0129	0.0001	0.0008	0.0000	

The Reference is presented by researchers, using EViews

It is noted from Table (3) that the two series under study are stable at the level (at Level) using the Phillips-Brown unit root test, which shows that the variables (oil prices, public expenditures, public revenues, deficits or surpluses) are static at the level, that is, complementary to the degree. (0) Because the value of (Prob) is less than (5%), therefore we reject the null hypothesis and accept the alternative hypothesis (Gujarati, 2009: 740) .

Figure (1) stability of the chain at the original level



Reference: From the researcher's work based on Eviews program outputs

Third: Granger causality test

Table (4) results of the causal relationship between variables using Granger's method

Null Hypothesis	Lags	F_Statistic	Prob
EX does not Granger cause RE	2	0.03246	0.9681
RE does not Granger cause EX		3.70729	0.0389
BD does not Granger cause RE	2	0.08357	0.9200
RE does not Granger cause BD		3.01552	0.0671
OLI does not Granger cause RE	2	0.18740	0.8303
RE does not Granger cause OLI		0.53726	0.0590
BD does not Granger cause EX	2	3.87477	0.0342
EX does not Granger cause BD		2.62594	0.0922
OLI does not Granger cause EX	2	0.03128	0.9692
EX does not Granger cause OLI		1.06906	0.0358
OLI does not Granger cause BD	2	0.50733	0.6082
BD does not Granger cause OLI		0.74990	0.0482

The reference was prepared by researchers, using EViews 9

It is noted from Table (4) the results of the causal relationship between the study variables using the Granger method, as there is a moral relationship directed from (RE revenues to EX expenditures), meaning that revenues are the

cause of expenditures, and there is also a moral relationship directed from (RE revenue to deficit or surplus BD)), That is, public revenues are the cause of the deficit or surplus, and a moral relationship directed from RE revenues to oil prices (OIL), and there is also a reciprocal moral relationship directed from (deficit or surplus BD to public expenditures), meaning that the deficit or surplus is the cause of public expenditures as well. Public expenditures are the cause of the deficit or surplus, also there is a significant relationship between oil prices, OIL, deficit, and surplus BD, and this corresponds to the logic of economic theory that world oil prices leave a clear impact on rentier economies that depend mainly on crude oil exports.

Fourth: the joint integration test using the (ARDL) model

The first step of the (ARDL) model is to estimate the relationship between the dependent variable (public expenditures, public revenues, deficit or surplus) and the independent variable (oil prices), as it is noted from Table (5) an (ARDL) model, which automatically determines the optimum time slowdown.

Table (5) estimating the covalent regression using the (ARDL) model

Variables	Coefficients	t-statistic	p-value
RE(-1)	0.254944	1.709279	0.1029
RE(-2)	-0.415780	- 2.911034	0.0086
EX	0.937387	50.92843	0.0000
EX(-1)	-0.243709	-1.691398	0.1063
EX(-2)	0.482458	3.470435	0.0024
BD	1.009444	42.82471	0.0000
BD(-1)	-0.258181	-1.689369	0.1067
BD(-2)	0.444719	3.107318	0.0056
OLI	-10.38318	-0.941998	0.3574
C	302658.4	0.351758	0.7287
R-Squared		0.999051	
Adjusted R-Squared		0.998624	
F- Statistic		2339.407	
Prob (F-statistic)		0.000000	
Durbin –Watson stat		1.858824	

The reference was prepared by researchers, using EViews 9

The statistical results showed that the independent variable (OIL) explained that the value of Adjusted R-Squared amounted to about (99%) in the change in the dependent variables (EX, RE, DE) that causes the change in the independent variable, as for (F- statistic) is statistically significant, because the value of (prob) is less than (5%), it reached about (0.000000), and this explains the significance of the model as a whole, whereas (Durbin - Watson stat) its

value is (1.858824) and this indicates that the estimated model is empty From the problem of self-correlation.

Fifth: The Residual Diagnostics Test

The results of the residual diagnostics test appear in Table (6), as it is noticed that the value of (p-value) in the normal distribution test is greater than (5%) and amounts to (0.864676). Thus, we accept the null hypothesis that indicates that the residues are normally distributed. And we reject the alternative hypothesis, as for the autocorrelation test, the probability of which is greater than (5%) is insignificant and the amount is (0.7133). This indicates that the model is free from the self-correlation problem, and also the prob value of the test of the homogeneity instability is greater From (5%) and amounting to (0.3472), this indicates that the model varies naturally (heteroscedasticity) and thus the statistical model (ARDL) is free of standard problems.

Table (6) Residual Diagnostic Tests

Histogram- Normality Tests	P-Value =0.864676
Serial Correlation LM Test	P- Value =0.7133
Heteroscedasticity Test	P- Value =0.3472

The reference was prepared by researchers, using EViews 9

Sixth: Bounds, wald Test

In order to verify the existence of a common complementarity between the dependent and independent variables, we resort to the boundary test, as it is noticed from the results of Table (7) that the calculated F-statistic value of (11.46811), which is greater than the value of the upper and lower bound, which amounted to (4.66) and (3.65) at (1%) respectively, and this indicates the rejection of the null hypothesis (H0) and the acceptance of the alternative hypothesis (H1) in the presence of a common complement, which represents the long-term equilibrium relationship between the independent variable and the dependent variables, as it is noted from Table (7) that the value of prob The amount (0.000) is less than 5% in the wald test, and this shows the effect of the independent variable on the dependent variable.

Table (7) Limit Test Results

Test statistic	Value	K
F-statistic	11.46811	3

Reference: Prepared by researchers based on the results of the statistical program (Eviews9)

Critical Value Bounds

Significance	0Bound الحد الأدنى	1Bound الحد الأعلى
%10	2.37	3.2
%5	2.79	3.67

%2.5	3.15	4.08
%1	3.65	4.66

Reference: Prepared by researchers based on the results of the statistical program (Eviews9)

Table (8) Wald Test Results

Test Statistic	Value	Df	Probability
F-Statistic	150.6047	(2.20)	0.0000
Chi-Square	301.2094	2	0.0000

Null Hypothesis: $c(1)=0, c(3) = 2 * C(4)$

Seventh: Estimated Short Run Coefficients

Table (9) shows the short-term parameters of the economic variables included in the estimated model, that there is a direct relationship between the independent variable (OIL) and the dependent variable (EX) in the short term, i.e. an increase in (OIL) by (1%) leads to an increase (EX) by an amount. (0.948092), and there is an inverse relationship between the independent variable (OIL) and the dependent variable (BD) i.e. increasing the independent variable by (1%) leads to a decrease of the dependent variable by (-0.437626), and the estimated relationship showed that the parameter of the error term has a value of (-1.142347) It was negative and significant (prob = 0,0000). This reflects the existence of the equilibrium relationship in the short term between the studied variables towards a long-term equilibrium relationship.

Table (9): Estimated Short Run Coefficients

Variable	Coefficient	t-statistic	Prob
D(RE(-1))	0.409150	3.457211	0.0025
D(EX)	0.948092	26.597626	0.0000
D(EX(-1))	-0.47466	-3.973841	0.0007
D(BD)	1.0181321	33.126708	0.0000
D(BD(-1))	-0.437626	-3.578915	0.0019
D(OLI)	-19.384034	-0.701327	0.4912
CointEq(-1)	-1.142347	-7.50345	0.0000

Reference: Prepared by researchers based on the results of the statistical program (Eviews9)

Eighth: Estimated Long Run Coefficients

It is noticed from Table (10) the estimated long-term parameters of the independent variable (OIL) whose sign is negative in the long term and the dependent variables (EX, BD) have a positive sign, and in return it is noticed that the value of (Prob) is less than (5%) for both variables, that is, it has an effect Significant in the long term, and we find that the error correction factor (CointEq (-1)) and the amount (-1.142347) was negative and significant according to the value of (Prob) (0.0000), and this confirms the existence of a long-term equilibrium relationship (co-integration) between the independent variable And dependent variables.

Table (10):Estimated Long Run Coefficients

Variable	Coefficients	t- statistic	P –Value
EX	1.013163	124.964248	0.0000
BD	1.030256	38.560899	0.0000
OLI	-8.944413	-0.961512	0.3478
C	260720	0.357501	0.7245
Cointeq =RE-(1.0132*EX+1.0303*BD-8.9444*OLI+260720.0626			
CointEq(-1)	-1.142347	-7.50345	0.0000

Reference: Prepared by researchers based on the results of the statistical program (Eviews9)

Conclusions:

1 .Stability of the series of variables under study after taking the first difference using the unit root (ADF, PP), and using Cranger causation, we noticed that the causal relationship is heading from oil prices to the general budget in Iraq during the study period.

2 .The probability value showed that it is less than the level (5%) for both variables, oil prices and the general budget, meaning that there is a direct relationship between the independent variable (oil prices) and the dependent variable (public expenditures) in the short term, while the inverse relationship between Oil prices, public expenditures, and long-term deficits or surpluses.

3 .Deficit in public budget in Iraq began in 2013, that is, before the financial hardship years that began at the end of 2014-2017, which means that the decrease in revenue is not a condition of deficit, but rather the expansionary behavior of the fiscal policy by increasing public spending to unprecedented ranges and the lack of financial discipline leads As well as the budget deficit.

4 .The double shock (low oil prices, and military expenditures to liberate Iraqi lands) at the end of 2014 negatively affected the Iraqi economy in general, and led to its contraction, and in particular on the public budget as a result of lower public revenues and higher military expenditures at the expense of other types of expenditures. As well as millions of displaced people who need emergency aid.

5 .Lack of flexibility in public expenditures due to the changes that occur in public revenues, especially oil in rentier countries, especially in the short term.

Recommendations:

1 -Emphasizing the achievement of fiscal discipline for public spending as a first step to reduce the public budget deficit, and one of the forms of reducing public spending and its discipline is to determine the size of support and direct it properly, and to combat corruption in state institutions and financial waste.

2 -Improving and diversifying public revenue sources by paying attention to the tax system with the possibility of reforming it, establishing a sovereign fund for Iraq for the purpose of investing surpluses of oil financial resources in years of financial hardship, and covering it for deficits in years of financial hardship.

3 -Adopting a clear vision for the fiscal policy to determine the course of the deficit for the coming years according to a study of the priorities of public spending and the sources of deficit financing from internal and external loans for the purpose of determining the cost burden of each of them while directing them to the best means of use.

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