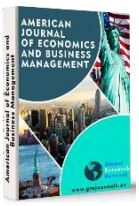

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Measuring the Impact of Fluctuations in oil Revenues on the Average Per Capita Income in Iraq for the Period (2003-2023)

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Abstract:

All countries of the world seek to raise the standard of living for their individuals, and the average per capita share of national income is one of the most important indicators that express this. The research aims to measure the impact of fluctuations in oil revenues on the average per capita share, that is, the average per capita income in Iraq during the research period. To achieve this, the method was relied upon analytical and measurement of annual series data, The research reached a number of conclusions, where the stability results were significant, as the oil revenues and average per capita data stabilized at their level, and this indicates to us the existence of a long-term balanced relationship between the two variables, and there is no need to conduct a co- integration test to prove the validity of the research hypothesis that there is a direct relationship between oil revenues and the average per capita share in Iraq during the research period, this was confirmed by the standard results, and these results are compatible with the Iraqi economy, which depends on oil revenues. In conclusion, it is necessary to address any imbalance in the structure of the Iraqi economy through the contribution of other sectors and reducing the dominance of the oil sector. This is achieved by diversifying the sources of non-oil revenues from in order to increase the stability of the well-being of individuals.

Keywords: oil revenue fluctuation, average per capita share, oil revenue measurement.

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Introduction

Since the first years of its discovery and the start of its production, oil has been the focus of attention of the active parties in the country. It was viewed as a source of strength in an economy that, over time, moved towards greater reliance on its revenues. On the other hand, it was viewed as a source of financing development to achieve a leap parallel to what was achieved in other countries. It is considered the basis on which Iraq relies primarily, and in light of this heavy dependence on the oil sector, this was and still is the same contribution to the gross domestic product, which was supposed to decrease over time to be replaced by a continuous increase in the agricultural and industrial sectors, but this was not encouraged for reasons, among them are poor management and planning, poor security situation, accumulations of previous wars, and economic sanctions.

Research Importance:

The research gains its importance from raising the problem of the relationship between the fluctuation of oil revenues and the average per capita income in Iraq and examining how oil has affected it.

Research Problem:

The essence of the problem addressed by the research lies in the huge oil revenues that do not require real economic activity, which led to an increase in the average per capita income in the same way due to it constituting the largest percentage of national income and vice versa.

Research Hypothesis:

The research is based on the hypothesis that the fluctuation of oil revenues affects the average per capita income and has not succeeded in building a real economy.

Research Aims:

The research aims to show that oil revenues created an improvement in the lives of individuals when they rose and vice versa when they decreased, by comparing and measuring them with the average per capita share. Therefore, the matter requires adopting a policy aimed at diversifying the Iraqi economy and anticipating the conditions of the global oil market to deal with its developments in a way that reduces the negative effects on the economy and society.

The First Topic: Conceptual Framework

1. The Concept of Oil:

Oil is a mineral liquid found naturally in the ground, which is called black gold because its color ranges between light brown and dark black. It has been used throughout the ages and to the present as a source of energy and for other uses [(1)].

We can express it as a natural substance that exists freely within reservoirs in the ground. It is the first and primary source of energy around the world and a raw material for many different industries, for example chemical, plastic, etc. It is extracted by drilling wells to different depths, and its nature, forms and density vary from place to another.

a. The Concept of Oil Revenues:

It is the financial return that countries producing and exporting crude oil receive as part of the real value of this depleted resource owned by society [(2)].

b. The Importance of Oil Revenues:

Oil revenues have an impact on the economic variables of rentier countries because these countries depend primarily on them to finance the bulk of the public expenditures of the rentier country. Therefore, when oil revenues increase, it is accompanied by an increase in the level of economic activity because there is a direct relationship and vice versa in the case of a decrease [(3)]. Companies operating in the oil industry will be affected by the impact of oil price changes on future profits, while companies operating in non-oil sectors will be affected by oil price changes in the economy in general [(4)].

The Positives of Oil Revenues:

1- An increase in the rate of foreign trade exchange through the use of oil revenues represented in foreign currencies to improve the reality of the production system in the local industrial and agricultural sector through the purchase of machinery, equipment, and machines, especially the introduction of modern technology to it, which increases

[1] - Muhammad Hayawi, Oil and its Impact on International Relations, first edition, Dar Al-Nafais, Beirut - Lebanon, 2010, p7-8.

[2] - Hiam Khazal Ashour, The relationship between oil revenues and government spending in the Gulf Cooperation Council countries for the period (2000-2008), Gulf Economic Journal, University of Basra, No. 23, 2012, p233.

[3] - The Tenth Arab Energy Conference, Abu Dhabi. United Arab Emirates, Republic of Iraq Paper, 2014,p3.

[4] - Gerben Driesprong and others, Stock markets and oil prices, Rotterdam School of Management, USA, 2004.

the competitiveness of the production system, increasing the volume of exports and achieving a surplus in the trade balance. [5].

2-Increasing the volume of foreign investment after investing the surpluses of these returns in the financial markets or establishing investment funds that benefit the possessing countries [6].

3-Achieving the material and economic well-being of society through increasing the per capita income rate and increasing the quality of services provided to citizens at all health, educational and security levels [7]. That is, implementing the human development program, which is one of the indicators of development and urbanization used to determine the development status of any country in the world[8].

4-Stimulating internal investment in various fields because it is directly linked to economic activity, which increases with increasing oil revenues, which leads to increasing job opportunities, reducing the unemployment rate, and achieving employment [9].

5-Increasing opportunities for achieving economic integration and establishing joint projects between countries that have a common ability to produce and export oil, and preserving common interests, especially maintaining the stability of oil prices, which ensures the preservation of the economy as a whole [10].

6-Oil revenues ensure the provision of the minimum amount of cash necessary to carry out the basic functions of the state entrusted to it, cover the state's public expenditures, and provide the necessary amounts to implement the state's investment projects such as housing projects, infrastructure, etc. [11].

Disadvantages of oil revenues:

1-Economic instability as a result of the dependence of the various economic sectors on the oil sector and the resulting fluctuations, tremors and instability in economic activity accompanied by the fluctuation in oil revenues. This situation occurs when the oil sector's contribution to the gross domestic product increases, or it is called rentier economics [12]. This makes these countries vulnerable to a great risk of shifting demand away from the product that they have an advantage in producing. Any shift to a new source of energy by developed countries (the largest oil consumers in the world) places oil-producing countries facing a major and dangerous problem that cannot be solved in the short term.

2-The difficulty of managing the monetary policy of the oil-producing state as a result of the influx of a large amount of foreign currency, which encourages an increase in the money supply in its broad sense, which leads to high inflation rates [13].

5 - Ali Abdul Hadi, The Growth of an Effective Strategy for Economic Development in Iraq, Journal of the College of Administration and Economics for Economic Sciences, Anbar University, Volume 4, Issue 9, 2012,p57.

6 - The Ninth Arab Energy Conference, Country Paper for the Republic of Iraq, Qatar, 2010, p23.

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12 - Ahmed Hussein Al-Hiti, Introduction to the Oil Economy, Arab Heritage Revival House, 2011, p140.

13 - Hatem Amir Mahran, Inflation in the Gulf Cooperation Council and the Role of Oil Funds in Economic Stability, Arab Planning Institute - Kuwait, 2007 , p18.

3-The occurrence of a deficit in the trade balance of rentier countries due to the accumulation of foreign currency in them, which makes goods produced at home appear more expensive than goods produced abroad, so the demand for imported goods shifts, leading to an increase in the volume of imports and a decrease in exports of goods and services [(14)]. This has a negative impact on the local production system and economic exposure, this results from the individual's weak initiative and his dependence on the state to provide the simplest goods and services he needs in his daily life, which makes the consumerist society move away from creativity and self-development.

4-The occurrence of a deficit in the general budget of the rentier state when the voluntary oil revenues decrease as a result of the high contribution of the oil sector to the state's general budget, which prompts governments to resort to internal or external borrowing, which leads to the accumulation of debts on the state [(15)]. This provides a fertile environment for financial and administrative corruption, especially in the absence of a clear vision for the overall economic policy of the oil-producing state, which makes its economy experience a state of slowness and weakness in the investment aspect [(16)].

5-A decrease in corporate profits and returns on stocks and bonds when oil revenues increase in the event of a rise in crude oil prices as a result of the negative effects that these revenues will have on macroeconomic indicators, as they will raise inflation rates and thus reflect negatively on profits and operating costs [(17)].

The Second Topic: Analysis of the fluctuation of oil revenues and the average per capita share

It is clear from Table No. (1 and 2) below that oil revenues amounted to (15,778,387) dinars in (2003) and the decrease was due to acts of sabotage, Iraq falling under the influence of war, the collapse of many institutions and facilities, and the cessation of services.

[14] - Safaa Ali Hussein, Measuring and analyzing the response of financial policy to shocks in the rate of trade in selected countries with special reference to Iraq, unpublished doctoral thesis submitted to the Council of the College of Administration and Economics, University of Baghdad, 2015, p7.

[15] - Edward Morse and others, Oil and Tyranny, The Political Economy of the Rentier State, first edition, translated and published by the Institute for Strategic Studies, Beirut, 2007, p126.

[16] - Mayeh Shabib Al-Shammari, Diagnosis of the Dutch disease and the components of reforming the Iraqi rentier economy, Al-Ghari Journal of Economic and Administrative Sciences, College of Administration and Economics, University of Kufa, Issue (15), 2008, p8-14.

[17] - Ahmed Hussein Ali Al-Hiti and Dr. Bakhtiar Saber Muhammad, The impact of oil revenue fluctuations on macroeconomic indicators and the performance of financial markets in the Gulf Cooperation Council countries, Anbar University Journal of Economic and Administrative Sciences, Volume (4), Issue (7), 2011, p5.

Table No. (1). Oil revenues in Iraq for the period (2003-2023) / (million dinars)

Years	Oil Revenues	Rate of change in oil revenues
2003	15728387	1442
2004	32593011	107.2
2005	39480069	21.1
2006	46908096	18.8
2007	50747131	8.2
2008	79131752	55.9
2009	51719059	-34.6
2010	66819670	29.2
2011	98090214	46.8
2012	116597076	18.9
2013	110677542	-5.1
2014	97072410	-12.3
2015	51312621	-47.1
2016	55727700	8.6
2017	75688760	35.8
2018	110468890	45.9
2019	105794570	-4.2
2020	59824566	-43.4
2021	73010925	22
2022	88305717	20.9
2023	123217012	39.5

Source: The table prepared by the researcher based on data from the Central Bank of Iraq (various annual bulletins) and column (3) was calculated by the researcher.

It rose for the period (2004 - 2008) with the occupation forces taking control of the oil sector, reaching (32,593,011-79,131,752) dinars, and this represents the highest rate of revenues than before, to enable Iraq to resume exporting oil after being subjected for a long period under the influence of the economic blockade. This is what we notice in the increase in the average per capita income also in a proportional manner, as it reached (19135.5-55162.2) dinars for the same years, due to the government increasing the volume of employment.

In the year (2009), oil revenues decreased and amounted to (51,719,059) dinars due to the decline in global oil selling prices, and this was accompanied by a decrease in the average per capita income, reaching (44,326.1) dinars. The years (2010-2012) also witnessed an incremental increase in oil revenues, reaching (66819670)،(98090214)،(116597076)dinars. This increase led to an increase in the average share of individuals for the same period, reaching (52440.4), (67031.8), (75446.2). This increase confirms the presence of a shock positive economic.

As for the year (2013), although there was a fluctuation in the decline this year in oil revenues, which amounted to (110,677,542) dinars, the difference was the increase in the average per capita income, which reached (78,487.3), and this is due to the increase in public spending. In the year (2014), both oil revenues and the average per capita share decreased to (97,072,410) dinars. Likewise, for the years that followed until (2016), they continued to decline, due to many reasons, including political, social, and economic, such as the loss of security, the flight of labor from the work site, sabotage, theft, and destruction of refineries and companies. At the level of the average per capita share, it achieved a similar level during the same years due to the unstable security conditions that the country went through, so the largest portion of oil revenues was directed to military spending, especially after the year (2014). This indicates to us the necessity of diversifying the structure of exports to reduce the dominance of the oil sector and its impact on the variable. The subject of the research.

As for the years (2017, 2018, 2019), oil revenues increased to reach (75688760),(110468890), (105794570) dinars due to the improvement of the security situation and the recovery of global oil prices, accompanied by an increase in the average per capita, reaching in those years (59240.4), (70001.1), (70240.1) dinars. Oil

revenues in 2020 reached a critical level, reaching (59,824,566) dinars, which negatively affected the average per capita income to reach (53,177.4) dinars due to the spread of the Corona pandemic and the accompanying disruption in all fields of life, in addition to the decline in global oil prices and the disputes within OPEC with... Independent producers and the global oil price war, especially between Saudi Arabia and Russia, have therefore declined sharply.

In the year (2021), the Iraqi economy returned to recovery, driven by oil, after the recession resulting from the Corona pandemic, the decline of the first wave, and the emergence of signs of hope as a result of the discovery of a vaccine for the epidemic and its approval for use, in addition to the global oil prices began to rise, thus achieving unexpected oil revenues that amounted to (73,010,925) dinars. As for the year (2022), oil revenues increased to (88,305,717) dinars, and the reason for this is the increase in the country's production capacity. In the year (2023), oil revenues reached (1232170126) dinars, the highest in years, and this increase is relied upon to close the financial deficit and reduce the size of internal and external debts.

In conclusion, Iraq is still at the mercy of global oil prices and its dependence of 96% of its gross domestic product on oil revenues, and these revenues are unstable and affected by several factors, as we mentioned, the most important of which is the change in global oil prices.

Table No. (2). Average per capita national income in Iraq for the period (2003-2023) / (million dinars)

Years	Average per capita	Rate of change in average per capita income
2003	10941.4	-28.7
2004	19135.5	74.8
2005	23299.5	21.7
2006	31264.3	34.1
2007	37157.4	18.8
2008	55162.2	48.4
2009	44326.1	-19.6
2010	52440.4	18.3
2011	67031.8	27.8
2012	75446.2	12.5
2013	78487.3	4.03
2014	75316.5	-4.03
2015	54788.6	-27.2
2016	53949.1	-1.5
2017	59240.4	9.8
2018	70001.1	18.1
2019	70240.1	0.3
2020	53177.4	-24.2
2021	72386.4	36.1
2022	90362.7	24.8
2023	97105.2	7.4

Source: The table prepared by the researcher based on data from the Central Bank of Iraq (various annual bulletins) and column (3) was calculated by the researcher

The Third Topic: Measuring the impact of oil revenues on the average per capita national income in Iraq

First: Description of the model

This stage is one of the most important stages in preparing the standard model, which is a set of economic relationships that are developed in the form of mathematical equations that explain the behavior of this relationship in a specific economy during a specific period of time. Thus, we will use the values of oil revenues as an independent variable and the average per capita share of national vinegar as a dependent variable.

Second: Presenting and Analyzing The Standard Results

Estimating the relationship between the average per capita national income and oil revenues:

D.W	Fcal	R2	Estimated model
1.6	58.687	75.5%	GNI=0.05+0.43OilR

Through the previous estimation process of the general model expressing the relationship between the average per capita share of national income and oil revenues, we conclude the following:

1-The above statistical results show that the estimated model is statistically sound and is considered significant and acceptable. This is confirmed by the interpretation coefficient, which came in at (75.5%). This percentage means that the changes occurring in the average per capita share are the result of changes in oil revenues in the same proportion, as the moral results confirm. For the estimated model, expressed by the calculated (F) value (58.7), approximately. It is significant at the level of significance (1%), and the model does not suffer from the problem of autocorrelation based on the value of the calculated (D.W) statistic amounting to (1.6) as it is close to (2).

2-2. The estimated model is consistent with the logic of economic theory, which stipulates that there is a direct relationship between the average per capita share of gross national income and oil revenues, as the fixed limit appears, which was estimated at (0.05), meaning that when no oil revenues are achieved hypothetically, the average per capita share is estimated at (500,000) dinars of the gross national income. This is financed through other non-oil sources of income, and the oil revenues parameter is (0.43), which means that any change in oil revenues by one unit (million dinars) will lead to an increase in the average per capita share of the gross national income by (430) thousand dinars.

Table No. (3) Testing the relationship between oil revenue (OILR) and average per capita income (GNI)

Dependent Variable: GNI

Method: Least Squares

Date: 05/07/24 Time: 18:42

Sample: 2003 2023

Included observations: 21

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.050772	0.022947	2.212584	0.0394
OILR	0.429469	0.056056	7.661401	0.0000

R-squared	0.755461	Mean dependent var	0.087381
Adjusted R-squared	0.742590	S.D. dependent var	0.202719
S.E. of regression	0.102851	Akaike info criterion	-1.620686
Sum squared resid	0.200987	Schwarz criterion	-1.521208
Log likelihood	19.01720	Hannan-Quinn criter.	-1.599097
F-statistic	58.69707	Durbin-Watson stat	1.602686
Prob(F-statistic)	0.000000		

Source: Table prepared by the researcher based on the results of the (Eviews9) program.

1-Stability Test

a-Stability of Oil Revenue Dust

Through the unit root test with the Dickey-Fuller Statistic package, which specializes in studying the stability of data, which was conducted on the time series of the oil revenue variable, the results that were reached through the outputs of the (EViews) program showed that they are stable at the level and with the presence of the interrupter only at Significance level (1%) because the calculated (t) value of (4.12) is greater than the tabulated (3.8).

Table No. (4) Testing the stability of oil revenues

Null Hypothesis: OILR has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=4)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-4.120452	0.0051
Test critical values:	1% level	-3.808546	
	5% level	-3.020686	
	10% level	-2.650413	

*MacKinnon (1996) one-sided p-values.
Augmented Dickey-Fuller Test Equation
Dependent Variable: D(OILR)
Method: Least Squares
Date: 05/07/24 Time: 18:47
Sample (adjusted): 2004 2023
Included observations: 20 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
OILR(-1)	-0.847202	0.205609	-4.120452	0.0006
C	0.031237	0.085256	0.366389	0.7183

R-squared	0.485393	Mean dependent var	-0.032591
Adjusted R-squared	0.456803	S.D. dependent var	0.508713
S.E. of regression	0.374931	Akaike info criterion	0.970489
Sum squared resid	2.530317	Schwarz criterion	1.070063
Log likelihood	-7.704893	Hannan-Quinn criter.	0.989927
F-statistic	16.97813	Durbin-Watson stat	2.123613
Prob(F-statistic)	0.000642		

Source: Table prepared by the researcher based on the results of the (Eviews9) program.

b-The stability of the variable per capita average

As for the time series of the variable average per capita gross national income, the results showed that it is stable at a significance level of (5%) because the calculated value of (t) is equal to (3.75), which is greater than the tabulated value of (3.8).

Table No. (5). Testing the stability of the average per capita share

Null Hypothesis: GNI has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=4)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-3.754110	0.0112
Test critical values:	1% level	-3.808546	
	5% level	-3.020686	
	10% level	-2.650413	

*MacKinnon (1996) one-sided p-values.
Augmented Dickey-Fuller Test Equation
Dependent Variable: D(GNI)
Method: Least Squares
Date: 05/07/24 Time: 18:51
Sample (adjusted): 2004 2023
Included observations: 20 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
Y(-1)	-0.872584	0.232434	-3.754110	0.0015
C	0.071346	0.051384	1.388498	0.1819

R-squared	0.439136	Mean dependent var	-0.005684
Adjusted R-squared	0.407977	S.D. dependent var	0.273811
S.E. of regression	0.210678	Akaike info criterion	-0.182329
Sum squared resid	0.798936	Schwarz criterion	-0.082756
Log likelihood	3.823294	Hannan-Quinn criter.	-0.162892
F-statistic	14.09335	Durbin-Watson stat	1.936457
Prob(F-statistic)	0.001453		

Source: Table prepared by the researcher based on the results of the (Eviews9) program.

Conclusions:

1. The stability results were significant, as the oil revenues and average per capita data stabilized at their level, and this indicates the existence of a long-term balanced relationship between the two variables, and there is no need to conduct a co-integration test to prove this.
2. The validity of the research hypothesis that there is a direct relationship between oil revenues and the average per capita income in Iraq during the research period. This was confirmed by the standard results.
3. Any change in oil revenues by one unit (million dinars) will lead to an increase in the average per capita share of gross national income by (430) thousand dinars. This is what was proven by the result of the estimated equation.
4. It was found that there were positive effects of oil revenues on the dependent variable in question by tracking the data path for those variables.

Recommendations:

1. The necessity of establishing sovereign funds in which savings can be made in times of high oil prices in order to resort to them in times of crises.
2. Take the issue of fluctuation in oil revenues into consideration when preparing the general budget.
3. Addressing any imbalance in the structure of the Iraqi economy by increasing the contribution of other sectors and reducing the dominance of the oil sector.
4. It is necessary for the Ministry of Oil to establish a work team to develop oil resources, because Iraq was unable to reduce its dependence on it in light of a one-sided economy, through a committee for institutional reform of oil.

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