

Analysis and Measurement of the Impact of Oil Revenues on Economic Variables in Iraq from 2003 to 2016

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National income is a major indicator of a country's economic stability and development and involves a number of macroeconomic variables. In the Iraqi economy specifically, oil revenues play a large role in maintaining and progressing national income. The macroeconomic variables in the Iraqi economy coincide directly with developments in the oil sector, and these important relationships form the basis of this study. Findings shows the impact of oil revenues on the economy using a descriptive analytical research method and multiple regression analysis, both of which are employed to substantiate the study's hypothesis. Conclusions indicate the dominance of the oil sector and the stages of waste and loss and mismanagement of this main resource for the Iraqi economy. Subsequent recommendations are consistent with these conclusions, addressing the much-needed preservation of this resource and suggesting ways to limit impacts of mono oil, reduce rent levels and better serve Iraqi economy as a whole.

Introduction

Rental economies are directly impacted by the many economic variables involved in fiscal revenues. Rent income functions as a stabiliser to balance these variables, particularly those within the macro economy from consumption, investment and government spending. When this rental resource is not used to promote the rest of the economic sectors, imbalances occur and impact one another which can negatively affect all aspects of the economy (Emilio et al., 2019). The research shows the relative importance of the Iraqi oil sector and its impact on the total variables of the national income, which can affect not only the rent sources but all elements of the State's economy. Various factors can in turn affect the oil revenue and are



often externally controlled, meaning that this vital aspect of the economy is outside of State powers (Doepke and Joel, 2017; Pomfret, 2019). In order to achieve comprehensive development of this resource and, in turn, the larger economy, rent sources and investments must continue to thrive. This means that government expenditure behaviours must undergo changes which, if implemented appropriately, may be able to stabilise the economy and increase security and peace among the Iraqi public.

Research statement

The Iraqi economy suffers from the inability to find non-oil economic sectors capable of influencing the macroeconomic variables that make up its national income. These variables are solely linked to the country's rent source and the state cannot, through its economic policy, reduce this effect without further research.

Hypothesis

The macroeconomic variables, which are the main component of the Iraqi economy, are subject to the impact of the oil sector during the period 2003-2016.

Significance of the research

The research will provide a comprehensive review of the reality of macroeconomic variables in the Iraqi economy for the period 2003-2016 and will propose a submission to a single economic sector. This will benefit the country's rent source and thus better serve the economy.

Research Objective

The research aims to explain both positive and negative impacts of the oil sector and its relative importance in various sectors of the Iraqi economy during the focus period.

Research Layout

The research is divided into two sections: the first analyses effects of oil revenues on some of the economic variables that make up the Iraqi national income. The second provides a descriptive analysis of the data which is used to support the research hypothesis.

Oil revenues and their relation to components of national income

The importance of the oil sector in the financial revenues of the state

Table 1 below depicts the impact of oil revenues on the financial resources of the State, to which oil revenues contribute a large amount of revenue. Conditions of the oil sector and its prices, along with the low export capabilities and production and control of specific revenues, indicate a substantial sector collapse. This is evidenced in the low 9.4% of revenues generated in 2010, a year characterised by relative stability and limited support for the agricultural sector in particular. The annual rates of change for oil revenues indicate a positive relationship these and the revenues of the general budget. Any decrease in oil revenues will therefore be reflected in the general budget, as seen for the years 2009, 2013, 2014, 2015 and 2016. Oil revenues have been affected by a number of political and larger economic instabilities. The decline in world oil prices and the impact of oil production from 2014 to 2016 has directed impacted the oil sector, as well as the dispute with the Kurdistan region on the proposed oil and gas laws and the war against terrorist gangs, dangers which indicate economic, humanitarian and social collapse. The absence of the general budget from diversifying revenues and the reliance on depleted sources linked to externally controlled influences may expose the State to bankruptcy. These events will thereby dictate the conditions of international organisations and in turn endanger security, community peace and the fate of the people (Abdullah, 2017). The need to use the oil wealth is therefore paramount in order to diversify other economic sectors for achieving sufficient revenue. Tax revenue through the private sector can be effective here as it produces high income and employment rates across all sectors, especially the agricultural, industrial and tourism sectors. These industries possess enormous capabilities and can provide strategic plans to improve national income (Kazem and Miqdam, 2017).

Table 1: The importance of the oil sector in financing the general budget of the state (billion Iraqi dinars) for the period (2003-2016).

*Note: The above years between the brackets indicate a negative growth rate.

Year	Public revenue	Annual percentage change	Oil revenue	Annual percentage change	Share of oil revenues from public revenues%
2003	15985.52	----	14386.97	---	89
2004	32982.7	106	32627.2	126.7	98.9
2005	40502.89	22.8	39480.07	21	97.5
2006	49055.54	21.11	53201.46	22.7	98.8
2007	54599.45	11.3	48461.66	9.7	97.4
2008	80252.18	47	79266.34	49	98.8
2009	55209.35	31.2	51874.5	34.5	93.9
2010	70178,22	27.11	63594.16	22.6	90.6
2011	103989.09	48.7	103061.76	62	99.1
2012	119817,22	15.22	111326,166	8	92.9
2013	113840.07	5	105695,825	5	92.8
2014	105553.85	7.3	98511,504	6.8	93.3
2015	66470.25	37	64455,242	34.6	97
2016	54409.27	31.7	44267,063	31.32	96.2

Source: CBI, Annual Statistical Bulletin.

The impact of the oil sector on foreign trade

Iraq's trade balance relies entirely on oil exports, with high import rates for its commodities but rarely for its agricultural products. Without oil exports, Iraq fails to meet the country's needs of the GDP, which is largely based on the oil sector. Iraq is, however, a vast market for imports of all types and forms (Bache, 2018), though such industrial or agricultural imports were unable to counter the waste of wealth derived from the significant drop in oil prices in 2014. The Iraqi economy saw a substantial loss of stability after this event, forcing the currency to be controlled externally by the foreign currency auction, which was made no better the continuation of the warring political climate.

Table 2 shows the impact of the rate of change in oil exports on the total Iraqi export scheme. This is another dangerous indicator of the lack of economic diversification in the State, showing that any change to the single commodity of oil can have far-reaching effects on all other aspects of revenue. This commodity can be affected both negatively and positively by external influences, and despite high revenues from this source, the remains a need to diversify exports and increase shares in total exports (Bache, 2018; Ipek, 2017).

Table 2: The impact of oil sector on foreign trade in the fields of the period (2003-2016) (JD million).

Year	Total exports	Annual rate of change%	Total oil exports	Annual rate of change%	Relative importance %
2003	25677064	---	21553327.5	-----	83.94
2004	25877930	0.78	25360371.4	17.66	98
2005	34882572	34.8	34150038	34.65	97.9
2006	45030865	29.1	45815031.6	34.15	97.3
2007	3842512	13.5	37229041.4	18.7	95.6
2008	74559420	91.4	72397196.8	94.46	97.1
2009	46129590	38.1	45160868.6	37.6	97.9
2010	60563880	31.3	60200496.7	33.3	97.1
2011	100192950	65.4	99892371.15	65.9	97.4
2012	109847890	9.6	109298451	9.4	99.7
2013	104645502	4.7	104226920	4.7	99.5
2014	98539801	5.8	98145642	5.8	99.6
2015	57611000	41.5	57207723	41.7	99.3
2016	51742500	10.2	51535530	9.9	99.6

Source: Ministry of Planning, Central Organisation for Statistics and Information Technology, Annual Statistical Bulletin.

The impact of the oil sector on government spending

By identifying these substantial impacts of the oil sector on government finances, this source can be considered the main supporter of the public revenue. This revenue is generated to meet public expenditure and thus allows for government projects in the operational and investment sectors. The decrease in oil revenues as shown in the table above signifies the impacts these changes will have on the public expenditure. The inconsistencies displayed in the years 2005, 2007 and 2011 are due to low rates of implementation in public expenditure, which were caused by a delay in adopting the budget to the mid-fiscal year. Further, security problems surrounding investment projects during 2005 and 2007 caused financial surpluses due to the increase in oil revenues which were not part of the general annual budgets for those years. When reviewing the comparison between the planned expenses, whether public, operational or investment, a low percentage of achievement is seen between what is planned and what is actually effective (see Table 3). For the 2012-2016 period, the significant correlation between the rates of changes in oil revenues and public expenditure shows clear decreases in oil revenue for these years. Data from 2016 is attributable to the partial reimbursement of expenses through internal and external borrowing. This period, witnessed since 2013, caused

a deficit in the general budget owing to the decline in oil prices, the unstable political climate, the suspension of export in northern Iraq and the non-payment of the Kurdistan region of oil revenues to the central government. Tables 3 and 4 below respectively illustrate the implementation rates of general, operation and investment expenses within the State, and the impact of the oil sector on public expenditure during the 2003-2004 period (Shaaibith and Shatha, 2018; Linda and Joseph, 2006).

Table 3: Implementation rates of general, operating and investment expenses.

Year	Percentage of implementation of the general budget%	Ratio of implementation of operating budget%	Percentage of implementation of the investment budget%
2004	159.4	202.2	52.4
2005	73.3	76.7	60.6
2006	76.1	78.6	65
2007	75.4	80.1	61
2008	68.5	77.5	75.8
2009	76	77.7	70
2010	82.8	89.5	65.7
2011	81.4	91.5	59.3
2012	89.76	94.8	78.9
2013	86	94.5	73.3
2014	----	----	----
2015	58.9	66.2	45.1
2016	63.3	83.8	61.7

Source: The ratios were extracted in comparison to the public budgets published in the Iraqi fact sheet (miscellaneous numbers) and the actual expenditures mentioned in the previous table.

*Note: There is no public budget planned because of the instability of the budget by the legislative authority.

Table 4: The impact of the oil sector on public expenditure (current and investment) during the period 2003-2004 (million Iraqi Dinars).

Year	General expenses (1)	Rate of Change (2)	Current Expenditure (3)	Rate of Change (4)	Investment expenses (5)	Rate of change (6)	Table of Change for the Oil Sector (7)
2003	4,901,931	---	4614080	---	287881	---	---
2004	32,117,491	555.2	29102758	530.7	3,014,733	947	126.7
2005	26375175	17.9	21803157	25	4,572,018	51.65	21
2006	38806679	47.1	32778999	50.3	6027680	31.83	22.7
2007	39031232	0.6	31308188	4.5	7723044	28.12	9.7
2008	59403375	52.2	47522700	51.8	11880675	53.8	49
2009	52,567,025	11.5	42053620	11.5	10513405	11.5	34.5
2010	70,134,201	33.4	54580860	29.8	15553341	48	22.6
2011	105139576	12.3	60925554	11.6	17832112	14.65	62
2012	78,757,666	33.5	75788623	24.4	29350953	64.6	8
2013	119127556	13.3	78746860	3.9	40380750	37.58	5
2014	112192125	5.8	76741673	2.5	35450452	12.21	6.8
2015	70397515	37.25	51832839	32.45	18584676	47.6	3406
2016	67067437	4.7	51173428	1.27	15894009	14.47	31.3

Source: Column (1) Ministry of Planning, Central Bureau of Statistics and Information Technology Annual Statistical Collections; Column (3.5) Central Bank of Iraq, Directorate of Statistics and Achievement, Annual Statistical Bulletin, and Columns (2), (4), (6) and (7) were prepared by the researcher depending on the previous columns.

The impact of oil revenues on the formation of fixed capital

Table 5 below outlines total capital formation and current prices of the public and private sectors between 2004-2015, while Table 6 illustrates rises in oil revenues paid to increase investment allocations. These include increases to the proportion and value of the investment and general budgets budget, declines in oil revenue and subsequent decline in the formation of government fixed capital. Each year represented is directly dependent on oil revenues and may differ in terms of which private capital formation was unable to offset the decline in the composition of public and total fixed capital. This trend was evident in the years 2009, 2014 and 2015, while in 2007, the decrease was due to poor time management resulting in incomplete projects (Bassam, 2007). Ratios between the accumulation of the general fixed capital and the annual rate of change are also apparent in the accumulation of total capital. This illustrates control of the government sector on fixed capital formation rates and the simultaneous weakness of the private sector during the period of study. The annual increase in the value of total capital formation for the private sector shows the extent of government

intervention and the impact of oil revenue rents on the growth of fixed capital formation. Despite this finding, the increase in investment allocations and the formation of fixed capital did not have a positive impact on sectors like agriculture and manufacturing. These contributions proved very weak in the gross domestic product, as reflected in the production output of oil and electricity sectors.

When reviewing the investment budget in Iraq, researchers found that the non-productive sectors converted by investment allocations did not generate sufficient returns. These investments, as well as many other projects, spent millions of dollars without completion. The disparity between these investment allocations and the output required to increase the fixed capital formation resulted in a weakened fixed capital in Iraq (Ibrahim, 2019). The general decline seen in 2014, 2015 and 2016 was caused by worsening political climates and gang warfare, a regression in world oil prices and a deficit in the general budget. Researchers note the worsening annual rate of change in total composition from 44.3% in 2013 to 1.45%. This decline led to a value decrease in the total fixed capital formation, changing from 35.5% growth rate in 2013 to just 7.09%.

In 2014, the private sector composition increased slightly to achieve an overall positive rate, albeit still a low one. The private fixed capital was not significantly affected by oil revenues but was also unable to form industrial or agricultural capital. This meant that economic development and diversified sources of income were left unchanged, leading the government to again invest in buildings and commercial complexes while neglecting industrial and agricultural infrastructure. Despite the impact on the value of capital formation, increases in oil revenues were not qualitatively effective enough to support the various economic sectors, reduce their costs or generate a sufficient source of income for the public budget.

The figures in Table 5 reflect increases in capital value, but the reality of the Iraqi economy does not indicate the accumulation in increasing investment rates, nor does it address the various economic activities in the Iraqi economy (Alnasrawi, 2010). Declines in fixed capital formation continued until 2016, data which is consistent with the decrease in oil revenues as shown in Table 5.

The impact of oil revenues on consumer spending

Oil revenues are the main source of government income in Iraq and are financed for public expenditure. Table 6 displays an annual increase in government spending in accordance with an increase in oil revenues, albeit at different rates of change each year. 2007 saw a larger percentage of this increase in line with the government's attempts to raise the standard of living in Iraq; unemployment costs and additional security requirements during this period

caused an increase in public expenditure. Without the prior rise in oil revenues, these secondary costs would not have been met.

The 2009 percentage of expenditure was recorded as lower than the previous year, which produced already low oil revenues and a negative annual change rate of 34.5%. While the increase in consumer spending by the government after the year 2009 decreased oil revenues due to the global crisis and the decline in oil prices, 2010 and 2011 saw a recovery of oil revenues and a rise in relative stability in the Iraqi economy. Rather than preserve and maintain this stability, government consumption spending did not change to a more conservative approach and thus continued to waste vital financial gains (Algaeed, 2017).

In 2014 and 2015, the decline in oil revenues impacted positively on consumer spending and lead to confronting political conflicts. This push for the liberation of Iraqi land was reflected in a reduction in spending and financial waste, though many unjustified expenditure activities still occurred during this period. Unnecessary spending on honorary posts of many political figures and excess expenditure in industries like travel and hospitality contributed to these wastages. Government consumption expenditure significantly increased to 0.4% in 2014, while the growth rate in 2015 was down 5.08% compared to the previous year (Fadil, 2015).

Impacts on private consumption were largely in accordance with economic theory. Beginning in 2004, higher income from wages and improved living conditions as resultant from increased oil revenues escalated consumer spending by 41.2%. This rate of increase supports the premise that higher income generates higher expenditure, and results in a saturation of goods and services that were once unattainable due to previously low incomes. Although consumer spending increased between 2006 and 2008, this marginal slope of consumption declined with second income of oil revenues. A similar trend occurred in 2009, when a decline in oil revenue saw higher consumption rates at the expense of this marginal slope. By 2011, the annual rate of change in private consumption expenditure reached 30.85%, offsetting a decline in the growth rates of government consumption expenditure for this period (Radhi, 2018).

A pattern exists in the data which shows increases in oil revenues leading to increases in the values of total consumption expenditure, as shown in Table 6. From the data presented, it can be concluded that oil revenues have had a significant impact on the increase in income and hence on the value of total consumer spending in both the public and private sectors (Holmes, 2019; *Equity and energy*, 2019).

Table 5: Total capital formation and current prices of the public and private sectors (2004-2015) (Million JD).

Year	Annual rate of change of oil revenues	Total fixed capital formation	Annual rate of change	Total fixed capital formation of the public sector	Annual rate of change	Total value of capital formation for the private sector	Annual rate of change
2004	-----	2857807.0	----	2487718.1	----	370088.8	----
2005	21.0	10182362.2	256.2	9743477.1	291.6	438885	18.6
2006	22.7	16911154.7	62	16013395.45	64.3	897756.2	104.5
2007	9.7	7650404.4	55.4	6861039.87	57.1	669364.5	25.4
2008	49	23240539.1	208.6	22455103.1	227.3	785436	17.34
2009	34.5	13471242.3	42	12083562.57	46.18	1387679.7	76.67
2010	22.6	26252776.8	94.9	24173486.2	100	2079290.5	49.83
2011	62	28234992.6	7.55	25723084.7	6.41	2511907.9	20.8
2012	8	38139871.0	35	33274363.54	29.35	4865507.4	93.69
2013	5	55036676.1	44.3	45086546.26	35.5	9950129.9	104.5
2014	6.8	55837402.8	1.45	41889615.46	7.09	13947787.4	40.1
2015	34.6	50650572.7	9.29	33838563.9	19.2	16812008,8	20.5
2016	31.3	39715637.2	21.59	19446700.4	42.5	20268936.8	20.56

Source: Ministry of Planning, Central Organisation for Statistics and Information Technology, Annual Statistical Group.

Table (6): Total consumption expenditure at current prices.

Year	Annual rate of change of oil revenues	Total consumer hypocrisy	Annual rate of change	Total government consumption expenditure	Annual rate of change	Total private consumption expenditure	Annual rate of change
2004	---	33147720.3	----	13608947.3	----	19538773.0	----
2005	21	42276630	27.54	14683390.3	27.54	27593239.7	41.2
2006	22.7	50510793.8	19.47	14984454.1	19.47	35526339.7	28.75
2007	9.7	63834497.3	26.37	20871484,0	26.37	42963013.3	20.9
2008	49	75230521.7	17.85	26139166.0	17.85	49091355.7	14.26
2009	34.5	95773952.9	27.3	27517759.7	27.3	68256193,2	39
2010	22.6	102687067.7	7.2	30660743.7	7.2	72026324.0	5.52
2011	62	114412156.6	11.41	36999562.9	11.41	77412593.7	7.47
2012	8	143458255.3	25.38	42158634.3	25.38	101299621.0	30.85

2013	5	153927724.8	7.29	47755742.7	7.29	106171982	4.8
2014	6.8	159264132.2	3.466	47946900.1	3.466	111317232	4.8
2015	34.6	161297236.3 17,248,095.8	1.27	45506443.6 3,631,594.9 46,298,818.0	1.27	115790792.7 13,616,300,9	4.01

Conclusion

From this analysis, it can be concluded that Iraqi oil revenues account for more than 95% of the State budget. This is a dangerous indicator that the budget relies on this sector as its only revenue stabiliser, which is constantly exposed to foreign influences. With no alternatives to diversify its economic resources, the Iraqi State and its economy are at constant risk. Further, oil exports control all other commodity exports in Iraq, indicating that the economy has an external economic dependence for all its other industry sectors. As these oil revenues are comprise the bulk of the public budget, and as evidenced in their rates of development, government expenditure is focusing more and more heavily on oil revenues as the main source to meet public expenditures.

Another finding from the research is that total gross fixed capital formation is increasing in value due to changes in oil revenue. Exceptions to this effect are seen in the year 2007 due to the delayed completion of investment projects, which in turn delayed development rates of fixed capital accumulation. These delays produced a significant decline in the rates of change in oil revenue and subsequently affected the composition of private capital.

The Iraqi economy is characterised by a clear and significant consumer pattern, with percentages in this study showing the continuous increase in consumption. This high consumer spending results from increased income and an attempt to satisfy the humanitarian needs that the Iraqi society has been deprived of for so long, with 2003 marking increases in population and diversified societal needs. Since 2013, the rates of change have also started to decline in accordance with changing oil revenue. The government consumption agreement has affected variables in oil revenue; despite the low rates of annual change in oil revenues, which make it very difficult to abandon previous spending, some ratios remain positive for this government consumption expenditure. As reported in the data, however, low development rates are seen in 2009, 2014, 2015 and 2016 due to the conditions mentioned during the research review.

In conclusion, this study suggests that the oil sector produces highly disruptive and unstable macro-variables within the Iraqi economy. As this sector is clearly utilised as a major component of the national income, the Iraqi economy and its future are being seriously impacted.

Recommendations

In order to appropriately preserve Iraq's oil revenue, reduce financial waste and stop exploitation from military, emergency and conflict spending, new methods must be implemented into the national budget. The Iraqi government must utilize its oil funds carefully and effectively in order to support other economic sectors, especially those with comparative advantages that are capable of serving local communities or providing fruitful investment climates for other export purposes. Further, in learning how to compensate for difficult imports or wasted funds, the government can diversify its exports and maintain a positive trade balance of non-oil activities.

Paying attention to public investment spending by increasing shares in public expenditure will support the productive economic sectors and better develop infrastructure. This provides external decisions that reduce the costs of investors and subsequently increase their profits, creating a positive impact on Iraq's national income and employment situation.

The study also encourages the private sector to increase fixed capital for projects consistent with general economic plans to achieve integration between the public and private sectors. This will achieve profitable investments that increase the national income and tax revenues of the State, thus diversifying income sources and reducing dependency on the oil sector.

Another problem found in the research was the State's high consumption expenditure and the collapse of its administrative structure in lieu of prudent spending policies. It is recommended that the State therefore disposes of some public sector facilities which can be adequately managed instead by the private sector according to the methods of privatization and participation, though without affecting or endangering the labour force. Oil revenues directed towards economic and social development projects can therefore start to form a solid economic base capable of diversifying income and increasing independence in the national budget. This independence can affect positive change on Iraqi communities by increasing security, preserving financial stability and safeguarding the sovereignty of Iraq away from international and political conflicts. Achieving this kind of security will also create opportunities for internal and external investments, boost employment and, in turn, increase the national income of the Iraqi economy.

All of the above cannot be achieved without extensive studies, data and statistical indicators for each sector of the economy that further illustrate their impacts on macroeconomic problems. These recommendations can be implemented to start addressing such problems and to develop other revenues in Iraq in addition to the oil sector. In promoting these other sectors



through precise procedures and policies, Iraq can achieve increased opportunities, diversified and stabilised income, independence from external powers and greater State security.

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