Restructuring of non-oil revenues in the state's general budget using financial engineering tools

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Abstratc
The research aims to identify the methods of financial engineering in how to restructure revenues, and to show the reasons for the failure of revenues in general to cover the deficit in the general budget. In addition, it explains the limitations and determinants of developing non-oil sources of financing. It uses the inductive and the descriptive analytical approach using the engineering tools of both traditional and new finance to find solutions to financial problems at the level of government financial institutions represented by financing the budget and managing its financing risks. Covering the budget deficit, managing its risks and the most important recommendations provide the appropriate environment in the Ministry of Finance that helps to develop mechanisms and methods of modern financial engineering such as tools and ideas. This is an approach in its strategy prepared by the Economic Department to maximize non-oil revenues through the implementation of innovative financing strategies. It implements projects with financial returns on the state treasury.

Introduction.
Financial engineering is one of the modern methods that exploit the knowledge and competencies of other sciences such as applied mathematics, economics, statistics and computers, to address financial issues through the creation of new financial products. These products help in finding solutions to financing problems and risk management, and is concerned with evaluating and measuring the risks to which funds are exposed, whether at the level of governments or companies. These goverments and companies operate within the economic sector. It is a set of operations aimed at innovating and designing innovative financial tools, developing existing ones, and finding new innovative creative solutions for economic and financial problems.
There is no doubt that using financial engineering methods, both traditional and new, to restructure non-oil revenues in the budget is new. Most of the applications of financial engineering were on financial institutions such as banks, insurance companies, mortgage and

other financial institutions, and this research comes as an attempt to show that impact on the budget.

2 -Research methodology.

First: the research problem

   The state's dependence on the oil resource by up to 90% of the total revenues led to the occurrence of major imbalances in the budget as a result of the drop in oil prices globally. Thus, a significant decrease in revenues happened due to the state's failure to develop its financial performance during the last period and its failure to take any financial measures or reforms or developing modern and new mechanisms and methods to develop non-oil sources of financing.Thos led to a chronic deficit in the general budget, which was reflected in all other forms of development such as the internal related to legislation and laws in force, the extent of the ability to apply them and the external represented inflow of foreign investment inward.

It is possible to define the research problem in the following questions:

1 -What is the role of non-oil revenues in financing the state's general budget?

2 -Does the government adopt financial engineering methods to find solutions to the financial problems it faces, including the budget deficit or the investment of the surplus?

3 -Does the state adopt a strategy to sustain these revenues to reduce dependence on oil revenues?

Second: Research objectives

The research objectives are the following:

1 -Identifying the sources of funding for the state's general budget, and identifying the importance and role of each source of funding and its role.

2 -Determining the non-oil funding sources and determining their relative importance.

3 -Identifying the methods of financial engineering in how to restructure revenues.

4 -Identifying the reasons for the shortfall of revenues in general to cover the deficit in the general budget.

5 -Knowing the limitations for the development of non-oil funding sources.

Third: The importance of research

   The issue of maximizing non-oil revenues in particular has recently gained wide attention by government officials as it is essential and important. It enables the state to pay part of its obligations, cover the deficit in the public budget and invest the surplus if it is achieved. This importance comes through the use of a new method, which is engineering of the financial system away from traditional methods, and finding solutions to the financial problems that the budget may face and managing its financing risks in a way that achieves the planned state goals.

Fourth: Research hypotheses

The research is based on two main hypotheses:

1 -Restructuring the revenues in the state's general budget contributes to reducing the deficit in it.

2 -The use of financial engineering methods contributes to maximizing non-oil revenues.

Fifth: The research community and its sample

  Research community, the Ministry of Finance and the sample Accounting Department.

Sixth: The time period

 The actual financial statements of the 2016 accounting department to 2020.

3The concept of financial engineering

The concept of financial engineering is modern in terms of term and specialization. Yet, it is as old as financial transactions themselves, and financial engineering is seen as a process for

building complex financial tools that do not differ in content from the building blocks used in the construction of buildings. However, the difference is in the elements of construction and one of the most important construction tools used in Financial engineering is the financial derivatives that in turn affect the return and risk such as credit risk and interest rates (McDonald, Cassano, & Fahlenbrach, 2006). Financial engineering is the science that provides the systematic framework for designing and preparing appropriate techniques in managing financial risks that include both asset management, liability management and strategy Hedging against risk(Abdel Hai, 2014). It has been defined as the use of existing financial products to improve returns and reduce risks in light of changing market conditions(Al-Zuhairi, 2017). It is an application of mathematical methods to solve finance problems, also known as financial mathematics, mathematical finance, and computational finance. Financial engineering relies on tools from applied mathematics, computer science, statistics and economic theory, meaning that financial engineering exploits the knowledge and competencies of other sciences in creating new financial products that help in finding Solutions to financing and risk management problems(N, 2018).

Financial engineering can the creative intellectual process that is concerned with designing and inventing new financial tools with new financing mechanisms and methods. These methods lead to solutions to the problems faced by financial institutions, and managing risks through analysis, measurement, and forecasting using quantitative mathematical methods and statistical modeling that enable them to avoid or reduce risks to the minimum in order to achieve the planned goals at the lowest costs and highest returns.

4- Financial engineering tools and their classifications

Financial engineering tools include a wide range of financial tools, where the division of securities in the financial markets leads to: traditional securities and innovative securities. The first includes recognized securities such as shares and bonds, which represent the basis in the current financial markets that are included in the transaction and within a few days. Its value is paid to complete the procedures for transferring ownership, and the second is the newly created securities whose value is derived from the market value of another (existing) asset and is in the form of a contract derived from the original(Younes, 2019).

As is the case in the concept of financial engineering, its tools have taken a large part of the thinking of writers and researchers, and accordingly, financial engineering tools can be classified as follows:

First: - traditional financial instruments

(Traditional) financial instruments can be divided into two parts: stocks and bonds, according to the following(Tatri, 2014):.

A- Shares (ownership instruments): A stock is an instrument that represents a financial asset issued by a joint stock company and gives its holder the right to ownership of his share in the company's capital. It is tradable in the secondary financial markets by offering it for public subscription. and financial institutions.

B- Bonds (debt instruments): A bond is defined as a security with one nominal value issued by a government or a joint stock company. These bonds are usually offered for sale in the money market to collect the required amount, and the government or company undertakes to pay the loan and its interests in accordance with the terms of the issuance. Thus, the bond is a long-term financing tool issued in the capital market, and is characterized by several characteristics that can be summarized as (debt instrument, fixed-income investment instrument, limited term, tradability).

Second: - New financial instruments

This type is also called financial engineering tools, financial derivatives, or financial derivative contracts, which include a group of financial contracts that vary according to their nature, risks, terms and complexity(Sarama, 2012).

A- Financial Derivatives

Many researchers in the field of finance and investment believe that financial engineering tools are the best that investment thought has been able to achieve. Many financial and banking institutions have sought to use financial derivative contracts in order to find new investment sources to manage financial risks through the creation, development and implementation of a set of new financial tools and the use of scientific principles. This is to find solutions to complex financial problems(Hakim & Al-Zuhair, 2019), Also, financial engineering tools or financial derivatives from a legal point of view are a contract that includes a mechanism for regulating the relationship between two parties to an event, and they are financial contracts whose value and characteristics are derived from the value of the underlying asset. A contract is like a stock or a commodity. When the value of the asset changes, the value of the derivative also change(Al-Ghanimi, 2018). These assets are divided into two types, real and financial related to items outside the statement of financial position. These contracts vary according to their nature, risks, and maturity dates. The investment may be real in assets Capitalism or financial investment in financial instruments. The investment in financial derivatives is focused (derived) on one of the two types. It is oil, gold, silver, wheat, or focused on a financial asset such as stocks, bonds, treasury bills, and mortgage(Hakim & Al-Zuhair, 2019), and that all derivatives are contracts and contracts in themselves have no value in the sense (they do not add value such as establishing a factory or creating a job opportunity). Rather, they are settled based on price differences or returns in the market, and the settlement is not required to deliver the asset subject of the contract(Al-Harash & Al-Harash, 2019).

The new financial engineering tools or financial derivatives are divided into two types: The first is the main financial instruments, which are four types represented by (option contracts, futures contracts, and future contracts futures and swaps contracts), second complex financial instruments or (intermediate)

B-Securitization

Securitization: In its basic meaning, it refers to the technical methods through which illiquid assets can be transformed or changed their form into liquid assets and resold them to investors in the money markets."(Philip, 1991). It is one of the most important financial innovations that enabled financial institutions From providing the liquidity you need at low costs, as well as transferring part of the risk to other parties (Maryam, 2012: 3), and it is defined as: a financial technology to provide liquidity by issuing negotiable papers in the financial market, which is reflected in the financial institution mobilizing a group of similar debts as assets and make them in the form of one debt (Tatri, 2014).

5 -The concept of the state's general budget.

The importance of the general budget, especially in the economies of developing countries, is that it is one of the financial policy tools, and one of the most important financial planning tools that determine the government's goals, policies and programs in how to exploit resources and the process of distributing them in a way that achieves those goals. The budget is in achieving comprehensive economic development, and is considered the effective means in mobilizing and distributing financial resources as it is the container into which the various

revenues flow to return and flow from them in the form of classified expenditures according to the types of exchange. Thus, the impact of this positively on the well-being of society appears and it is one of the tools of economic and social guidance to achieve economic development and social justice.

The budget was defined as the document that shows the public spending units how financial resources are spent in order to achieve a set of predetermined general goals(Shabalala, 2005). The definition focuses on the fact that the budget is a document that shows the mechanism of spending and revenue collection and the implementation of plans in order to achieve the set goals.

It is also defined as a state financial plan that includes estimates of public expenditures and revenues for a particular fiscal year and for all aspects of expenditure, issued by a law from the legislative authority before its implementation. It reflects the economic and social objectives adopted by the government because it includes programs and projects(Copley & Joha, 2007).

The budget is a work plan expressed in a quantitative manner and prepared in advance for the institution or for the various functions involved in it(Ngozika, 2013). This definition shows that the budget is a plan based on future estimates and expressed in a quantitative manner for all parties involved in its preparation.

It is also an expression of the general policy of the government's direction, and it is a financial plan that is clarified by declaring the amounts that will be spent for the various purposes for which it was specified, and the budget appropriations cannot be exceeded in general without following due legal procedures(Freeman, Shoulders, Allison, Smith Jr, & Becker, 2014). This definition focuses on the fact that the budget is a financial plan for a future period that is controlled by the political authority, and the parliament approves the pre-estimated revenues and expenditures in it in order to achieve the general objectives.

According to the researcher, and based on the above definitions and concepts, we can define the state's general budget as a document issued by the legislative authority with a law that includes a plan for a group of programs and activities expressed in the estimated figures of expenditures and revenues for a period of one year, and these estimates are based on actual facts that occurred in the past, the purpose of which is achieving a set of pre-planned economic and social objectives in order to fulfil a comprehensive development in all sectors adopted by the state.

6 -The solutions offered to confront the financial problems in the budget by using the methods, ideas and tools of financial engineering through the following:

A - Raising the exchange rate of the dollar against the Iraqi dinar: transactions in foreign currencies and their exchange rates are among the most important obstacles faced by economic units that affect the movement of these prices because of their risks to economic units (Al-Ghanimi, 2018). Also, the exchange rate is one of the tools in managing budget risks and covering its deficit, as the Iraqi government can reduce or raise the value of the Iraqi dinar against the value of the dollar, as it pumps more than (8) trillion dinars per month in the form of salaries and purchases("The currency sale window in the Central Bank of Iraq," 2019).

Raising the exchange rate of the dollar against the Iraqi dinar adds to the general budget amounts higher than what the Ministry of Finance currently receives by replacing the dollar with a larger amount of the dinar. Thus, it coveres part of the budget deficit in terms of

salaries, purchases, etc. The higher the value of the reduction in the Iraqi dinar, the greater the amounts received. It is covered by the Ministry of Finance and vice versa, i.e. there is a positive relationship between them.

B - Issuing investment certificates to finance strategic investment projects in Iraq, similar to the financing of the second Suez Canal("The proceeds from the sale of the Suez Canal investment certificates "exceed expectations"," 2014).

The Iraqi government issues investment certificates to finance strategic projects and put them up for sale through the Rafidain and Al-Rasheed banks and the Trade Bank of Iraq (TBI) in various categories for a period of five years and with a specific annual interest. It develops the railway system and highways linking Iraq with Syria and Turkey and then to Europe. The project cost is about (5.4) billion dollars, which will generate revenues for the public treasury comparable to oil revenues and perhaps much more if it is completed, in addition to employing thousands of manpower during Completion time.

C- Direct deduction of tax and customs revenues for the Central Bank's currency sales in the (currency window) from Transfer and LC Credit for the purpose of import(" Annual Statistical Bulletin," 2018).

For the purpose of controlling and maximizing revenue collection, the amount of tax and customs duties at the source should be deducted directly in the currency window from the volume of amounts issued for the purpose of import, which are remittances and documentary credits. These percentages are determined based on what is imported by merchants (such as electrical appliances, mobiles, cars or wood ... etc.) and according to the instructions and controls in the General Tax Authority and the customs tariff law in the General Customs Authority, in addition to the deduction at the source, one of the ways to develop the tax system in Iraq is to provide and implement a number of electronic work systems and work automation in the two general tax authorities Customs and the Central Bank, which will facilitate their work and enable them to control and monitor the collection of funds.

D- Securitizing or securitizing debt or issuing bonds for amounts owed by the government: Securitization is one of the methods related to the stock markets, and one of the important tools for financial derivatives, enabling financial institutions to generate new sources of financing and this is done by liquidating their financial assets, including debts of all kinds, transferring its risks to others or reducing them to the minimum possible while achieving high returns(Sarama, 2012).

This is through the government's issuance of bonds for the amounts owed to others by local and foreign contractors and companies, at a certain percentage, as if it was 50% of the full maturity of the debt for a certain period of time and with a specific interest to pay the amounts owed in favor of local and foreign companies, contractors or any other entities. The remaining 50% can be paid on form cash by reserving allocations for it in the annual budget, and this measure eases the burden on the budget and manages its risks well.

E. The mechanism of partnership between the public and private sectors in the implementation of investment projects: (Mirgorodskaya, 2018: xx), G.A. Buryakov, O.V. Andreeva, A.S. Orobinsky(2018)

The government can find a framework for the mechanism of partnership with the private sector in implementing investment projects under conditions of limited economic growth and the risks of budget deficit. The concept of financial engineering of corporate structures allows the participation of the state, which leads to improving the movement of financial resources,

attracting additional sources of financing and reducing the cost of their use, thus reducing the cost of their use. The burden of the budget from financing some projects.

H- Swap contracts for establishing and equipping strategic projects and infrastructure (Al-Asadi & Al-Issawi, 2016):

This happens through the exchange of associated gas in an investment form for a specified period of time in return for the establishment of electric stations, thus maximizing revenues in several directions. The first is to create assets for the state represented by power stations, the second is not to waste gas by burning it in the air, and the third is to generate revenues from selling electrical energy production to the citizen, achieving self-sufficiency and then exporting.

G- Supporting Small and Medium Enterprises:(Al-Tamimi, 2018). Employing financial engineering in the use of investment capital as a source of financing in small and medium enterprises.

The conditions that Iraq went through, such as successive wars and terrorist operations, created unemployment among the Iraqi youth, and that the search for tools to confront this issue is the adoption of business incubators and financial support for small and medium projects, as their success requires the need to obtain funding sources in order to cover the financial needs. This is to facilitate business and overcome difficulties in front of it, and this will lead Iraq to activate programs aimed at providing financial assistance and moral guidance for these projects, which will develop various crafts and industries and produce types of goods and services, and these projects will develop into major projects and industrial bases in the future, which will employ thousands of manpower as well as These institutions are subject to the Iraqi tax law and treasury support.

D- The method of the financial buffer to manage budget risks: https://www.ahewar.org

It is a precautionary system that depends on the fluctuation in income resulting from the unilateral economy, which depends on a single sovereign resource for the country such as oil, through which (future and flowing financial resources are reserved) and approved as a financial reserve or a financial buffer until the end of the budget year or the fiscal year. It is a stored financial stock that is depleted slowly during the year, lest revenues fluctuate until the last day of that fiscal year, thus managing the budget risks and achieving a kind of stability in it. It is a financed from the differences in selling oil prices between what has been fixed in the budget and the market price and from what is sold of state real estate as well as investment returns Iraq abroad.

A. Development and Investment Fund: (Saleh, 2018a)
    This is done through investing the financial buffer itself and transferring it to a sovereign wealth fund instead of periodically emptying the resources of the buffer and transferring it from financial treasury to a financial flow in the following fiscal year. This is also through adopting a financial mechanism to implement infrastructure projects. If its returns increase, it will turn into a sovereign wealth fund, and its returns are a continuous compensating financial flow in the event of the fluctuation of the natural unilateral resource, which means creating an indirect diversification of budget resources with the availability of self-protection in the event of a decline in the revenues of oil resources.

B. A- Establishment of a submerged sovereign fund: (Saleh, 2018b)

C. This fund is financed periodically from annual allocations for infrastructure projects in the federal public budgets, and is sometimes compensated when withdrawing from it and

declining its balance with bridge loans provided by international institutions such as the International Government Export Guarantee Finance Institutions EFIC to support the combined foreign contracting companies, as this model (financial and executive) will be achieved along the efficiency in the continuous implementation of contracting projects in Iraq.

The foreign contracting sector offers offers to finance its contracts through conditional or linked deferred payment to contract implementation through an integrated cycle that represents a non-franchise or semi-franchise (i.e. low interest) financing cost linked to the establishment of contracting companies. The submersible fund will act as the guarantor and financier of infrastructure projects, and at the same time the fund is a new model that generates financing integration in which the government financial resources flowing into the fund balances are paralleled with the amounts of bridge loans provided by the combined international bodies and their withdrawals dues for the implemented projects on a periodic basis.

D. Through any of these funds, it is possible to finance strategic projects in the industrial, agricultural and tourism sectors with returns on the state's public treasury. These projects include:

E. Oil industries: (manufacture of motor oils, petrochemicals, derivatives, etc.) similar to the Nibras Petrochemicals project (an Iraqi government project) content of marketing through Chinese companies (purchasing all production stages).

F. Investing agricultural lands for an agreed period of time with the investor, and it is paid through the profits of the project, similar to agricultural projects in the Kurdistan region, where a contract was made with the Turkish Mersin Company in this regard.

G. Establishing power plants by exploiting associated gas and other strategic projects that have a return on the state treasury and thus have a positive impact on the budget.

H. Construction of highways and railways to transport goods across Iraq to neighboring countries.

I. Establishing and developing tourist facilities of all kinds, religious and non-religious

7-Restructuring of non-oil revenues for the period from 2016-2020
First: Analyzing the content of budget data

Expenditures and revenues of various types, oil and non-oil (tax, customs and other types) in addition to public debt are considered important tools in financial policy, as the relevant data were collected from the Ministry of Finance, the Accounting Department, the research sample. In addition, it includes other data that strengthened the applied aspect obtained from The Central Bank, the Ministry of Planning and the Public Debt Department in the Ministry of Finance, as well as personal interviews with some officials in the Ministry of Finance, the Central Bank and the Ministry of Planning. The US Treasury from the Central Bank of Iraq amounting to 31.6 billion dollars to compare it with the interest of loans owed by the Iraqi government and to extract the difference in cost, negatively or positively.

1- Oil and non-oil revenues

Table (1) shows the oil and non-oil revenues and the ratio of each to the total revenues for the years 2016-2020.

A- Oil revenues: It is noted from Table (1) that the oil revenues for the years 2016-2020 reached (46,249,617 million ID) in 2016 with a rate of 84.4% of the total revenues, and increased to reach (65,496,777 million ID.) O.P.) in 2017 with a rate of 84.6% of total revenues. It is doubled (96,062,936 million USD) in 2018 with a rate of 90.15% of total revenues, and by (99,490,603 million USD) with a slight increase in 2019 at a rate of 92.5% of total revenues. It then begins to decline to reach (55,954,671 million ID) in 2020 at a rate of 88,54% of total revenues except 2020. The reason is due to the escalating increase in oil revenues at the expense of the rest of non-oil revenues. Despite the sharp decline in oil prices in the global market, this did not prevent their increase through increasing oil production, and despite that there was a planned and continuous deficit. In the budget as a result of the increase and expansion of expenditures, which required resorting to internal and external borrowing

Table (1): Oil revenues and non-oil revenues and their ratio to the total revenues for the years 2016-2020. (million Iraqi dinars)

| Year | (1) oil revenue | non-oil revenue | | | (5) Total non-oil revenue (4+3+2) | (6) Total Actual Revenue (5+1) | (7) Ratio of oil revenue to total revenue (6÷1) | (8) Percentage of non-oil revenue out of total revenue (6÷5) |
		(2) taxes	(3) customs	(4) others				
(first)2016	46,249,617	3,260,478	632,384	4,696,741	8,589,603	54,839,219	%84,4	%15,6
(first)2017	65,496,777	5,103,292	1,194,980	5,627,124	11,925,396	77,422,173	%84,6	%15,4
(first)2018	96,062,936	4,037,631	1,648,580	4,820,687	10,506,898	106,569,834	90,15%	%9,85
(first)2019	99,490,603	2,989,537	1,024,994	4,061,861	8,076,392	107,566,995	%92,5	%7,5
(first)2020	55,954,671	3,891,229	826,961	2,526,829	7,245,018	63,199,689	88,54%	%11,46

B- Non-oil revenues: Table (1), which is prepared by the researcher, is based on the *Ministry of Finance* 2020). It shows the percentage of non-oil revenues from the total revenues, and when comparing them with oil revenues for the same time period above. It becomes clear that the volume of non-oil revenues in 2016 amounted to (8,589,603 million ID) at a rate of (15, 6%) of the total revenues, and in 2017 it increased to reach (11,925,396 million ID) or

(15.4%) of the total revenues. In 2018, it decreased to (10,506,898 million ID) and by 9, 85% of the total revenues, to decrease further in 2019 to (8,076,392 million ID) or (7.5%) of the total revenues. The decline continued in 2020 to (7,245,018 million ID) and by 11.46% of the

Year	non-oil revenue			* (4) Total actual oil and non-oil revenues	Tax (5) percentage of total revenue (4÷1)	The (6) ratio of customs to the total revenue (4÷2)	Other (7) percentage of total revenue (4÷3)
	(1) taxes	(2) customs	(3) others				
(first)2016	3,260,478	632,384	4,696,741	54,839,219	%5,95	%1,1	%8,55
(first)2017	5,103,292	1,194,980	5,627,124	77,422,173	%6,59	%1,54	%7,27
(first)2018	4,037,631	1,648,580	4,820,687	106,569,834	%3,79	%1,55	%4,51
(first)2019	2,989,537	1,024,994	4,061,861	107,566,995	%2,78	%1	%3,72

total revenues. It is noted that the total non-oil revenues are in continuous decline during the time period of the research sample from 2016-2020 due to the reliance on oil revenues in financing the budget for ease of collection. Table (2) shows a comparison of non-oil revenues (taxes, customs and others) with the total actual revenues for the years 2016-2020(*Data related to public debt for the years from* 2016 to 2020).

Table (2): Percentage of taxes, customs and others from the total actual revenues for the years 2016-202 (million ID)

| (first)2020 | 3,891,229 | 826,961 | 2,526,829 | 63,199,689 | %6,16 | %1,3 | %4 |

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 * Total actual oil and non-oil revenues from table(1)

It is clear from Table (2) (prepared based on the *Ministry of Finance* 2020) that the volume of tax revenues from the total revenues for the years 2016-2020 amounted to (3,260,478, 5,103,292, 4,037,631, 2,989,537 and 3,891,229) million ID at rates (5.95%, 6.59%, 3.79%, 2.78% and 6.16%), respectively, which are volatile causes of decline and upward. Yet, the volume of customs revenues from the total revenues for the same period amounted to (632,384, 1,194,980 and 1,1) 648,580, 1,024,994 and 826,961) million ID at rates (1.1%, 1.54%, 1.55%, 1% and 1.3%), respectively, which are very low if compared to the work of the General Authority of Customs and the dollar issued by the Central Bank in the currency window that was established for the purpose of importing and traveling exclusively. We will show this later in the deduction of taxes at the source in the currency window. As for the volume of other revenues from the total revenues for the same period as well, it amounted to (4,696,741, 5,627,124, 4,820,687, 4,061,861 and 2,526,829) million ID at rates (8.55%, 7.27%, 4.51%, 3.72% and 4%), respectively, they are constantly declining.

Table (3): Percentage of taxes, customs and others of the total non-oil revenues for the years 2016-2020 (million Iraqi dinars)

year	non-oil revenue			(4) Total non-oil revenue (3+2+1)	(5) Ratio of tax revenue to total non-oil revenue (4÷1)	(6) Ratio of customs revenue to total non-oil revenue (4÷2)	(7) Percentage of other revenues out of total non-oil revenues (4÷3)
	(1) taxes	(2) customs	(3) others)				
(first)2016	3,260,478	632,384	4,696,741	8,589,603	%37.85	%7.45	%54.7
(first)2017	5,103,292	1,194,980	5,627,124	11,925,396	%43	%10	%47
(first)2018	4,037,631	1,648,580	4,820,687	10,506,898	%38.3	%15.7	%46
(first)2019	2,989,537	1,024,994	4,061,861	8,076,392	%37	%12.7	%50.3
(first)2020	3,891,229	826,961	2,526,829	7,245,018	%53.7	%11.4	%34.9

Table (3) (based on the date from *Ministry of Finance* 2020), shows the percentage of taxes, customs and other revenues of the total non-oil revenues, where the arithmetic average of the percentage of tax, customs and other revenues of the total non-oil revenues amounted to 41.97, (11.45) and (46.58), respectively, for the time period from 2016 to 2020 , It is clear that the proportion of the contribution of customs revenues is the least contributing to the total non-oil revenues, followed by tax revenues, while other revenues are the most contributing, so that the picture is clear and detailed.

Most of these revenues, in the event of a slight increase, come as a result of imposing taxes on the sale of real estate and fees on cars, in addition to fees for health services, imports and the tax on mobile phone companies, which in turn charged to the citizen, and there is no significant percentage of these revenues coming from the agricultural and industrial projects represented. In the productive sectors producing goods or services, this is due to poor planning and not motivating them to invest and participate in the production process and generate added value.

From the foregoing, with regard to oil and non-oil revenues, the following is evident:

 •The general budget depends, in financing its expenditures, largely on oil revenues, with an approximate arithmetic mean of 88% of the total actual revenues during the time period of the research sample from 2016 to 2020.

 •Tax, customs and other revenues amounted to an arithmetic average of (5%, 1.3%, and 5.6%), respectively, with an approximate average of 12% of the total actual revenues during the time period of a sample, which is clear evidence showing neglect and lack of interest in developing revenues from taxes Mark and other revenues in financing the budget, which is a very low percentage compared to oil revenues, and did not reflect the percentage of revenues imposed on imports and taxes on individuals and companies.

 •The customs revenues were the lowest, which amounted to 1.3%, which is a very low percentage if compared to the work of the General Authority for Customs and the dollar issued by the Central Bank in the currency window for the purpose of importing exclusively. It is assumed that its percentage is much higher in the supply of the public treasury commensurate with the volume of work in these institutions.

 •The estimates of expenditures and revenues are inaccurate estimates that are not subject to a certain mechanism due to immediate changes, so they are subject to personal judgments that depend on the estimates of previous years without taking into account the variables according to the circumstance the country is going through.

 •Oil revenues are affected by fluctuations in the prices of the global oil market. This market is related to the volume of production of oil countries in or outside OPEC and related to supply and demand, in addition to other factors related to the market such as speculation in oil futures contracts, which in turn is reflected in the general budget in a negative or positive way.

2- Operational and investment expenses

The current (operating) budget and the investment budget and the ratio of each to the total budget for the years 2016-2020 as shown in Table(4)

Table (4): Percentage of the current budget and the investment budget of the total budget for the years 2016-2020 (million Iraqi dinars)

Ye ar	(1) Total Actual Revenue	(2) Tota l actu al expe nses	(3) The amo unt of the actu al bud get defi cit or sur plus -1) (2	(2) The amount of the planned budget deficit or surplus	(5) Ac tu al de fic it or su rpl us 3) 1÷ (
201)6 firs (t	54,839,219	67,0 67,4 33	) 12,2 28,2 (14 defi cit	(24,194,919)deficit	22 % def icit
201)7 firs (t	77,422,173	75,4 90,1 15	1,93 2,05 8 surp lus	(21,659,739)deficit	2,4 % sur plu s
201)8 firs (t	106,569,834	80,8 73,1 88	25,6 96,6 46 surp lus	(12,514,516)deficit	24 % sur plu s
201)9 firs (t	107,566,995	111, 723, 522	) 4,15 6,52 (7 defi cit	(27,537,929)deficit	3,8 % def icit
202)0 firs (t	63,199,689	76,0 82,4 42	) 12,8 82,7 (53	——————	20, 4 % def

		defi cit		icit

Based on the data from *Ministry of Finance* 2020), Table (4) makes it clear that the volume of expenditures in the current (operating) budget in 2016 amounted to (51,173,425 million ID.) or 76% of the total total budget, to increase in 2017 by (59,025,654 million ID.) and by 78% of the total total budget. It continues to increase in 2018 to (67,052,856 million ID) or 83% of the total total budget, but in 2019. This increase reached (87,300,932 million ID) or 78% of the total budget, and in 2020. The amount was (72,873,537 million ID) at a rate of 96% of thatl total budget.

The volume of expenditures in the investment budget in 2016 amounted to (15,894,008 million ID.) at a rate of 24% of the total total budget, and in 2017 it amounted to (16,464,461 million ID), bringing the percentage down to 22% of the total total budget. In 2018, the amount decreased to (13,820,332 million USD) and the percentage decreased to 17% of the total total budget, while in 2019 the amount increased to (24,422,590 million USD) at a rate of 22% of the total total budget. In 2020, the amount decreased sharply to (3,208,905 million ID), at a very low rate of 4% of the total total budget.

As for the total budget, expenditures are constantly increasing during the years from 2016 to 2019 except for 2020, and it is noted that the total (current) operating expenditures are constantly increasing at the expense of investment expenditures. This is a major imbalance that has negative repercussions on the budget and revenues generated by the state treasury.

From the foregoing discussion of the operating expenses and investment expenses, it is clear that:

•Most of the revenues have been spent on the operational side through increasing allocations or by expanding into new sections of expenditures in the budget and at the expense of investment spending.

•The current expenditures are mostly spent on salaries in addition to consumer goods and services of various types (health, educational, military, agricultural, industrial...etc), which averaged (82.2%) of the total budget expenditures during the time period of the research sample.

•The investment expenditures did not achieve any returns that contribute to reducing dependence on oil revenues, as their arithmetic average amounted to (17.8%) of the total expenditures during the time period of the research sample, except for the year 2020, when its percentage decreased significantly to reach 4%, which is a low percentage compared to In operational expenditures, it becomes clear that the revenues allocated to investment spending did not have any tangible positive impact on the infrastructure or in the investment sector at the industrial, agricultural, tourism or other sectors for the production of goods and services that are imported from outside the country, and thus the capital cycle falls outside the country. The country is for the benefit of the countries that produce those goods and services of all kinds and thus operate their factories and their workforce and create an added value on the raw material to produce goods and employ their workforce, which if directed correctly inside Iraq towards strategic projects that can generate good revenues for the treasury.

3 -The budget deficit and the public debt
A - budget deficit and surplus

Table (5) shows the total actual revenues and expenditures and the percentage of the actual and planned budget deficit or surplus for the years 2016-2020(*Data related to public debt for the years from* 2016 to 2020).

Table(5): the Total actual revenues and expenditures and the percentage of the actual and planned budget deficit or surplus for the years 2016-2020 (million Iraqi dinars)

year	(1) Total actual revenue	(2) Total actual expenses	(3) The amount of the actual budget deficit or surplus -1) (2	(2) The amount of the planned budget deficit or surplus	(5) Actual deficit or surplus 3) 1÷ (
2016 first (t	54,839,219	67,067,433	) 12,228,2 (14 deficit	(24,194,919)deficit	22% deficit
2017 first (t	77,422,173	75,490,115	1,932,058 surplus	(21,659,739)deficit	2,4% surplus
2018 first (t	106,569,834	80,873,188	25,696,646 surplus	(12,514,516)deficit	24% surplus
2019 first (t	107,566,995	111,723,522	) 4,156,52 (7 deficit	(27,537,929)deficit	3,8% deficit
2020 first (t	63,199,689	76,082,442	) 12,882,7 (53	——————	20,4% def

				defi cit				icit

Total actual revenues and expenditures and the percentage of the actual and planned budget deficit or surplus for the years 2016-2020 (million Iraqi dinars). The data in the table is taken from the budget law for the mentioned years, bearing in mind that the year 2020 has not been approved, and the deficit is only actual.

It is clear from Table (5) that the planned deficit for 2016 amounted to (24,194,919 million ID.), while the actual deficit was 50% less than the planned, amounting to (12,228,214 million ID) with a deficit rate of 22% of the total actual revenues. In 2017, the planned deficit amounted to (21,659,739 million ID), while there was no actual deficit, but there was an actual surplus amounting to (25,696,646 million ID) with a surplus rate of 24% of the total actual revenues. Also, in 2018, the planned deficit amounted to (21,659,739 dinars). million ID, while there was no actual deficit, but there was also an actual surplus amounting to (1,932,058 million ID), with a surplus of 2.4% of the total actual revenues, while in 2019 it amounted to (27,537,929 million ID). Yet, the actual deficit amount was (4,156,527 million USD) with a deficit rate of 3.8% of the total actual revenues. In 2020, there was no planned deficit for not approving the budget, and there was only an actual deficit that amounted to (12,882,753 USD) with a deficit rate of 20 4% of the total actual revenues of table (6) shows the total actual revenues and expenditures and the actual and planned deficit or surplus in the budget for the years 2016-2020.

B- Public Debt(*Data related to the indebtedness, the number of Iraq's population and the workforce*)

Table (6): shows the percentage of internal and external debt to the total debt for the years 2016-2020.

year	(1) internal debt	(2) external debt	(3) total general debt (2+1)	(4) The ratio of the internal debt to the total debt (3÷1)	(5) Ratio of external debt to total debt (3÷2)
2016	47,134,614	24,162,444	71,297,058	%66,1	%33,9
2017	48,749,226	30,018,072	78,767,298	%48,75	%51,25
2018	43,953,852	30,957,762	74,911,614	%58,67	%41,33
2019	38,910,258	30,129,180	69,039,438	%56.36	%43,64
2020	66,254,646	27,895,200	94,149,846	%70,37	%29,63

*The original data (*Ministry of Finance*, 2020) shows the amounts (million USD) were converted to (million ID) at the official exchange rate of 1182 dinars per dollar for the years from 2016 to 2020.

It is clear from Table (6) that the size of the internal debt for the years from 2016 to 2020 amounted to (47,134,614, 48,749,226, 43,953,852, 38,910,258 and 66,254,646) million ID of the total public debt at rates (66.1%, 48.75%, 58.67%, 56.36%, and 70.37%), respectively, which fluctuate up, down and then rise, but they are very high rates to cover the deficit. The external debt for the same period amounted to (24,162,444, 30,018,072, 30,957,762, 30,129,180 and 27,895,200) million ID at rates (33.9%, 51.25%, 41.33%, 43.64% and

29.63%), respectively, which are lower than the percentage of the internal debt in covering the budget deficit. The duration of the research sample and peaked in the year 2020.

There is a correlation between the budget deficit and the public debt, as in the event of a deficit, the budget is financed by borrowing, whether it is internal or external. Borrowing on the one hand is considered a financing factor and on the other hand it is considered a pressure factor as a result of the burden of public debt through the obligations arising from paying it during the coming period Table (7) shows a comparison between the public debt and the budget deficit, with its actual and planned parts:

Table (7): Comparison between the public debt and the actual and planned budget deficit for the years 2016-2020 (million Iraqi dinars)

Years	(1)* Actual deficit or surplus	(2)** planned deficit	(3)*** Public debt
2016	deficit (12,228,214)	deficit24,194,919)	71,297,058
2017	surplus 1,932,058	deficit (21,659,739)	78,767,298
2018	surplus 25,696,646	deficit (12,514,516)	74,911,614
2019	deficit (4,156,527)	deficit (27,537,929)	69,039,438
2020	deficit (12,882,753)	———————	115,496,850

 **The source is the budget law for the mentioned years, bearing in mind that the year 2020 has not been approved the budget and the actual deficit only.

It is clear from Table (7) that the government estimated the budget with a planned deficit for the years from 2016 to 2019 except for the year 2020, when no budget was approved in that year, and accordingly the government's tendency was towards internal and external borrowing to cover the budget deficit.

It is noted that the budget witnessed an actual surplus during the years 2017 and 2018 amounting to (1,932,058 MAD) and (25,696,646 MAD), respectively. In contrast, the debt decreased during these two years from (78,767,298 MAD) in 2017 to (74,911,614 MAD) in 2018, and the planned budget deficit and the corresponding borrowing continued for the years 2019 and 2020 due to the repayment of debts and the interest resulting from it, in addition to the drop in global oil prices and the expansion of government spending. Therefore, it was inevitable that the government's orientation and expansion move towards internal borrowing would continue and external.

Thus, the expansion of the government and its resort to an increase in the public debt should be accompanied by a growth in the gross domestic product. Otherwise, the government will not be able to face the impact of the public debt represented by the balance of payments deficit and the public budget deficit, and the obligations will become an obstacle to the state's ability to confront the sustainability of the public debt, as the cost of the internal and external debt for the years from 2016 - 2020 amounted to (11,176,014 MAD), as shown in Table (8). Consequently, it resorted to expanding oil production and increasing exports to get out of the debt service problem and not to resort to strategic solutions by exploiting these Debt to create projects with a return through which you can pay the cost of the debt

Table (8): Total annual interest incurred on internal and external debt for the years from 2016 to 2020 (million Iraqi dinars)

Years	(1) Annual interest on the internal debt	(2)* Annual interest on the external debt	(3) Total cost of debt (2+1)
2016	557,950	612,276	1,170,226
2017	1,510,360	778,938	2,289,298
2018	2,054,030	1,134,720	3,188,750
2019	1,343,940	1,101,624	2,445,564
2020	1,073,930	1,008,246	2,082,176
total	6,540,210	4,635,804	11,176,014

*The interests of the external debt The original table was one million USD converted into one million ID at the official exchange rate of 1182 dinars to the dollar for the years from 2016 to 2020.

It is clear from Table (9) that the cost of debt for the years from 2016 to 2020 amounted to (11,176,014,000,000) eleven trillion, one hundred and seventy-six billion and fourteen million Iraqi dinars, equivalent to (9.45) billion dollars.

In order to find out the extent of public debt contribution and its impact on the budget for the years 2016-2020, Table (9) shows the extent of its impact on the general budget.

Table (9): The contribution of public debt and its impact on the general budget for the years 2016-2020 (million Iraqi dinars)

(3) Contribution of public surplus debt to the budget (1+2) or (1-2)	(2) ** The total public debt to cover the deficit	(1) * Total actual deficit or surplus	years
surplus 59,068844	71,297,058	deficit (12,228,214)	2016
surplus 80,699,356	78,767,298	surplus 1,932,058	2017
surplus 100,608,260	74,911,614	surplus 25,696,646	2018
surplus 64,882911	69,039,438	deficit (4,156,527)	2019
surplus 102,614097	115,496,850	deficit (12,882,753)	2020

It is clear from Table (9) that the actual deficit for the year 2016 amounted to (12,228,214) million ID. It was covered through internal and external borrowing with a total amount of 71,297,058 million ID. Its impact on the budget will be a surplus of 59,068844 million ID. In 2017, there was an actual budget surplus of 1,932,058 million ID. In addition to the borrowed amount, its effect in the budget will be a surplus of 80,699,356 million ID. Also, the surplus increased in 2018 to reach 25,696,646 million ID. Its impact on the budget was a surplus of 100,608,260 million ID, while in the years 2019 and 2020, there was a deficit of (4,156,527) and (12,882,753) million ID which were covered by borrowing a total amount of 69,039,438 and 115,496,850 million ID. Their effect on the budget was a surplus of 64,882911 and 102,614097 million ID.

It is clear by interviewing the total debt with the actual deficit for the period from 2016-2020 that there is a continuous surplus in the budget and that the deficit is a planned deficit and not

an actual deficit, and it is assumed that these surpluses are invested correctly to achieve returns to the state treasury and thus are reflected on the budget.

From the foregoing, with regard to the deficit and public debt and its contribution to the budget, the following is evident:

•There was an actual budget deficit in the years 2016, 2019 and 2020 that was covered by internal and external borrowing. As for the years 2017 and 2018, there was no actual deficit, but rather there was an actual surplus other than what was planned for the budget deficit, and this is clearly evident by interviewing the total debt. The actual deficit for the period from 2016 to 2020 indicates that there is a continuous surplus in the budget and that the deficit is a planned deficit and not an actual deficit.

•The total debt, both internal and external, is on a continuous increase during the time period of the research sample, and it reached its peak in the year 2020.

•Iraq will remain oriented towards public borrowing due to the nature of the political and economic conditions and the almost complete dependence of the Iraqi economy on the oil sector, which led to the emergence of negative effects on oil revenues as a result of the drop in oil prices and the transformation of Iraq within a short period from a country with financial surpluses to a country that requires external financing, which forced the government to borrow Based on the Financial Management and Public Debt Law No. 95 of 2004 to counter the pressures created by the planned budget deficit as a result of the drop in oil prices, the financing of military operations against terrorism and the expansion of expenditures.

•There is a correlation between the budget deficit and the public debt, as in the event of a deficit. The budget is financed by borrowing, whether it is internal or external. Borrowing on the one hand is considered a financing factor and on the other hand it is considered a pressure factor as a result of the public debt burden by paying the debt during the coming period, as Debt costs for the years from 2016 to 2020 amounted to (11,176,014,000,000) eleven trillion, one hundred seventy-six billion and fourteen million Iraqi dinars, equivalent to (9.45) billion dollars.

•When comparing the ratio of public debt to GDP, it becomes clear that there is a fluctuation rate in public debt to GDP between a rise and a decrease and then a rise for the years from 2016 to 2020, and the debt ratio reached its peak in 2020, reaching 58.1%, and this is a negative indicator that is reflected on the creditworthiness of Iraq in Inability to meet public debt obligations.

Second: Restructuring non-oil revenues using financial engineering tools

Financial engineering tools are among the important tools in maximizing non-oil revenues from taxes, customs and other revenues, to cover the budget deficit or use the surplus to generate revenues and achieve comprehensive development in all economic sectors, and the most important of these tools are the traditional and (stocks and bonds) financial tools Innovated financial derivatives (such as options contracts, futures contracts, future contracts, swap contracts), as well as securitization, in addition to any new creative ideas for financial engineering.

Emphasis will be placed on some of these tools to address the deficit and maximize the revenues of the public budget, namely:

1. Issuing investment certificates to finance the port of Al-Faw, similar to the investment certificates for financing the Suez Canal.
2. Maximizing customs and tax revenues through direct deduction at the source in the currency window.

3. Issuing bonds with a certain percentage of the amounts owed by the Iraqi government.

1. **Issuance of investment certificates to finance the Al-Faw port project by the Iraqi government, similar to investment certificates to finance the expansion of the Suez Canal.**

That is, for the Iraqi government to issue investment certificates to finance the Al-Faw port project and put it up for sale through the Rafidain and Al-Rasheed banks and the Trade Bank of Iraq (TBI) in the denominations of (10000, 100000, 250000, 500,000 and 1000000) Iraqi dinars to start financing the project, and the purchase of investment certificates is limited to Iraqis only from individuals and companies. In addition to Iraqi individuals outside Iraq, the duration of the certificates will be five years, with an annual interest of 12 percent, to be spent every three months for the purpose of collecting 10 trillion Iraqi dinars(Jazeera, 2021). The cost of the project is about (4.4) billion euros, which is equivalent to (5.06) billion dollars (Agency, 2021), to be one of the largest ports overlooking the Gulf. The estimated amount to start the project can be calculated using the data of the Ministry of Planning in the table below:

Table (10): Number of groups within the legal working age from 15 years old to 63 years' old

(1) Estimated population of Iraq for the year 2020	(2) Number of groups within the legal working age from 15 years old to 63 years old	(3) Number of Employees	(4) ịEnumeration of categories within the legal working age from 15 years old to 63 years old, except for employees(3-2)	(5) Percentage of the number of employees in the workforce (2÷3)	(6) Percentage of other categories of the labor force(2÷4)
40,150,174 Populations	22,751,687 Populations	,1,921 Populations	20,830,128 Populations	%8.44	%91.56

It is clear from Table (10)(*Ministry of Planning* 2020) that the number of groups within the legal working age is (20,830,128) people, excluding employees. These groups are divided to obtain the amounts expected by the Iraqi government to finance the port of Al-Faw, as shown in Table (11).

Table (11): The amounts expected to be obtained by the Iraqi government from the categories available within the legal working age, except for the category of employees

No.	(1) A specific category investment certificate	(2)* ịTotal numbers available to purchase investment certificates	(3) Percentage of numbers available	(4) Total numbers available for each category of investment certificates (3×2)	(5) For the amount expected to be received by the Iraqi government (4×1) Thousand dinars
1	(10) Thousands	15,622,596	%40	6,249,038	62,490,380
2	(100) Thousand	15,622,596	%20	3,124,519	312,451,900

	s				
3	(250) **Thousands**	15,622,596	%20	3,124,519	781,129,750
4	(500) **Thousands**	15,622,596	%10	1,562,259	781,129,500
5	(1)Million	15,622,596	%10	1,562,259	1,562,259,000
Total	-		%100	15,622,596	3,499,460,530

From Table (11)(*Ministry of Planning* 2020), it is noted that the amount expected to be obtained by the Iraqi government from the categories available within the legal working age, except for the category of employees, is (3,499,460,530,000) three trillion three hundred eleven billion nine hundred and eighty-nine million three hundred and thirty thousand dinars. The number of employees reached (1,921,559) as shown in Table (10) and assuming that the percentage of the number of categories available for purchasing investment certificates is 75% of the total number, so the available number is (1,921,559 x 75% = 1,441,169 employees), which can be divided to get The amounts expected by the Iraqi government, as in Table (12) below:

Table (12): The amounts expected to be obtained by the Iraqi government from the available categories of employees

No	(1) A specific category investment certificate	(2)* The total number of employees available to purchase investment certificates	(3) Percentage of numbers available	(4) Total numbers available for each category of investment certificates (3×2)	(5) The amount expected to be obtained by the Iraqi government (4×1) Thousand dinars
1	(10) **Thousands**	1,441,169	%30	432,350	4,323,500
2	(100) **Thousands**	1,441,169	%45	648,526	64,852,600
3	(250) **Thousands**	1,441,169	%25	360,292	90,073,000
4	(500) **Thousands**	1,441,169	%0	0	0
5	Million	1,441,169	%0	0	0
Total	-		%100	1,441,169	159,249,100

From table (12)(*Ministry of Planning* 2020), it is noted that the expected amount to be obtained by the Iraqi government from the employees is (159,249,100,000) one hundred and fifty-nine billion, two hundred and forty-nine million and one hundred thousand dinars.

By collecting the two informants, the amount expected to be obtained by the Iraqi government to finance the port of Faw is as follows:

3,658,709,630,000 = 159,249,100,000 + 3,499,460,530,000three trillion six hundred and fifty-eight billion seven hundred and nine million six hundred and thirty thousand dinars.
By converting the amount into dollars and at the official rate of the Central Bank of 1450 dollars per dinar, the expected amount for financing the port of Faw becomes as follows:
2,523,248,020 = 1450 ÷ 3,658,709,630,000two billion five hundred twenty-three million two hundred and forty-eight thousand and twenty dollars.
From the foregoing it appears that:

A - The government can finance many projects, including the port of Al-Faw by issuing investment certificates to the public. It is noted that the amount expected to be obtained by the Iraqi government from the available categories of employees and non-employees within the legal working age amounted to (3,658,709,630,000) Iraqi dinars, which is equivalent to (2,523,248,020) US dollars, which is approximately 50% of the value of the project, and therefore the impact of this will be positively reflected on the budget and represents a solution to the problems of financing these projects through the public and the private sector, which will have a clear impact by reducing the burden on the budget.

B - Since the project has been completed in part, represented by the breakwater in its eastern and western parts, the Iraqi government can complete the construction of the project's berths by issuing investment certificates and obtaining the necessary funds to finance it without resorting to external parties that restrict its ability to make economic and political decisions in the interest of the country. The benefits and advantages of the project are as follows:

•The completion of the construction of Al-Faw port and the reception of large commercial ships is worthy of attracting international maritime navigation to the ports of Iraq, which will connect with a developed railway that connects to Istanbul and the Syrian ports on the Mediterranean (which is called the dry channel), which will reduce shipping costs and shorten the time for the delivery of goods from East Asia towards Russia and Europe.

•There will be a qualitative leap in the movement of goods and an increase in revenues, customs fees and docking fees, as the planned port capacity is estimated at 99 million tons annually, which will make Iraq dominant in maritime transport in West Asia.

•Creating large investment opportunities in several areas along the road for the dry canal project, which will generate additional revenues for the public treasury.

•Employing local manpower, as this project will provide job opportunities during the implementation. It is assumed that half a million citizens of Basra and other governorates will find jobs that generate daily and monthly income and provide a decent living for them, which in turn reduces unemployment.

•Providing the modern technical means necessary to manage the ports, use modern systems and keep pace with global developments in this field, will lead to maximizing revenues and eliminating red tape and administrative and financial corruption.

2. **Maximizing customs and tax revenues through direct deduction at the source in the currency window, in addition to automation and electronic connectivity:**

The volume of tax revenues from the total revenues for the years from 2016 to 2020 amounted to (3,260,478, 5,103,292, 4,037,631, 2,989,537 and 3,891,229) million ID at rates (5.95%, 6.59%, 3.79%, 2.78% and 6.16%), respectively. They are volatile causes of decline and upward, while the volume of customs revenues from the total revenues for the same period amounted to (632,384, 1,194,980 and 1,1) 648,580, 1,024,994 and 826,961) million

ID at rates (1.1%, 1.54%, 1.55%, 1%, and 1.3%), respectively, which are very low if compared to the work of the Customs General Authority and the dollar issued by the Central Bank in the currency window for the purpose of importing exclusively.

Since financial engineering is creative ideas to invent new products or invent solutions to financial problems by exploiting a number of sciences, including software and electronic systems, and to control and maximize revenue collection, it is necessary to deduct tax and customs duties at the source. Those percentages are determined based on what is imported by merchants (as if It is electrical devices, mobiles, cars, wood, etc.) and according to the instructions and controls in the General Authority for Taxes and the General Authority for Customs. These percentages are deducted from the amounts exported for the purpose of import in the currency window directly, and through this procedure, what has been collected from tax and customs revenues will be compared. During the research period and between what is real that can be obtained from tax and customs revenues by deducting them directly at the source, and for more control and control over the collection of those revenues. It is necessary to go to automating those departments and linking them to electronic systems and network, and this is between the General Authority for Taxes, the General Authority for Customs and the Central Bank. Table (13) shows the Central Bank's sales of the issued currency for the purpose of imports and travel**.**

Table (13): Central Bank sales of currency for the purpose of import and travel (* million Iraqi dinars)

year	Central bank currency sales details			(4) CBI Sales of FX (3+2+1)	(5) Central bank sales for the purpose of import(1-4) or(3+2)	(7) The ratio of central bank sales for the purpose of import out of total sales(4÷5)
	(1) Cash	(2) Transfer	(3) LC Credit			
2016	5,543,580	18,569,220	15,512,568	39,625,368	34,081,788	%86
2017	11,054,064	31,375,001	1,742,268	44,171,333	33,117,287	%75
2018	10,387,416	45,323,790	0	55,711,206	45,323,790	%81.4
2019	6,824,868	53,604,882	0	60,429,750	53,604,882	%88,7
2020	3,982,158	48,120,402	0	52,102,560	48,120,402	%92,4

The original data includes amounts in (million USD) converted to (million ID) and at the exchange rate of 1182 for the years from 2016 to 2020.

The table is adopted from *The Central Bank / Department of Statistics and Research* 2020).The customs and tax rates are determined according to the laws and regulations as follows:

As for the customs tariff, it was determined by the Customs Tariff Law No. (22) of 2010, Part Two, at rates (5%, 10%, 15% and 25%), and the arithmetic average of these rates is .(%13.75)

The tax rates starts from (6% to 100%) according to the regulations (General Authority for Taxes / Professions and Business / Import, 2020: 9-11), where the goods are estimated according to these ratios and work according to the unified equation issued by the Department of Business and Professions in the numbered circulars 14/163 on 27/1/2014 and as follows:

(value of imported goods in foreign currency) x exchange rate + (amount of customs duty in Iraqi dinars) x 102% x controls of imported material x 15% = value of tax deposits

By taking the central bank sales of dollars for the purpose of import (transfer and credit) in Table (15) multiplied by the tax rate according to the controls of the imported material 15% at least, and the average customs tariff rate of (13.75%), the amount of revenue resulting from the import activity will be as in the table (14), which is compared with the amounts collected for the research sample years from 2016 to 2020 in Table (2) to show the amount (the gap) or the total amount that was not verified from taxes and customs.

Table (14): Comparing the amount of taxes and customs by deducting them at the source in the currency window with an indication of the amount and percentage of change with the amounts collected for the research sample years from 2016-2020(*Data related to documentary credit and remittance in the currency window*, 2016 to 2020) (million Iraqi dinars)

Change percentage = current - previous / previous		previous		Current			
(7) The amount of the customs amount that has not been achieved and the percentage of change 5÷(5-3)	(6) Amount of unfulfilled tax amount and percentage -2) change 4÷(4	***(5) The customs amount shown in the accounts of the Accounting Department	(4)** The amount of tax shown in the accounts of the Accounting Department	(3) Arithmetic mean of the customs duty rate 13.75 (%13.75×1)	(2) Assumed tax rate %15 (%15×1)	*(1) Total central bank currency sales Transfer+ LC Credit	year
4,053,861 %641at	1,851,790 %56.8 at	632,384	3,260,478	4,686,245	5,112,268	34,081,788	2016
3,358,647 %281 at	(135,699) (%2.6) at	1,194,980	5,103,292	4,553,627	4,967,593	33,117,287	2017
4,583,441	2,760,937	1,648,580	4,037,631	6,232,021	6,798,568	45,323,790	2018

%278 at	%68.3 at						
6,345,677 %619 at	5,051,195 %169 at	1,024,994	2,989,537	7,370,671	8,040,732	53,604,882	2019
5,789,594 %700 at	3,326,831 %85.5 at	826,961	3,891,229	6,616,555	7,120.402	48,120,402	2020

From table (14)(*Ministry of Finance*, 2020), it is clear that the amount of taxes and customs by deducting them at the source in the currency window, the amount and percentage of change in the amounts collected for the research sample years from 2016 to 2020 was very large except for the year 2017, where the percentage of change for taxes was (56.8%, -2.6% and 68. 3%, 169%, and 85.5%) respectively. As for customs duties, the percentage change for the same years (641%, 281%, 278%, 619%, 619% and 700%).

From the foregoing it appears that:

1. There is a gap in the amount of unrealized amounts, as the total unrealized amount of taxes and customs for the research sample years from 2016 to 2020 reached (5,905,651 and 3,222,948, 7,344,378, 11,396,872 and 9,116,425) (million ID, respectively, with an annual arithmetic average of) 36986274 ÷ 5 years = 7,397,255 million IQD) seven trillion three hundred and ninety-seven billion two hundred and fifty-five million Iraqi dinars. It is equivalent to (5,101,555,000) five billion one hundred and one million five hundred and fifty-five thousand dollars annually, which will have a significant impact on treasury revenues and support the general budget for the state.

2. The reason for the gap is some laws hindering the collection of taxes, which were previously referred to as Investment Law No. 13 of 2006 and Industrial Development Law No. 20 of 1998, in addition to exemptions due to bilateral agreements with some countries, as well as the inaccuracy of the information contained within the manifest for the statement. Customs are manual and non-electronic, in addition to the fact that the permit is inaccurate and does not conform to the permit of the country of origin. Thus, attention must be paid to providing and implementing a number of electronic work systems and automating work in the two public bodies for taxes and customs, which will facilitate their work and enable them to control and control the collection of funds as well as the formation of a database. A large number of departments can be used in many departments related to the work of the two bodies such as the Central Bank, measurement and quality control, health departments and other departments, which leads to shortening the effort and time, mastering the work and eliminating a large part of the routine and administrative and financial corruption, and that allocating part of the resources earned by these outlets is The means by which these systems can be implemented and the effective systems in this field (the system of Koda).

3. **Issuance of bonds with a certain percentage of the amounts owed by the government instead of full cash payment**

The government can issue government bonds with a certain percentage of the full maturity to pay the amounts due in favor of local and foreign companies, contractors or farmers, and

securit those dues for a certain period of time and with a specific interest. It is a type of financial engineering product that leads to a solution to the financing problems for this type of commitment. This solution does not burden the budget by allocating cash to pay such dues. Rather, the government issues bonds through the central bank to pay the previous or current dues owed by the government and in cooperation with the Ministry of Planning for investment projects. Table (15) shows the amounts due to these entities until 2020.

Table (15): Total dues to investment entities (contractors) until 2020 (million Iraqi dinars)

No	Level	Amounts due to investment entities (contractors)
1	Ministries	1,807,633
2	Governorates	256,787
	total	2,064,420

It is clear from table (15)(2020), that the total amounts owed to investors amounted to (2,064,420,000,000) two trillion and sixty-four billion four hundred and twenty million ID. (2,064,420,000,000 x 50% = 1,032,210,000,000) and with annual interest 5% of the amount owed to each investor, contractor, or local or foreign company for a period of time (5) years for example.

Therefore, investors can discount these bonds with the Central Bank of Iraq through one of the government banks that deals with them, and the value of this discount represents the interest obtained by the holder. Either their nominal value is paid in full on the maturity date, or it is possible to obtain cash for the maturity amount through trading (buying and selling(*Currency sale window in the Central Bank of Iraq,*, 2019). in the Iraq Stock Exchange and therefore new investors who have financial surpluses can invest these bonds in order to obtain the benefits after the end of the specified bond period.

From the foregoing, the following appears:

A- Securing the dues owed by the government is one of the solutions in reducing the burden on the budget and allowing the government to arrange its position in directing its allocations towards areas and projects with a return on the state treasury that helps it manage budget risks.

B - Investors can obtain cash from trading these bonds in the Iraq Stock Exchange or discounting them with the Central Bank through a government bank.

C - New investors enter the financial market to purchase these bonds, with their financial surpluses represented by cash in order to obtain the benefits of these bonds at the end of their period of time.

Items 1, 2 and 3 prove that financial engineering when applied and the restructuring of non-oil revenues provides other sources of funding, and this proves hypothesis No. (1) which states that the restructuring of revenues in the state's general budget contributes to reducing the deficit in it and hypothesis No. (2) which states the use of financial engineering methods contributes to maximizing non-oil revenues.

8 -Conclusions and recommendations

First: the conclusions

1 -The general budget depends, in financing its expenditures, largely on oil revenues, with an approximate arithmetic average of 88% of the total actual revenues. As for tax, customs and other revenues, their arithmetic average reached (5%, 1.3%, and 5.6%), respectively as an approximate average of 12% of the total actual revenues during the time period of a sample from 2016 to 2020.

2 -Most of the revenues were spent on the operational side, which reached an arithmetic average percentage (82.2%) of the total budget expenditures. As for investment expenditures, its arithmetic average percentage reached (17.8%) of the total expenditures during the time period of the research sample, except for the year 2020. The percentage of investment spending decreased significantly to reach 4% of the total expenditures during the time period of the research sample from 2016 to 2020.

3 -There was an actual budget deficit in the years 2016, 2019 and 2020 that was covered through internal and external borrowing. In the years 2017 and 2018, there was no actual deficit, but rather there was an actual surplus other than what was planned for the budget deficit.

4 -When comparing the ratio of public debt to GDP, it becomes clear that there is a fluctuation rate in public debt to GDP between rise and fall and then rise for the years from 2016 to 2020, and the debt ratio reached its peak in 2020 as it reached 58.1%. This is a negative indicator that is reflected on the creditworthiness of Iraq Inability to meet public debt obligations.

5 -The customs revenue was the lowest, amounted to 1.3%, which is a very low percentage if compared to the work of the General Authority of Customs and the dollar issued by the Central Bank in the currency window for the purpose of importing exclusively.

Second: Recommendations.

1 -Reviewing the financial instruments used and searching for the best solutions to avoid entering into speculation and relying on scientific foundations to avoid risks.

2 -Paying attention to the multiplicity and diversity of funding sources and building a revenue system in the long run away from the pulsating source (oil) by paying attention to the financing role of taxes and developing tax systems and directing its container towards developing and re-industrial sector, agricultural and tourism sectors. Thus it does not focus on developing these sectors only. Rather, it works to free public spending from the control of the oil price and its fluctuations, which are subject to external factors.

3 -Adopting a financial policy capable of generating investments at the industrial, agricultural, tourism, or other sectors for the production of goods and services.

4 -Investing the planned deficit in the budget as it is an actual surplus and not an actual and continuous deficit over the length of time for the research sample, and directing it towards investing in high-productivity activities that lead to an increase in the real job opportunities. This is an increase in the production of goods and services, the development of infrastructure, and the achievement of stability and social welfare.

5- Issuance of investment certificates is one of the mechanisms of financial engineering and certainly reaches the result of reducing the burden on the budget, and ultimately it improves the efficiency of financial budgets and gives confidence between the public and investment projects in general.

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