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Estimation of the Impact of Government Spending on Industrial Sector Development: A Case Study of Iraq for the Period (1990-2020)

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Abstract

The research mainly attempted to find out the impact of the public expenditure on the development of the Iraqi industrial sectors according to the period (1990 to 2020), as well as several other control variables. The analysis of available data suggested that the indicators of industry sector and fiscal policy tools in Iraq underwent great changes not only because of economic and political instability experienced by the country throughout the study period but also the new-emerged situations that followed, like the cases of wars, economic sanctions, and changes in governance systems that contributed significantly in creating a halt in fiscal policy. Empirically, the study ascertained several outcomes from the analysis. In this case, the empirical test of the hypothesis showed that there was a negative correlation between current expenses and manufacturing output, significant at a level of confidence (10%). On the opposite side, the standard correlation between capital outlay and industrial output is of a positive sign (0,05). Moreover, a current expenditure with an industrial output would make a negative relationship and would become significant at the level of significance of 10%, whereas investment expenditure and industrial output making a positive relationship with a level of significance of 5%. As part of study, it recommended the re-organization of public expenditure structure, enhancing discipline of budget formulation. This, in turn, will support the development of budgetary programs for the economy, particularly, the industrial sector.

Keywords: *Government Spending, Industrial Sector Development*

INTRODUCTION

Governments, especially in those countries where manufacturing is a key element of the economic structure, often take a leading position in dictating the development path of the national economy; this is especially true for the countries of the third world. The income is the awarding of the government of the financial resources to some sectors, such as industry, having long-term impact on economic development, job creation, and overall industrial competitiveness. In this discourse, Iraq, a nation that is faced with the intricate issue of historical and present burdens, the understanding of the influential factor between government spending and industrial sector development is imperative.

The decade of 1990s to 2020 is sort of period in Iraq's ever wavering history that is marked by existential questions and social, political, and economic changes, and international sanctions, armed conflicts and, reconstruction attempts. This background, however, necessitates the assessment of industrial sector impact of budgetary expenditure, as a policy selection tool, which emphasizes the essence of responsiveness during crises and economic transitions.

The intention of this study is to unveil the mysteries that lay behind the relationship between the fiscal policy and the trajectory of the industrialization capability of the Iraqi economy for the last three decades. The industrial sector in Iraq have always been arrows used to target at the quivers of the country's economic strategies seeking to diversify the economy, create job opportunities and promote technological advancement. Nevertheless, the sector has shown volatility to internal factors such as political instability some of the factors that entail external forces such as international sanctions, oil price declines and global market dynamic shifts have contributed to this.

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Indispensable to the context of the above discussion is to comprehend the government spending role that is the key to understanding economic policies that have been both finding solutions or bringing burden to industrial development.

METHODOLOGY: While a complete analytical model is used in this research to find out how government spending fosters industrial sector in Iraq. Besides involving both the painting and data manipulation techniques, this study intends to produce the precise picture of the connection between the government spending and the industrial growing utilising standard economic modeling and statistics.

Research Objective: The primary research objective in this study is the analysis the role of, governmental spending on, the building of, the Iraqi economic sectors, especially the industrial sector, during the period (1990-2020). This will be achieved through the accomplishment of a set of subsidiary objectives, including:This will be achieved through the accomplishment of a set of subsidiary objectives, including:

1. Understanding the situation of the industrial part of Iraq as of this moment.

2. Looking into the effect of government spending maintenance on the development rates within the Iraqi industrial sector during the research period.

Importance of the Study

The industrial sector is one of the most crucial economic sectors through which the competitiveness of all productive sectors in the economy can be enhanced, thereby achieving the production and economic objectives they aspire to attain. Furthermore, adopting an approach spanning three decades allows for identifying the trends, patterns, and policy effects that have shaped the industrial landscape in Iraq over time. The results of this research are expected to yield valuable insights for policymakers, economists, and stakeholders investing in Iraq's economic trajectory. By elucidating the effectiveness of government spending policies in promoting industrial development, this study contributes to informed decision-making processes aimed at enhancing sustainable economic growth, boosting industrial competitiveness, and promoting comprehensive development in Iraq and beyond.

Research Hypothesis

To achieve the objectives of the study, it is hypothesized that there is a positive impact of government spending (both current and investment) on achieving development in the Iraqi economic sectors, especially the industrial sector, during the period (1990-2021).

Study Boundaries

Objective Boundaries: To identify the impact of fiscal policy on achieving development in the Iraqi economic sectors, particularly the Iraqi industrial sector.

Spatial Boundaries: Iraq

Temporal Boundaries: The period from (1990-2021).

First Section: Public Expenditure: Concept, Types, and Impact on Economic Activity -

Concept of Public Expenditure:

Public expenditure can be defined as a sum of money spent by public entities with the aim of achieving public benefit. (Hamza & Fateh, 2014, p. 13).

Types of Public Expenditure:

We aim to identify the most important types of public expenditure:

Real Expenditure and Transfer Expenditure: Real expenditure refers to the state's use of a portion of purchasing power to acquire various goods and services for public projects that satisfy general needs. Real expenditures directly increase the national output, such as the expenditure of public funds on wages and salaries for workers,

as well as the purchase of goods and services necessary for the functioning of administrations and state agencies (Droussi, 2004, p. 164). Transfer expenditures, on the other hand, involve transferring a cash amount from one group to another within society. These expenditures do not have a direct counterpart and do not lead to an increase in national output but rather redistribute it (Elhiti & Ayoub, 2012, p. 69).

Ordinary Expenditure and Extraordinary Expenditure:

The evolution of the state's role over time towards increased intervention in economic and social affairs has led to an increase in public expenditures in terms of volume and type. This has resulted in increased public revenues, and with the increase in public expenditures, taxes are no longer sufficient to cover them, especially when these expenditures are used to address exceptional areas such as economic crises or natural disasters (Droussi, 2004, p. 165).

Current Expenditure and Capital Expenditure:

Current expenditure is defined as the operational expenditures necessary for managing public facilities. It includes paying wages to workers and employees, maintenance expenses, administrative expenses, economic expenses, and social expenses. Capital expenditures, on the other hand, refer to expenditures allocated to capital formation for society. These can take the form of new investments in all economic activities and all capital expenditures, as well as the least expenditures that can be spent to increase the inventory of goods (Droussi, 2004, p. 170).

The Impact of Public Expenditure on Economic Activity

The use of fiscal policy as a tool to achieve economic growth emerged with the developments in economic growth theory, especially with the introduction of the Harrod-Domar model and the spread of literature during the years 1950-1960 on using fiscal policy to break the vicious circle of poverty in economies trapped in low equilibrium. In order to accelerate the pace of growth for developing economies, the Harrod-Domar model emphasized that growth is a function of savings and capital productivity. Consequently, the state can raise the growth rate by increasing savings and investment. Fiscal policy aims to direct resources to socially desirable channels with higher returns, with the goal of increasing production and accelerating economic growth. This objective has become increasingly important in developing countries compared to advanced ones. In developing countries, where monetary policy alone does not yield satisfactory results due to the lack of growth in the money market and capital markets, fiscal policy can be used as a complementary tool to monetary policy to increase capital formation (Amal, 2015, p. 62).

The use of fiscal policy tools leads to achieving economic growth through increasing government spending. This mechanism leads to increased investments and, consequently, increased income through the multiplier effect, thereby stimulating aggregate demand and increasing gross national product. Fiscal policy mobilizes financial resources to finance economic and social investments and plays an effective role in economic activity by providing financial incentives and guarantees for private efforts through improving work, investment, and saving incentives (Hajir, 1980, p. 58). Especially since most countries need to rebuild their economies and desire to achieve growth in their productive capacities and optimize the use of available economic resources and push production potentials upwards (Lesseid Ali, 1975, p. 100).

THE CONCEPTUAL FRAMEWORK OF THE INDUSTRIAL SECTOR AND ITS IMPACT IN IRAQ

CONCEPT OF INDUSTRY

Industry is the fundamental pillar of economic development and progress for any country in the world. The level of a country's development in industry distinguishes it, and comparisons are often made on this basis. The industrial sector can be defined as the main and large unit in the national economy, consisting of an increasing number of branches and industrial projects that extract raw materials from nature for industrial purposes with the aim of preserving their utility value or recycling them (Al-Ma'mari, 2006, p. 4).

The industrial sector can also be defined as a group of industrial projects that include three main categories of activities: extracting raw materials in their natural form, whether metallic or non-metallic, which are referred to as extractive industries or processing these extracted materials. Additionally, it includes agricultural products produced in the agricultural sector and supplied to the industrial sector by transforming them into industrial goods, such as producing steel from iron ore and textiles from cotton and wool in the manufacturing sector. It may also produce industrial nature services such as machinery, equipment, and durable materials, as well as their formulation. Industrial goods may be designated for later production as tools or equipment, or intermediate goods such as cement, steel, and plastic pellets, among others. Alternatively, they may be designated as personal consumer goods such as private cars, refrigerators, textiles, and beverages (Abdul Karim and Hashim, 1989, p. 25).

Analysis of the Industrial Sector in Iraq: This can be divided into two stages

The first stage: Before 2003, especially during the 1990s and particularly after the Gulf War, many sections of the industrial sector were disrupted due to international sanctions imposed on Iraq and the economic blockade enforced by the United Nations, in addition to rampant inflation and a decline in the exchange rate of the Iraqi dinar. All of these factors led to the stagnation of the industrial sector, which couldn't increase its investments or keep up with global developments in the field of industry (Al-Shawi, 2001, 7).

The second stage: Iraqi industry after 2003

Economic and social development, in general, and industrial development, in particular, are closely linked to the prevailing political and economic conditions in any country worldwide. Economic and political relations leave their mark on the overall economic and social growth, which is reflected in the essence and objectives of the economic policy of that country and how its programs are implemented. As known, the industrial sector is considered the practical and scientific cornerstone for developing the capabilities of society and is the basic foundation for employing labor. However, in reality, we see that the industrial sector in Iraq faced significant challenges, especially after 2003.

These challenges affected all establishments, whether small, medium, or large, and included both the public and private sectors. This came after the American occupation of Iraq in April 2003, which was followed by looting and the destruction of infrastructure. The absence of state authority and the rule of law failed to prevent individuals with weak morals from stealing most industrial facilities. More than 192 industrial companies stopped functioning, either completely or partially, including over 200 factories, employing around 250,000 workers, whether technical, administrative, or engineering personnel. This posed a financial burden on the state, as it continued to pay salaries to all employees despite most of these establishments coming to a complete halt. Many small factories and workshops also ceased operations due to the lack of government support.

Furthermore, there was an expansion in imports after Iraq opened up to the outside world and adopted liberal economic policies. In 2007, Iraq imported approximately $24 billion worth of goods, including importing 5 million tons of cement, while Iraq has 14 large cement factories with a production capacity of 17 million tons (Ali, 2012, 233). The workforce in 2004 reached approximately 6,232,000 workers, and by 2013, the number had increased to around 8.5 million workers due to population growth. The industrial sector employed about 12.5% of the total workforce, while the agricultural sector accounted for about 21%, and the services sector dominated with around 66%. According to statistics from the Ministry of Planning, in 2014, there were approximately 350,821 workers, with 65% of them in the public sector, 30% working for the private sector, and the remainder in the mixed sector.

The number of large industrial establishments in 2011 was approximately 546, including 449 private establishments, 12 mixed establishments, and 85 public establishments. Small industrial establishments numbered around 47,281, with approximately 851,145 workers. By 2013, the number of large establishments had increased to 796, and the medium-sized ones reached around 408, while the number of small establishments decreased to 38,081. The total workforce in all these industries was approximately 516,261 (Ministry of Planning, 2015, 27-31).

In 2017, the number of large establishments reached 1,091, with 574 of them operational and 517 of them halted for economic, political, or administrative reasons. After 2007, the public industrial sector dominated most manufacturing branches, such as consumer or intermediate industries, as well as capital-intensive industries. The Ministry of Industry is responsible for directing industrial activity and manages approximately 61 government-owned companies, with more than 220 factories operating in various industrial fields. Currently, in Iraq, there are over 18,000 complete projects planned, but most of them are either halted or operate with low production capacity. Additionally, there are around 14,000 projects under construction. If these projects were completed with high production capacity, they could accommodate thousands of workers and contribute significantly to the Gross Domestic Product (GDP) (Ali, 2015, 234).

Here are the main features of the industrial sector in Iraq after 2003, as summarized by Al-Awadi (2017, 4):

Most industries in Iraq have a consumer-oriented nature, with fewer workers compared to the agricultural sector.

Distorted relationship between the public and private sectors, lacking clarity and focus.

State-owned companies dominate the industrial production, accounting for up to 90%.

Despite some modern production technologies being introduced, most equipment has not kept pace with global developments and is characterized by obsolescence.

Insufficient contribution to employment for the Iraqi workforce, with many relying on government aid, especially in idle facilities.

Lack of environmental concern, coupled with clear energy wastage due to limited use of modern technology.

Weak industrial investments, particularly in large-scale facilities with potential economic future.

Inadequate legislation and laws to protect the industry, as well as regulations governing domestic and foreign contracts.

Chapter Three: Economic Assessment of the Impact of Public Spending on the Development of the Iraqi Industrial Sector (1990-2021)

The Relationship Between Public Spending and the Value of Industrial Output in Iraq (1990-2021)

A. Current Expenditure and its Relation to the Value of Industrial Output in Iraq: The value of industrial output was recorded at 40,408,200,000 million dinars in 1990, while current expenditure amounted to 11,357 million dinars in the same year, marking the lowest value of current expenditure during the study period. The value of industrial output decreased to 21,671,300,000 million dinars in 1991, the lowest value during the study period, while current expenditure increased to 15,653 million dinars for the same year. The value of industrial output continued to increase steadily to reach 11,322,918,200,000 million dinars in 1997, with current expenditure increasing to 534,095 million dinars in the same year. This increase persisted, with the value of industrial output reaching 30,421,723,600,000 million dinars in 2002, while current expenditure amounted to 1,762,683 million dinars for the same year. This upward trend continued, with the value of industrial output reaching 98,594,871,500,000 million dinars in 2008, while current expenditure amounted to 47,522,700 million dinars for the same year. The value of industrial output decreased to 88,268,914,900,000 million dinars in 2015, while current expenditure recorded 18,564,676 million dinars for the same year. The value of industrial output continued to rise, reaching 161,818,863,000,000 million dinars in 2021, the highest value during the study period, while current expenditure recorded 89,526,686 million dinars for the same year, also the highest value during the study period. This increase can be attributed to the expansion of state responsibilities, keeping pace with global developments, participating in international organizations, and public spending on diplomatic representation.

B. Capital Expenditure and its Relation to the Value of Industrial Output in Iraq: The value of industrial output was 40,408,200,000 million dinars in 1990, while capital expenditure amounted to 2,82 million dinars in the

same year. The value of industrial output decreased to 21,671,300,000 million dinars in 1991, the lowest value during the study period, while capital expenditure increased to 1,84 million dinars for the same year, also the lowest value of capital expenditure during the study period. The value of industrial output continued to increase steadily, reaching 11,322,918,200,000 million dinars in 1997, with capital expenditure increasing to 71,707 million dinars in the same year. This increase persisted, with the value of industrial output reaching 30,421,723,600,000 million dinars in 2002, while capital expenditure amounted to 755,602 million dinars for the same year. This upward trend continued, with the value of industrial output reaching 98,594,871,500,000 million dinars in 2008, while capital expenditure amounted to 11,880,675 million dinars for the same year. The value of industrial output decreased to 147,302,189,900,000 million dinars in 2014, while capital expenditure recorded 24,930,767 million dinars for the same year, marking the highest value of capital expenditure during the study period due to the expansion of demand base, growth in e-commerce, and increased need for equipment and programs to facilitate remote work. The value of industrial output continued to rise, reaching 161,818,863,000,000 million dinars in 2021, the highest value during the study period, while capital expenditure amounted to 13,322,973 million dinars for the same year.

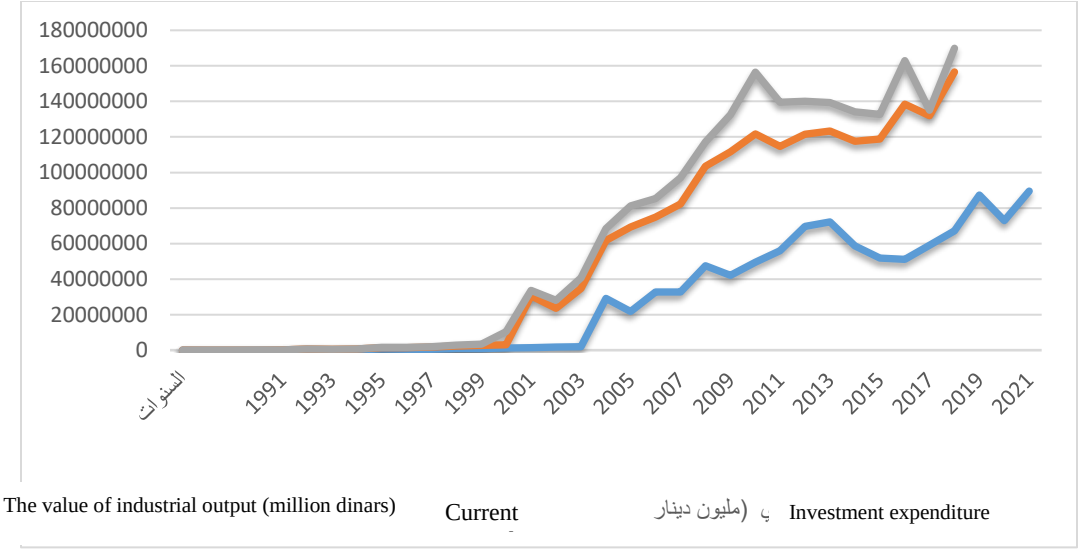

Figure (1) represents the trends in the relationship between investment expenditure, current expenditure, and the value of industrial output

Source: The figure was prepared by the researcher based on data from the Ministry of Planning - Central Statistical Organization - Directorate of National Accounts for various years (1990-2021).

Through Figure (1), we observe a positive trend in the relationship between public expenditure (current and investment) and the value of industrial output throughout the study period. This reflects the significance of public expenditure in supporting the development of the industrial sector and enhancing its infrastructure.

Measuring and Analyzing the Impact of Fiscal Policy on the Development of the Iraqi Industrial Sector for the Period (1990-2021)

First: Description of the Proposed Standard Model:

The indicators used in the economic measurement of the relationship between macroeconomic variables and their impact on the development of the industrial sector can be described using the following standard formula:

1. Dependent Variables:

A. The industrial sector, represented by the contribution percentage of the industrial sector to the Gross Domestic Product, in other words, the ratio of industrial output to Gross Domestic Product (Y1).

2. Independent Variables (XS):

A. Current expenditure as a percentage of Gross Domestic Product (1X).

B. Investment expenditure as a percentage of Gross Domestic Product (X2).

C. Oil revenues as a percentage of Gross Domestic Product (X3).

D. Tax revenues as a percentage of Gross Domestic Product (X4).

E. Total public debt (domestic public debt + external public debt) as a percentage of Gross Domestic Product (X5).

Secondly: Study Countries

The study sample included the Republic of Iraq for the period (1990-2021).

Thirdly: Mathematical Formula for the Standard Model

The standard model was constructed according to the following formula:

$$_{it} \text{……..……..(1) } +\varepsilon X_5\ _5\beta + X_4\ _4\beta + X_3 + {}_3\beta\ X_2 + \beta_2 X_1 = {}_1\beta\ [Y1]$$

1. Unit Root Test: To ensure that the time series is free from unit roots and to assess its stability in the data of the first model for the Republic of Iraq, we used the Phillips-Perron (PP) test. The research results were as follows:

It can be observed that the unit root test results for the independent variables (X2, X4) indicate their stability at the level with the presence of a constant (With Constant), or both constant and trend (With Constant & Trend) equally. This is based on the values of "prob," which were greater than 5%, indicating the stability of these variables at the level.

However, for the dependent variable (Y1) and the independent variables (X1, X3, X5), the results of the table indicate their instability at the level. Nonetheless, they are stable at the first difference with the presence of a constant (With Constant) or both constant and trend (With Constant & Trend) equally. This conclusion is based on the values of "prob," which were less than 5%, indicating the stationarity of the study variables in the Republic of Iraq, as shown in the following table (1).

Table (2): Phillips-Perron Unit Root Test Results for Variables of the First Model

UNIT ROOT TEST TABLE (PP)							
At Level							
		Y1	**X1**	**X2**	**X3**	**X4**	**X5**
With Constant	**t-Statistic**	**-2.4063**	**-2.6597**	**-4.2304**	**-1.5223**	**-4.8731**	**-1.5047**
	Prob.	**0.1483**	**0.0925**	**0.0024**	**0.5093**	**0.0004**	**0.5180**
	Sign.	**n0**	*****	*******	**n0**	*******	**n0**
With Constant & Trend	**t-Statistic**	**-2.5908**	**-2.4410**	**-4.2160**	**-1.8516**	**-4.7862**	**-2.8217**
	Prob.	**0.2866**	**0.3529**	**0.0117**	**0.6549**	**0.0030**	**0.2006**
	Sign.	**n0**	**n0**	******	**n0**	*******	**n0**
Without Constant & Trend	**t-Statistic**	**-0.8001**	**-1.4584**	**-2.1979**	**-0.6249**	**-2.8923**	**-1.3442**
	Prob.	**0.3613**	**0.1326**	**0.0290**	**0.4384**	**0.0053**	**0.1620**
	Sign.	**n0**	**n0**	******	**n0**	*******	**n0**
At First Difference							
		d(Y1)	**d(X1)**	**d(X2)**	**d(X3)**	**d(X4)**	**d(X5)**
With Constant	**t-Statistic**	**-7.6109**	**-7.4959**	**-10.9502**	**-4.7542**	**-9.3327**	**-7.1127**
	Prob.	**0.0000**	**0.0000**	**0.0000**	**0.0006**	**0.0000**	**0.0000**
	Sign.	*******	*******	*******	*******	*******	*******
With Constant & Trend	**t-Statistic**	**-7.8071**	**-8.0300**	**-10.7172**	**-4.6957**	**-11.3036**	**-10.0536**
	Prob.	**0.0000**	**0.0000**	**0.0000**	**0.0039**	**0.0000**	**0.0000**
	Sign.	*******	*******	*******	*******	*******	*******
	t-Statistic	**-7.7980**	**-7.5339**	**-10.8629**	**-4.7941**	**-9.4684**	**-5.5567**

Without Constant & Trend	**Prob.**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**
	Sign.	***	***	***	***	***	***
Notes : **a: (*) Significant at the 10%; (**) Significant at the 5%; (***)Significant at the 1% and (no) Not Significant.**							

Source: Compiled by the researcher using statistical software (EViews 12).

Based on the unit root test results for the study variables in Iraq, we can apply the Autoregressive Distributed Lag (ARDL) model to the data.

3. Results of applying the ARDL model to the variables of the first model (Y1): After testing the stability of the time series for the independent variables (current expenditure, investment expenditure, oil revenues, tax revenues, and total public debt) as independent variables and (industrial output) as the first dependent variable, it became clear that the second and fourth variables (investment expenditure and tax revenues) were stable at the level, while the remaining variables stabilized after taking their first differences. Based on this, we can apply the ARDL model, and Table (2) below shows the results of this test.

Table (13): Results of Applying the ARDL Model to the Variables of the First Model

Dependent Variable : (Y1)				
Method : ARDL				
Sample (adjusted): 1993 2021				
Dynamic regressors (3 lags, automatic): X1 X2 X3 X4 X5				
Fixed regressors : C				
Selected Model : ARDL(2 , 3 , 1 , 3 , 0 , 0)				
Variable	**Coefficient**	**Std . Error**	**t- Statistic**	**Prob.***
Y1(-1)	**0.056965**	**0.170791**	**0.333535**	**0.7437**
Y1(-2)	**0.323516**	**0.162615**	**1.989461**	**0.0666**
X1	**-0.338913**	**0.210320**	**-1.611414**	**0.1294**
X1(-1)	**-0.287080**	**0.188915**	**-1.519627**	**0.1509**
X1(-2)	**0.417004**	**0.112664**	**3.701315**	**0.0024**
X1(-3)	**-0.170575**	**0.109386**	**-1.559393**	**0.1412**
X2	**-0.502750**	**0.151886**	**-3.310049**	**0.0052**
X2(-1)	**-0.557077**	**0.243498**	**-2.287807**	**0.0382**
X3	**0.214243**	**0.201067**	**1.065531**	**0.3047**
X3(-1)	**0.180850**	**0.231111**	**0.782524**	**0.4469**
X3(-2)	**-0.567473**	**0.186447**	**-3.043612**	**0.0088**
X3(-3)	**0.303595**	**0.133101**	**2.280941**	**0.0387**
X4	**-4.617746**	**1.921503**	**-2.403195**	**0.0307**
X5	**0.002321**	**0.001355**	**1.712416**	**0.1089**
C	**54.79182**	**13.76962**	**3.979180**	**0.0014**
R-squared	**0.948210**	**Mean dependent var**		**60.91276**
Adjusted R-squared	**0.896419**	**S.D. dependent var**		**10.55466**
S.E. of regression	**3.396904**	**Akaike info criterion**		**5.589850**
Sum squared resid	**161.5454**	**Schwarz criterion**		**6.297072**
Log likelihood	**-66.05283**	**Hannan- Quinn criter.**		**5.811344**
F-statistic	**18.30865**	**Durbin-Watson stat**		**1.829856**
Prob(F-statistic)	**0.000001**			
***Note :p- values and any subsequent tests do not account for model selection.**				

Source: Compiled by the researcher using statistical software (EViews 12).

From Table (2), it is evident that the ARDL model identifies the time lags for the variables included in the model. Regarding the test results, specifically the explanatory power of the model represented by the coefficient of determination (R^2), it showed that the independent variables (current expenditure, investment expenditure,

oil revenues, tax revenues, and total public debt) explained 94% of the variation in the first dependent variable (industrial output), while 6% is attributable to external factors not captured by the model that may influence the dependent variable. As for the (F)-test, which signifies the overall significance of the model, the statistical significance level was (prob=0.000), indicating the model's quality at a significance level of 5%.

4. Common Integration Test for the First Variables (Y1): To test the existence of long-term equilibrium relationship (common integration) between (current expenditure, investment expenditure, oil revenues, tax revenues, and total public debt) as independent variables and industrial output as the first dependent variable, it is necessary to conduct a Bound Test. This is illustrated in Table (3) below.

Table (14): Results of the Bound Test for the Common Integration of the First Model Variables

F-Bounds Test		**Null Hypothesis : No levels relationship**		
Test Statistic	**Value**	**Sign if.**	**I(0)**	**I(1)**
As ym ptotic : n = 1000				
F-statistic	**5.43566655**	**10%**	**2.08**	**3**
K	**5**	**5%**	**2.39**	**3.38**
		2.5%	**2.7**	**3.73**
		1%	**3.06**	**4.15**
Actual Sample Size	**29**	**Finite Sample: n=35**		
		10%	**2.331**	**3.417**
		5%	**2.804**	**4.013**
		1%	**3.9**	**5.419**
		Finite Sample: n=30		
		10%	**2.407**	**3.517**
		5%	**2.91**	**4.193**
		1%	**4.134**	**5.761**

Source: Compiled by the researcher using statistical software (EViews 12).

Based on Table (3), the test results for cointegration show that the computed F-statistic, which is 5.44, exceeds both the lower and upper critical values of 2.39 and 3.38, respectively, at a significance level of 5%. This leads us to reject the null hypothesis of no cointegration and accept the alternative hypothesis, indicating the presence of cointegration among the five independent variables (current expenditure, investment expenditure, oil revenues, tax revenues, and total public debt) and the first dependent variable (industrial output). This suggests the existence of a long-term equilibrium relationship.

5. Results of Short and Long-Term Relationships in Iraq.

Through this test, we can estimate the long and short-term parameters to reveal the degree of influence of the independent variables on the first dependent variable and determine the type of relationship, as shown in Table (4) below.

Table (15): Results of Short and Long-Term Relationships for Model Variables

ARDL Long Run Form and Bounds Test				
Sample : 1990 2021				
Included observations:29				
Conditional Error Correction Regression				
Variable	**Coefficient**	**Std. Error**	**t- Statistic**	**Prob.**
C	**54.79182**	**13.76962**	**3.979180**	**0.0014**
Y1(-1)*	**-0.619519**	**0.159507**	**-3.883967**	**0.0017**
X1(-1)	**-0.379564**	**0.209098**	**-1.815240**	**0.0910**
X2(-1)	**1.059827**	**0.271692**	**3.900839**	**0.0016**
X3(-1)	**0.131215**	**0.108616**	**1.208062**	**0.2470**
X4**	**-4.617746**	**1.921503**	**-2.403195**	**0.0307**
X5**	**0.002321**	**0.001355**	**1.712416**	**0.1089**
D(Y1(-1))	**-0.323516**	**0.162615**	**-1.989461**	**0.0666**

D(X1)	**-0.338913**	**0.210320**	**-1.611414**	**0.1294**
D(X1(-1))	**-0.246429**	**0.143860**	**-1.712972**	**0.1088**
D(X1(-2))	**0.170575**	**0.109386**	**1.559393**	**0.1412**
D(X2)	**-0.502750**	**0.151886**	**-3.310049**	**0.0052**
D(X3)	**0.214243**	**0.201067**	**1.065531**	**0.3047**
D(X3(-1))	**0.263877**	**0.126983**	**2.078045**	**0.0566**
D(X3(-2))	**-0.303595**	**0.133101**	**-2.280941**	**0.0387**
*** p-value incompatible with t-Bounds distribution. ** Variable interpreted as Z = Z(-1) + D(Z).**				
Levels Equation Case 3 : Unrestricted Constant and No Trend				
Variable	**Coefficient**	**Std. Error**	**t- Statistic**	**Prob.**
X1	**-0.612675**	**0.295588**	**-2.072733**	**0.0571**
X2	**-1.710725**	**0.624498**	**-2.739360**	**0.0160**
X3	**0.211801**	**0.182883**	**1.158126**	**0.2662**
X4	**7.453760**	**2.544576**	**2.929273**	**0.0110**
X5	**0.003746**	**0.002063**	**1.815621**	**0.0909**
C	**88.44250**	**4.382389**	**20.18134**	**0.0000**
EC = Y - (-0.6127*X1 -1.7107*X2 + 0.2118*X3 -7.4538*X4 + 0.0037*X5 +88.4425)				

Source: Compiled by the researcher using statistical software (EViews 12).

Short-term relationship: The Error Correction Model (UECM) test was used to predict the return of the model to equilibrium and measure the speed of adjustment in the long term between the independent variables and the first dependent variable included in the model. The results in Table (4) clarify the following: 1. The negative sign indicates an inverse relationship between current expenditure and industrial output, significant at a 10% level of significance. An increase in current expenditure by 1% will lead to a decrease in industrial output by 0.379%.

2. The positive sign indicates a positive relationship between investment expenditure and industrial output, significant at a 5% level of significance. An increase in investment expenditure by 1% will lead to an increase in industrial output by 1.059%.

3. The positive sign during the first lag indicates a positive relationship between oil revenues and industrial output, significant at a 5% level of significance. An increase in oil revenues by 1% will lead to an increase in industrial output by 0.264%. However, during the second lag, the sign is negative, indicating that an increase in oil revenues by 1% will lead to a decrease in industrial output by 0.304%.

4. The negative sign indicates an inverse relationship between tax revenues and industrial output, significant at a 10% level of significance. An increase in tax revenues by 1% will lead to a decrease in industrial output by 4.613%.

5. The results indicate a positive relationship between total public debt and industrial output, but it is not significant at a 5% level of significance.

6. The test results show that the unrestricted error correction coefficient (UECM = -0.6195) is negative and significant at a 5% level of significance with a probability of 0.0014. This result satisfies the necessary and sufficient condition for the existence of short-term relationship. Any shock or change in the independent variable that causes a disturbance in the short-term equilibrium in the previous year (t) will be corrected by 62% in the current year (t-1).

B. Long-Term Relationship: This test also reveals the type of relationship between the independent variables and the dependent variable and the degree of influence between them. Through Table (15), the following is evident:

1. Current Expenditure: The sign is negative, indicating an inverse relationship between current expenditure and industrial output, significant at a significance level of (10%). An increase in current expenditure by (1%) will lead to a decrease in industrial output by (0.613%).

2. Investment Expenditure: The sign is positive, indicating a causal relationship between investment expenditure and industrial output, significant at a significance level of (5%). An increase in investment expenditure by (1%) will lead to an increase in industrial output by (1.711%).

3. Oil Revenues: The results indicate a positive sign, meaning a causal relationship between oil revenues and industrial output, but it is not significant at a significance level of (5%).

4. Tax Revenues: The sign is positive, indicating a positive relationship between tax revenues and industrial output, significant at a significance level of (5%). An increase in tax revenues by (1%) will lead to an increase in industrial output by (7.454%).

5. Total Public Debt: The sign is positive, indicating a positive relationship between total public debt and industrial output, significant at a significance level of (10%). An increase in total public debt by (1%) will lead to an increase in industrial output by (0.004%).

Diagnostic Tests for the Dependent Variable (Y1)

To ensure the accuracy and validity of the results obtained from the previous tests, we will conduct some diagnostic tests to confirm the findings.

A. Autocorrelation Issue: The estimated models are tested to ensure they are free from autocorrelation or serial correlation issue using the LM Test.

B. Heteroscedasticity Issue: The estimated models are tested for heteroscedasticity problem using the ARCH test to ensure they are free from variance difference issue, as shown in Table (16) below:

Table (16) Diagnostic Test Results for the First Model

Breusch-Godfrey Serial Correlation LM Test:			
Null hypothesis : No serial correlation at up to 1 lag			
F-statistic	**0.145175**	**Prob . F(3,13)**	**0.7093**
Obs * R-squared	**0.320275**	**Prob . Chi-Square(3)**	**0.5714**
Heteroskedasticity Test : ARCH			
F-statistic	**1.301533**	**Prob . F(3,22)**	**0.2990**
Obs * R-squared	**3.918978**	**Prob . Chi-Square(3)**	**0.2703**

Source: Prepared by the researcher using statistical software (EViews 12).

From the LM Test results in Table (5), we observe that the F-statistic value with a probability level of (Prob=0.7093) is not significant at the 5% level, indicating that we accept the null hypothesis, which suggests the absence of autocorrelation problem. Therefore, we reject the alternative hypothesis, which indicates the presence of autocorrelation issue. This means that there is no autocorrelation problem in the model among the error terms. This test enhances the validity of the results for the ARDL model.

As for the results of the ARCH test in Table (16), concerning the identification of the heteroscedasticity problem, it is evident that the F-statistic value with a probability level of (Prob=0.2990) is greater than 5%, indicating no presence of heteroscedasticity issue. Therefore, we accept the null hypothesis and reject the alternative hypothesis, which suggests the presence of heteroscedasticity problem among the error terms. This test further improves the accuracy of the results for the ARDL model.

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

Fiscal policy in Iraq plays a significant role in achieving economic stability, as its effectiveness lies in its ability to impact economic activity and address various economic challenges.

Iraqi fiscal policy is reflected in the accumulated surplus of production, represented by an increase in productivity and a clear increase in the real capital of society, along with investment in required fields.

Iraqi fiscal policy still requires more economic awareness and progress in the right direction to better serve economic development and uplift the Iraqi economic reality.

Standard analysis results:

a. Increasing public spending by one unit, with other factors remaining constant, would contribute to an increase in the national income by $54188.067 million.

b. Increasing public spending by one unit, with other factors remaining constant, would contribute to an increase in the per capita national income by $295.361.

c. Increasing public spending by one unit, with other factors remaining constant, would contribute to an increase in the Gross Domestic Product (GDP) by $57786.322 million.

d. Increasing public spending by one unit, with other factors remaining constant, would contribute to an increase in the average per capita share of GDP by $0.140.

Recommendations

Review the structure of public spending to achieve better control and contribute to program budgeting and performance.

Reform subsidy systems to enable more efficient and effective public spending, especially in energy subsidies.

Develop the existing system for managing the tax system in Iraq through proper tax enumeration and improving revenue authorities' efficiency.

Enhance state revenues by exploiting mineral wealth from mines and quarries (such as cement, iron, and phosphate) to achieve higher economic returns.

Rationalize public spending, especially by combating financial and administrative corruption.

Encourage foreign investment in the local sector to support the production apparatus with advanced expertise and technology.

Support small and medium-sized industrial institutions by providing loans and necessary plans to achieve economic growth in Iraq.

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