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Original Research Article

Public Debt and Its Impact on the Unemployment Rate in the Iraqi Economy for the Period (2004-2022)

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Abstract: The aim with this study is to gauge the short and long-term relationship between public debt and its effect on unemployment in the Iraqi economy for period (2004-2022) using modern joint integration methods according to the (ARDL) model. Given the effect of public debt fluctuations upon unemployment rates in the Iraqi economy for period (2004-2022), there were a number of conclusions reached by that research. Among them was that public debt has a direct effect on the unemployment rate in the Iraqi economy for period (2004-2022), that is to say increasing public debt results in an increasing unemployment rate during this period. The reason is simply that when public debt increases it also increases the burden upon the Iraqi economy, and this forms a major barrier towards economic development because these loans are made under constraints. And this serves as an additional burden upon the Iraqi economy which in turn leads to an increase in unemployment rate in Iraq. Therefore, the investigation recommends to.

Keywords: Public debt, unemployment, ARDL model, Iraq.

INTRODUCTION

Public debt is an important economic issue that directly impacts the stability and growth of economies worldwide. In the case of Iraq, which has undergone radical transformations since 2003 mostly due to political changes if leading to new policies. That is particular issue. Public debt has shot up thanks to a host of modern challenges such as reconstruction costs and security crises along side the exploitation of resources, but the rise in public debt has also been accompanied by high unemployment rates. Unemployment rate is one of Iraq's most important social and economic issues, because high unemployment rates show economy is incapable of absorbing his increasing work force which leads to all sorts of negative effects on social stability and economic development. This negativity cascades throughout most macro-economic variables.

Research Problem: Despite the great importance of this topic, Iraq faces multiple challenges in understanding how public debt affects unemployment rates, so the research problem revolves around the nature of the relationship between public debt and the unemployment rate in the Iraqi economy during the period (2004-2022).

Research Hypothesis: The research hypothesis revolves around the relationship between public debt and the unemployment rate in the Iraqi economy during the period (2004-2022) as follows: A positive correlation exists between public debt and unemployment rates such that the greater the level of public debt in Lebanon, the lower will be its economy's performance towards sustainable development projects and jobs creation.

Research Objective:

This research aims to shed light on the relationship between public debt and the unemployment rate in Iraq from 2004 until 2022. It will reveal how public debt impacts macroeconomic policy as well as unemployment rates themselves. Furthermore, it aims to provide an exhaustive account of hurdles and hopes facing Iraq's economy, and with the result of this inquiry to offer suggestions: how may we best transform the economic and living conditions in this country.

RESEARCH METHODOLOGY

To take advantage of the logical complexities found in central theories, we conducted basically a conjunction of the descriptive, analytic approach and its corresponding theoretical background research.

While the former investigates ideas public debt and unemployment rates in terms of economic theory, the latter adopts standard quantitative methods.

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Empirical evidence for this work comes from (Eviews) model estimation as well as necessary tests to determine if there are problems with our assumption.

Research Limitations:

Spatial boundaries: The Iraqi economy.

Time limits: The research covers the time period (2004-2022).

Research Structure:

The investigation was categorized into three axes: the first axis addressed the concept of public debt and unemployment; the second axis focused on the analytical role of public debt in influencing the unemployment rate during the period from 2004 to 2022; the third axis concentrated on assessing the impact of public debt on unemployment rates within the Iraqi economy for the same period. The inquiry culminated in findings and suggestions.

Some previous studies:

Previous research investigations serve as a significant reference for contemporary research, particularly regarding the relationship between public debt and its impact on unemployment rates within the Iraqi economy. Notably, the following studies are among the most pertinent:

Scientific addition to the research:

The investigation is differentiated from previous studies by its thorough examination of the influence of currency rates on the trade balance in the Iraqi economy. This research builds upon and improves previous studies in this field, particularly varying in its chronological context.

1. Al-Rawi, Anmar Atallah Mustafa (2021) entitled (The Impact of Public Debt on Some Economic Indicators of Iraq for the Period (2004-2019), Master's Thesis, College of Administration and Economics, University of Anbar)), and the study topic pertains to the significant impact of external debt on economic indicators and the subsequent implications for the stability of the financial system. The study posits that foreign public debt adversely impacts economic indices in Iraq over the long run. The research seeks to assess the influence of external public debt on various economic development indicators in Iraq. The primary conclusion indicates a correlation between rising unemployment rates and elevated levels of external public debt, attributed to the failure to allocate these funds towards economic development and the lack of investment in productive and developmental projects, resulting in the misdirection of debt resources away from economic advancement. Generating additional employment opportunities without reducing overall production levels. The paramount recommendations involve addressing administrative and financial corruption within governmental institutions by formulating innovative strategies that consider practical realities and enforcing stringent penalties on all corrupt individuals without exception, including the confiscation of their assets and the revocation of their privileges, among other measures.
2. A study by Ahmed Al-Waeli and Donia Karim (2021) entitled The Impact of Some Economic Variables on the Unemployment Rate in Iraq for the Period 2004-2017 A standard study, the study aimed to find out the impact of some economic variables (GDP growth rate, current spending growth rate, investment spending growth rate, inflation rate, public and private capital formation) on the unemployment rate in the Iraqi economy during the period. (2004-2017). Using multiple linear regression analysis, the study found that all variables except inflation have a weak impact on unemployment, while inflation and unemployment are correlated with a positive relationship. The study recommended the need to coordinate all economic policies to ensure the best level of balance between unemployment and inflation.

Scientific addition to the research:

The investigation is unique compared to other investigations on the topic due to its thorough methodology, which sought to discover appropriate solutions by analyzing the impact of public debt on the unemployment rate in the Iraqi economy from 2004 to 2022. This research is seen as a progression and augmentation of prior studies. Historical precedents in this sector for the Iraqi economy over several times.

The first axis: the conceptual framework of public debt and the phenomenon of unemployment

Public debt adversely influences the economy across several sectors by depending on a detrimental source, resulting in further bad consequences, including the alarming issue of unemployment, which poses significant challenges for many individuals. From both developed and developing nations globally. Consequently, this subject will focus on elucidating the conceptual framework of public debt and unemployment through the following:

First: The concept of public debt:

Public debt is generated through borrowing, a process undertaken by both the executive and legislative branches. Countries engage in borrowing to address budget deficits, which occur when public expenditures exceed revenues. To finance public spending, the government must secure funds by issuing government bonds to individuals, the Central Bank, or by obtaining loans from international entities such as the World Bank, the International Monetary Fund, or foreign nations. This borrowing provides the government with the necessary revenues to fulfill its obligations **(Al-Fares, 119:1997).**

In this regard, several definitions of public debt have been given, including:

It is a sum of money borrowed by the government or any public person from private or public individuals or financial institutions from them or from other countries under an agreement whose legitimacy is based on a general legal rule issued by the legislature that includes fulfillment, undertaking to pay it and pay interest in accordance with the terms of the agreement **(Al-Qadi, 2014:119).**

It is also defined as the sum of the internal and external loans obtained by the state and their interest is up to a certain period **(Abdullatif, 4: 2016).**

It is defined as a contract between two parties (creditor and debtor) wherein the creditor disburses a sum of money in local or foreign currency to the debtor in return for the debtor's commitment to repay the principal and interest within a designated timeframe, referred to as a local loan. **(Mohammed, 6: 1996).**

A) Functions of public debt: There are three basic functions of public debt (Fatlawi and Moussawi, 273: 2019):

1- Stabilization function: Where the government is responsible for achieving economic stability, especially in times of crises that the country is going through, in this case the public budget should not be balanced, and therefore the fiscal policy needs to contribute to achieving economic growth and reducing government debt by reducing public spending, which leads to the emergence of signs of economic recovery.
2- Empowerment function: that is, achieving the goal of tax empowerment, as consistency in economic policy is necessary to build an investment activity in order to achieve growth, and this is important in determining taxes in the long term, and through it an atmosphere of confidence can be created that entrepreneurs can plan and calculate long-term investments.
3- Burden sharing function: This happens when the amounts spent at the present return benefits to present and future generations, that is, the distribution of tax burdens over generations and this function includes public investments that increase the efficiency of the economy in the long run.

B) The importance of public debt: The significance of public debt is illustrated by a series of attributes associated with public debt instruments that impact various economic variables. For instance, the utilization of long-term bonds aids the economy in mitigating liquidity during inflationary periods and can influence economic equilibrium, unemployment, and money supply. However, this strategy is multifaceted, capable of either rectifying budget deficits or revitalizing economic sectors and stimulating development. The significance of religion in the subsequent points **(Rashid *et al.*, 2008: 371):**

1- Public debt is one of the important and influential means of accumulating savings and helps absorb the financial surpluses owned by individuals to be used to cover the budget deficit and achieve economic balance.
2- The internal public debt leads to the redistribution of purchasing power among the intended community, and this is what distinguishes it from the external debt, and the state does not need to increase exports to repay it because it is in local currency.
3- The principle of financial management dictates that government expenditures must align with annual revenues; however, crises such as floods, famines, wars, and natural disasters may necessitate an increase in public debt to address budget deficits when the government lacks adequate funds.
4- The government increases public spending financed by borrowing for the establishment and maintenance of development and production projects, as itis one of the tools used by the government to eliminate depression and unemployment in the economy.
5- Public debt is used to finance social capital and a tool to finance development, because developing economies suffer from a lack of capital to achieve their development plans in all fields.

C) Economic causes of public debt (Student, 19:2018): Numerous economic justifications for governmental debt may be encapsulated in the following statements:

1- Insufficiency of the public budget: Through the lack of distribution of economic resources to the sectors with appropriate spending, which leads to increased compatibility in the consumer aspects without the aspects that increase economic growth.
2- Economic crises: In developing countries in general, there is a crisis in aggregate demand, as the production system is inflexible, which calls on the government to increase imports at the expense of local manufacturing, and thus increase expenditures as well, which leads to economic crises, including high rates of poverty and unemployment ... etc., which leads the state to resort to public debt.
3- Increasing state intervention in economic activity: To attain social welfare, mitigate income inequality, and elevate the population's standard of living, increased spending may result in revenues insufficient to cover public expenditures, necessitating the exploration of alternative sources including public debt.

4- **The private sector:** The private sector in developing countries generally exhibits weakness and is unable to capitalize on the nation's economic resources due to financial deficits; thus, the government must offer financial assistance and incentives, occasionally assuming its role, a phenomenon known as the crowding out effect.
5- **New monetary issuance:** This refers to inflationary finance employed by the state to address the deficit or settle internal debt, as it is domestic, which subsequently leads to further issues, including the escalation of inflation, the increase in the overall price level, and the devaluation of currency.
6- **Extravagance and wars:** What is observed on developing countries is extravagance and waste, especially on luxuries and increasing the salaries of senior state employees, as well as the steady rise in military spending through the import of weapons and the cost of maintenance and sustainability, and the use of foreign expertise, all of which increases public spending as a whole and leads to a budget deficit and then the state resorts to borrowing to fill this shortage.

Second: Unemployment, its concept, types, causes:

1. **The concept of unemployment:** Many may hastily assert that the unemployed are individuals who do not engage in work. To elucidate the accurate definition of unemployment, we will examine various definitions of this phenomenon and delineate the categories encompassed within the unemployed classification. This will clarify the misconception that all individuals without a job are unemployed. Furthermore, we encounter challenges in estimating unemployment rates with requisite precision. A significant number of individuals, including children, the infirm, the ill, and the elderly, receive pensions and cannot be classified as unemployed, as unemployment necessitates the capacity to work. Additionally, there are individuals capable of employment who are not actively seeking work, such as students in universities or schools, and therefore, they do not qualify as unemployed despite their potential to work. Individuals favor enhancing their competencies and skills through education to leverage them for future employment with higher remuneration. Consequently, they should not be classified as unemployed. Additionally, some individuals are employed yet seeking superior job opportunities, despite being registered as unemployed in labor offices; in reality, they are not unemployed. Furthermore, there are those engaged in part-time work who prefer full-time employment and are actively searching for such opportunities.

The unemployed are described as those who are capable of working, seek employment, are willing to accept the prevailing salary, yet remain jobless. In economic analysis, unemployment refers specifically to individuals who have lost their jobs and their means of livelihood.

Unemployment is generally defined as the underutilization of labor capacity and working time in the production of goods and services. Official statistics stipulate two fundamental criteria that must be met simultaneously to classify an individual as unemployed: the individual must be capable of work. To seek employment opportunities.

Experts and economists concur, as advised through the International Labor Organization (ILO), that the unemployed are defined as individuals who are able and willing to work, actively seeking employment, and ready to accept the prevailing wage, yet remain unsuccessful. This definition encompasses both first-time entrants into the labor market and those who have previously been employed but were compelled to exit for various reasons.

We deduce that not all individuals seeking employment are classified as jobless, and conversely, not all individuals not seeking employment are classified as unemployed.

2_Types of unemployment:

Numerous forms of unemployment have emerged since the significant economic crisis that impacted the capitalist system, each arising at specific stages and under particular conditions encountered throughout the development of capitalism and the expansion of its economies, continuing to the present day. (Al-Bilawi, 2002: 44).

1. Periodic unemployment: Unemployment arises from economic cycles and dissipates as the economy transitions to a state of boom or recovery. It results from the absence of consistent economic activities over varying time periods, which experience periodic fluctuations. The duration of these economic cycles, characterized by repetition and periodicity, spans from three to ten years. The economic cycle comprises two phases: the initial phase of boom or expansion, characterized by increases in production, employment, and income levels, culminating at a peak. Subsequently, an economic crisis ensues, marking a turning point, after which national activity enters a phase of contraction, descending until it reaches a trough. Following this, recovery commences, and economic activity begins to expand once more.

2. Seasonal unemployment: Seasonal fluctuations and the nature of employment contribute to what is termed temporary unemployment, wherein individuals engage in work during certain intervals and remain idle

during others. This phenomenon is prevalent in many Arab countries, characterized by periods of heightened labor activity followed by declines.

3. **Structural unemployment:** The phenomenon results from fluctuations in demand or technological advancements, causing a disparity between the workforce's experience and qualifications and the labor market's requirements. This leads to a mismatch between available job opportunities and the competencies of job seekers. Such changes stem from transformations in contemporary technological systems, the introduction of new products, alterations in product demand structures, and the emergence of additional categories and skills within the workforce, resulting in an oversupply in the labor market. What constitutes excess demand, and this disparity persists until supply meets demand.
4. **Frictional unemployment:** This phenomenon occurs due to the ongoing migration of workers across various regions and professions, often stemming from insufficient information accessible to job seekers regarding available opportunities. Consequently, the duration of the job search may be extended due to inadequate knowledge about employment, both among employers and job seekers, despite their efforts to find work.
5. **Disguised unemployment:** This phenomenon arises when the marginal productivity of labor is zero or negative, particularly evident in emerging agricultural nations.
6. **Voluntary unemployment:** Voluntary unemployment refers to an individual's choice to abstain from work despite possessing the capability and available opportunities, without a stable resource or legitimate means of subsistence. This phenomenon occurs when a worker willingly resigns from their position, either due to a preference for leisure over employment or in pursuit of a superior job opportunity that offers a higher wage.

1. **Causes of unemployment:**

Numerous factors contribute to unemployment or exacerbate its severity. Some of these factors are intrinsically linked to the economic system, its institutional framework, growth dynamics, and operational efficiency. Others pertain to the workforce, including their willingness and capacity to work, as well as their qualifications, skills, and access to training and rehabilitation. Additionally, there are indirect causes of unemployment. In summary, the causes of unemployment can be delineated as follows: (Al-Ukaili, 1982:32)

A- High population growth rates
B- Low population growth rates
C. Capital Intensity in Industry
D. Political events and public revenues
E- Influx of expatriate workers from abroad
F- The country's monetary policy

The previously mentioned variables greatly contribute to increasing unemployment rates in the country, necessitating the development of a well crafted fiscal policy to correctly represent true GDP growth, which consequently affects average per capita income. This necessitates a synchronized approach between comprehensive economic objectives and essential financial and monetary measures. The reduction in economic growth is mostly due to erroneous policies and excessive government interference in economic activities. The simultaneous mismanagement and inability to recognize critical developmental factors, along with the degradation of essential standards for prudent economic decision-making, have negatively affected overall economic activity and led to increasing unemployment rates in the Iraqi economy for the following reasons: (Hussein, 2005) 32:

1. The destruction of infrastructure throughout the last two decades of the previous century, along with the occupation, immediately led to the cessation of economic endeavors, especially those requiring significant labor forces.
2. Redirecting the prior economic policy towards military expenditure and away from labor-intensive investment projects has undermined the potential to optimize the utilization of economic resources for generating employment opportunities in productive sectors that facilitate the development process.
3. The security situation significantly contributed to the absence of several anticipated investments and its subsequent effect on rising unemployment rates.
4. The termination of several personnel from the old Iraqi army, other security forces, and various ministries resulted in heightened social costs for the state, significantly elevating unemployment rates.
5. The deterioration of the manufacturing process due to rising inflation levels has adversely affected investment activities, resulting in increased unemployment, particularly among young individuals of working age.

The reasons previously mentioned contributed to increased unemployment rates, alongside the interruption of public sector activities and the private sector's inability to independently stimulate the development process. As a result, the oil industry became the exclusive source of funding for public expenditures in the state's overall budget. Furthermore, the state's support of the ration card and oil derivatives exacerbated the unemployment problem. The emergence of financial and administrative corruption after 2003 was attributed to the ineffectiveness of aid in reaching its intended recipients, exacerbated by the depletion of financial

resources owing to the security situation, which had adverse consequences. Concerning the populace and the increase in unemployment rates (Omar, 2010 (63):

The second axis: The development of public debt and unemployment in the Iraqi economy for the period (2004-2022)

The evolution of public debt and unemployment constitutes a fundamental and significant subject in the economies of both developing and developed nations. These variables serve as a crucial foundation for this research, as religion holds a prominent position in global contexts, influencing economic outcomes amid crises and shocks. To assess the efficacy of public debt within the Iraqi economy, it is essential to examine the trends in public debt and unemployment throughout the research period, as detailed below:

Table (1): The evolution of public debt and unemployment in the Iraqi economy for the period (2004-2022)

Annual change rate of unemployment %	Unemployment rate	Annual rate of change of public debt %	Public debt	Years
—	**26.80**	**—**	**135070652**	**2004**
-33.21	**17.90**	-17.44	**111518120**	**2005**
-2.23	**17.50**	-17.52	**91980090**	**2006**
-33.14	**11.70**	-12.74	**80265989**	**2007**
30.77	**15.30**	-24.55	**60559880**	**2008**
-8.50	**14.00**	1.79	**61641779**	**2009**
-14.29	**12.00**	6.32	**65538340**	**2010**
-7.50	**11.10**	-6.23	**61457023**	**2011**
7.21	**11.90**	-0.67	**61044886**	**2012**
1.68	**12.10**	-6.64	**56988845**	**2013**
-12.40	**10.60**	8.74	**61969675**	**2014**
24.34	**13.18**	41.48	**87675456**	**2015**
-18.06	**10.80**	18.29	**103707051**	**2016**
27.78	**13.8**	33.05	**137984326**	**2017**
-1.52	**13.59**	-33.89	**91225076**	**2018**
0.44	**13.65**	5.48	**96219998**	**2019**
0.66	**13.74**	30.68	**125744352**	**2020**
33.92	**18.4**	-11.13	**111744322**	**2021**
-6.52	**17.2**	13.42	**126744311**	**2022**

Source:

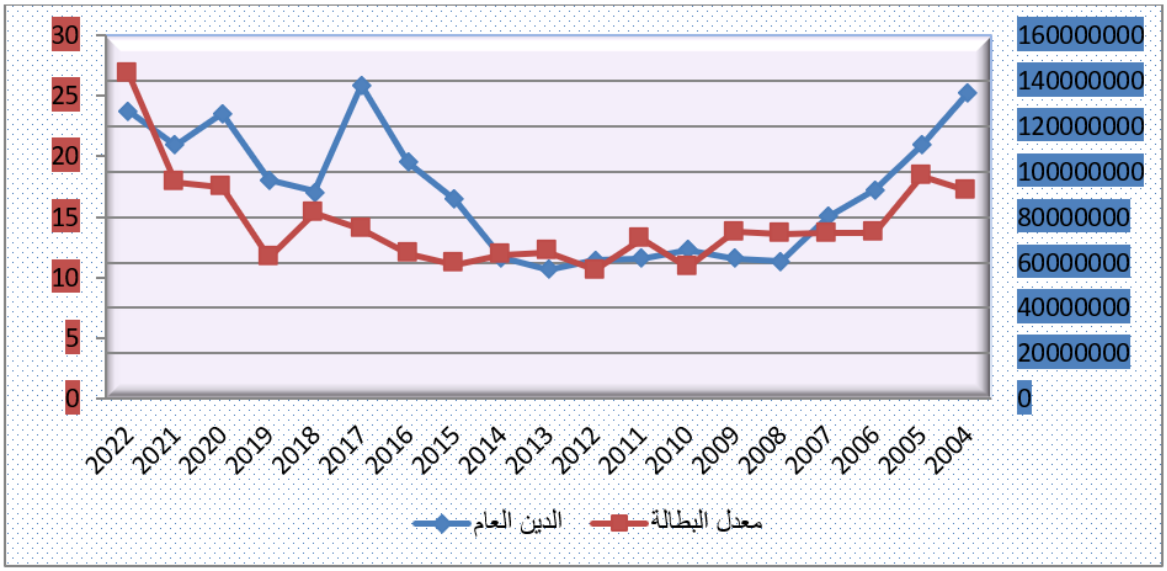
- Ministry of Finance, Economic Department, General Budget Tables.
- Ministry of Planning, Central Bureau of Statistics, Directorate of National Accounts.
- The annual rate of change is calculated according to the following formula: R = Yt-Yt-1\Yt-1, where R: the annual rate of change Yt: its value in the current year, Yt-1: its value in the previous year. (Al-Fahdawi, 62: 2020)

The correlation between public debt and the unemployment rate is contingent upon governmental debt management and its application in economic support. When public debt finances productive projects and investments, it fosters job creation and mitigates unemployment. Conversely, if public debt is allocated to unproductive current expenditures, it may weaken the economy, elevate unemployment rates, and exacerbate the financial burdens on the government due to debt servicing obligations.

Table (1) clearly indicates that Iraq's public debt has been on the rise, particularly following the 2003 occupation, reaching (135070652) million dinars in 2004. Subsequently, the public debt gradually decreased, culminating at (56988845) million dinars in 2013, reflecting a negative annual change rate of (-6.64%). Thereafter, public debt increased again, reaching (61969675) million dinars in 2014, with an annual change rate of (8.74%). The volume of public debt escalated until it reached 137,984,326 in 2017, with an annual growth rate of 33.05%. This surge in public debt was precipitated by Iraq's military and financial crises, stemming from declining global oil prices and military operations in numerous Iraqi provinces, compelling the country to seek external debt to accommodate rising expenditures. Subsequently, the public debt exhibited fluctuations, oscillating between increases and decreases. From 2018 to 2022, public debt increased from 91,225,076 million dinars in 2018 to 126,744,311 million dinars in 2022. This surge in public debt can be attributed to the global impact of the Corona crisis, which affected all nations, including Iraq. The crisis disrupted the global economy, resulting in a decline in oil exports, upon which Iraq heavily relies. Consequently, this led to a reduction in public revenues, compelling Iraq to incur public debt to address the health crisis and falling prices. Petroleum Iraq has seen substantial rises in public debt due to extensive government expenditure, particularly following the decrease in oil prices over several years. Given the Iraqi economy's heavy reliance on oil, the

reduction in oil income compelled the government to incur debt to address the budget deficit.

Table (1) indicates that Iraq's unemployment rate reached 26.80% in 2004, a rise attributed to the American occupation and the destruction of factories, which exacerbated unemployment. Subsequently, the unemployment rate gradually declined to 15.30% in 2008, reflecting an annual change rate of 30.77%. This decrease was primarily due to an increase in job opportunities, particularly within the armed forces and internal security forces. The unemployment rate in Iraq decreased to 6.10% in 2014, exhibiting a negative annual change of 12.40%. Subsequently, the rate fluctuated until it reached 17.2% in 2022, with a negative annual change of 6.52%. The unemployment rate has been predominantly influenced by the insufficient diversification of the economy and a significant reliance on the public sector for employment. Notwithstanding many government initiatives aimed at economic stimulation, there was no substantial effect on reducing unemployment owing to inadequate investments in productive areas. Figure (1) illustrates the correlation between governmental debt and the unemployment rate in Iraq from 2004 to 2022 as indicated:



The aforementioned figure illustrates a negative correlation between public debt and unemployment in Iraq from 2004 to 2022, indicating that the rise in public debt has not resulted in substantial development projects to generate sustainable employment opportunities. Instead, it has exacerbated financial pressures on the economy without significantly alleviating unemployment.

The results of measuring public debt and its impact on the unemployment rate in the Iraqi economy for the period (2004-2022)

Characterization and formulation of the standard model used in the research

The standard model serves as a comprehensive framework encompassing all concepts and theoretical foundations grounded in the actual relationships among the research variables, selected in accordance with economic theory that elucidates the anticipated interactions between the quantitative model's variables. The initial step in examining any standard model involves gathering data and identifying the dependent and independent variables to be incorporated into the model. The characterization of the standard model relies on mathematical formulations that articulate the relationships among the examined economic variables in the form of standard models. It is feasible to evaluate the data of the relevant variables to ascertain their parameters for analysis and interpretation, subsequently presenting the results as economic issues inside a standardized framework.

Economic variables used in research

The investigation incorporated an independent variable and a dependent variable, which were examined theoretically based on economic theories from various schools of thought and empirical economic studies. To test the research hypotheses and achieve its objectives, the independent variable was identified. The Iraqi economy's public debt and unemployment rate are illustrated in Table 1, which presents the variables and data utilized in the standard model.

Table (2): Characterization of research variables and data used in the standard aspect

Profile	Variable	Icon	Name of variables	Profile	Variable	Icon	Name of variables
adherent	Y	UN	Unemployment rate	Independent	X1	Tpd	Public debt
			28.1				135070652
			17.9				111518120
			17.5				91980090
			11.7				80265989
			15.3				60559880
			14.00				61641779
			12.00				65538340
			11.00				61457023
			11.9				61044886
			12.1				56988845
			10.6				61969675
			13.1				87675456
			10.8				103707051
			13.8				137984326
			13.5				91225076
			13.6				96219998
			18.00				125744352
			18.4				139710372
			17.2				149918395

Source: Researcher work

According to the theoretical framework of the study, the subsequent functional link is posited for testing:

Yi = a + b1X1 + ui..…..…… (28)

Whereas:

Y: represents the unemployment rate symbol dependent, while (X1): It symbolizes the independent public debt, and the research period extends from (2004-2022), which is a short period that is not enough to conduct modern standardization methods, so the data was converted into quarterly data, as the (12Eviews) program provides the possibility of converting data from annual to quarterly.

The results of stability tests for research variables

We will evaluate the long-term reliability of the study variables using the statistical program (2Eviews1) to ascertain their stability, particularly by investigating the existence of a unit root and determining the order of integration. Ensuring the stability of the variables under examination is essential for precisely estimating standard models, thereby alleviating the problem of false regression. Moreover, stable time series can withstand shocks and eventually return to equilibrium over the long run. Therefore, we shall utilize unit root tests and time series graphs to ascertain the stability of the time series. Subsequent to the execution of these tests, we acquired the ensuing outcomes from the statistical software (2Eviews1):

Table 3: Results of the unit root test (Phelps-Perone-PP test) for search variables at the original level of data

UNIT ROOT TEST RESULTS TABLE (PP)			
Null Hypothesis: the variable has a unit root			
	At Level		
		UN	TPD
With Constant	t-Statistic	-3.5415	-1.1052
	Prob.	*0.7450*	*0.7099*
		n0	n0
With Constant & Trend	t-Statistic	-3.2571	-2.0665
	Prob.	*0. 8165*	*0.5555*
		no	n0
Without Constant & Trend	t-Statistic	-1.6243	-0.1687
	Prob.	*0.0980*	*0.6221*
		*	n0
Notes: a: (*) Significant at the 10%; (**) Significant at the 5%; (***) Significant at the 1% and (no) Not Significant			

Source: Preparation of the researcher based on the outputs of the standard program (EViews12).

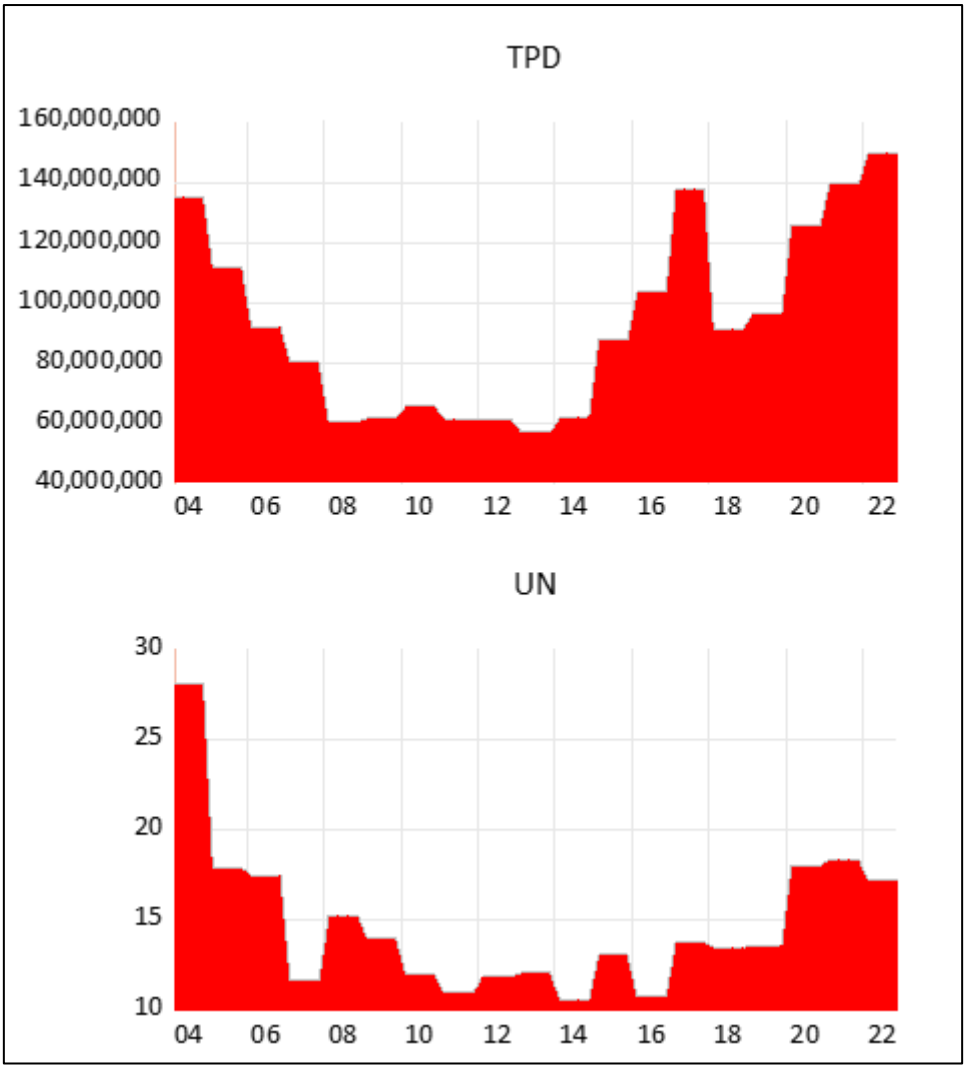


Figure (1): Graphs of the results of stability tests for the variables in question at the original level
Source: Compiled through the researcher utilizing the results of the standard software (12) Eviews.

The outcomes from Table (2) and Graphs (1) reveal that the stability test indicates instability in both the dependent and independent variables at their original levels, as assessed by the Phelps-Perron test. As a result, due to the instability of all variables under examination, the first difference was calculated, as presented in Table (3).

Table 3: Decision-making tests for research variables at the first difference of data

	At First Difference		
		d(UN)	d(TPD)
With Constant	t-Statistic	-8.5535	-8.4889
	Prob.	*0.0000*	*0.0000*
		***	***
With Constant & Trend	t-Statistic	-9.1268	-9.0070
	Prob.	*0.0000*	*0.0749*
		***	*
Without Constant & Trend	t-Statistic	-8.5440	-8.5440
	Prob.	*0.0911*	*0.0000*
		*	***
Notes: (*) Significant at the 10%; (**) Significant at the 5%; (***) Significant at the 1%. and (no) Not Significant			

Source: Prepared by the researcher based on the outputs of the standard program (12Eviews).

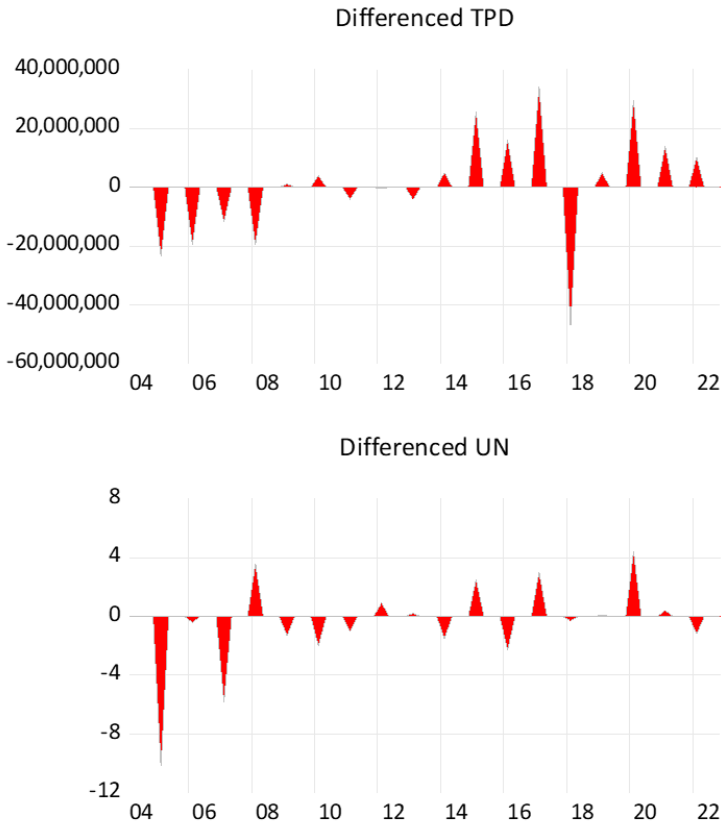


Figure (2): Graphs of the results of stability tests for the variables in question at the first difference.
Source: Compiled through the researcher utilizing the results from the standard software (12) Eviews.

Table (3) and graphs (2) illustrate that both the independent and dependent variables achieved stability upon taking the first difference, as indicated by the Phelps Perron test (PP). Consequently, the autoregressive distributed lag (ARDL) method is recommended for use. Due to the stabilization of variables at the first difference and the limited number of views.

The correlation between governmental debt and the unemployment rate in the Iraqi economy from 2004 to 2022.

Preliminary Estimation of ARDL Model

Table (4) presents the findings of the preliminary estimation of the Autoregressive Distributed Lag (ARDL) model, illustrating the correlation between public debt and the unemployment rate in the Iraqi economy from 2004 to 2022.

Table (4) Initial Assessment of the ARDL Model the Correlation between Public Debt and Unemployment Rate in the Iraqi Economy

Dependent Variable: UN				
Method: ARDL				
Selected Model: ARDL(1, 1)				
Variable	Coefficient	Std. Error	t-Statistic	Prob.*
UN(-1)	0.816233	0.052112	15.66303	0.0000
TPD	6.28E-08	1.70E-08	3.689971	0.0004
TPD(-1)	-5.04E-08	1.83E-08	-2.756715	0.0074
C	1.392177	0.638650	2.179874	0.0326
R-squared	0.869135	Mean dependent var		14.58533
Adjusted R-squared	0.863605	S.D. dependent var		3.797606
S.E. of regression	1.402520	Akaike info criterion		3.566276
Sum squared resid	139.6613	Schwarz criterion		3.689875
Log likelihood	-129.7354	Hannan-Quinn criter.		3.615628
F-statistic	157.1808	Durbin-Watson stat		1.994637

Source: Compiled through the researcher utilizing the results from the standard software (12Eviews)..

Table (4) displays the first estimation outcomes of the ARDL model, demonstrating the correlation between public debt and the unemployment rate in the Iraqi economy from 2004 to 2022. The coefficient of determination (R^2) is 0.86, signifying that the independent factors explain 86% of the variability in the dependent variable, with the remaining 14% attributable to additional unaccounted variables. The D.W. value, together with Table (4) and Figure (3), demonstrates that the appropriate autoregressive distributed lag (ARDL) model is (1.1) for evaluating the relationship between public debt and the unemployment rate in the Iraqi economy from 2004 to 2022.

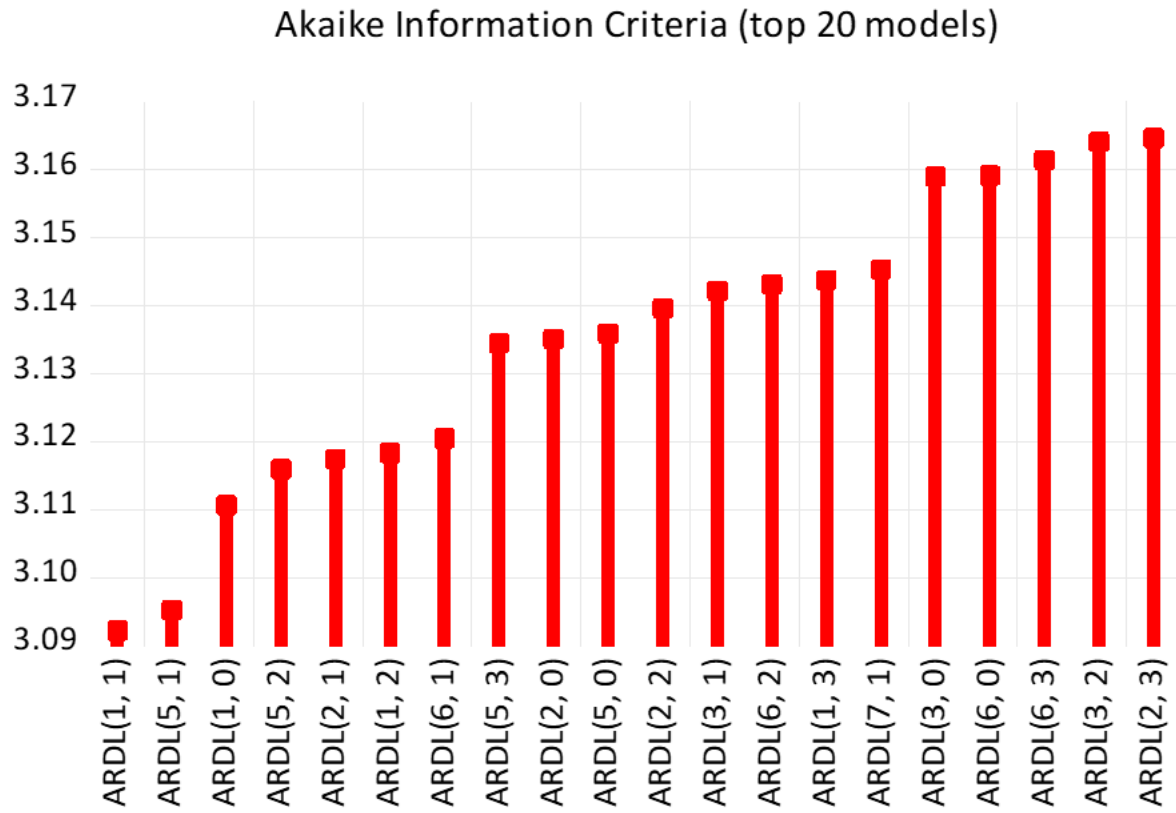


Figure (3) Test results according to the AIC standard to determine the best model.
Source: Preparation of researchers based on the results of the standard program (12Eviews).

Normal Distribution Test of Jarque Bera JB Residue

This test depends on the amount of the p-value of the (JB) statistic, as the null hypothesis is adopted, which indicates that the remainders of the model are distributed normally if (), or we accept the alternative hypothesis that indicates that the residuals of the model are not distributed normally if the probability value is less than () (the value of the criterion or index $P-value > 0.050.05$ of kurtosis) is the one that expresses whether the shape is flattened or elongated, the shape of the distribution is moderate if the value of (3 = ku), and the shape of the distribution is elongated if the value of (3< ku), and the shape of the distribution is flattened if the value of (3> ku), and the idea of this must be a value (ku) approaching (3) in order for the shape of the distribution to be moderate, and depending on the standard Skewness) to find out whether the shape is symmetrical or twisted, if the value of (0 = sk) this means that the shape of the distribution is symmetrical, but if the value of (0< Sk. This indicates that the shape of the distribution is twisted to the left, but if the value of (0> Sk), this indicates that the shape of the distribution is twisted to the right, and it appears from the figure that the value of (0< Sk) indicates that the shape is asymmetrical and twisted to the left, and Figure (4) presents the findings of the remaining study model, demonstrating that the data adheres to a normal distribution, as the probability value of the Jarque-Bera (JB) test is (0.982), exceeding (0.05). Demonstrate that the data adheres to a normal distribution.

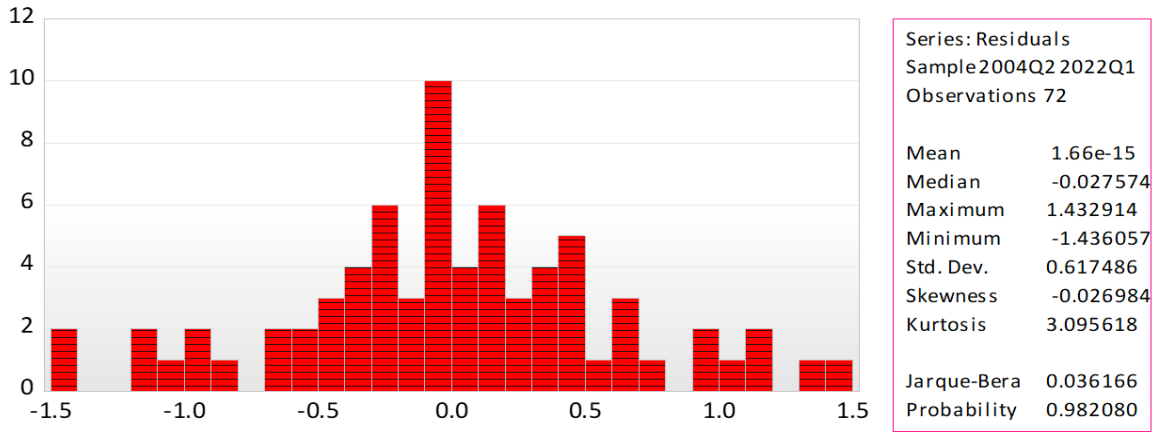


Figure (4) illustrates the normal distribution of the model's residuals
Source: Preparation of researchers based on the results of the standard program (12Eviews).

Bounds Test Results

To examine the long-term equilibrium connection between public debt and the unemployment rate in the Iraqi economy from 2004 to 2022, a border test (joint integration) must be performed using the below table:

Table 5: Examination of the outcomes of the assessments on the correlation between public debt and unemployment rate in the Iraqi economy from 2004 to 2022.

Test Statistic	Value	Signif.	I (0)	I (1)
F-statistic	**4.571355**	**10%**	**3.02**	**3.51**
K	**1**	**5%**	**3.62**	**4.16**
		1%	**4.94**	**5.58**

Source: Preparation of researchers according to the results of the standard program (12Eviews).

Table (5) reveals that the computed F-statistic is 4.571, surpassing the critical threshold at a significance level below 5%. This results in the rejection of the null hypothesis (H_0), which argues the nonexistence of a long-term equilibrium connection between the variables, and the acceptance of the alternative hypothesis (H_1), which claims the existence of a common integration relationship among the variables. The model utilized during the research period demonstrates a long-term equilibrium relationship between the explanatory variables and the dependent variable, requiring the assessment of responses in both the short and long term.

The outcomes of assessing the long-term and short-term relationships, as well as the error correction coefficient.

Following the boundary test and confirming the existence of a long-term equilibrium relationship between the dependent and independent variables, the long-term parameters and error correction coefficient were estimated using the standard program (12Eviews). Table (6) displays results that affirm the presence of a common integration relationship between the dependent and independent variables. The CointEq error correction vector coefficient (-1) for the adult model is demonstrated by a value of (-0.183), accompanied by a probability of (0.0007). The data fulfill the two essential criteria for this coefficient: its negative value and statistical significance.

Table 6: Estimation Findings of Long-Term and Short-Term Responses Based on the ARDL Model for the Relationship between Public Debt and the Unemployment Rate in the Iraqi Economy from 2004 to 2022

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.392177	0.638650	2.179874	0.0326
CointEq(-1)*	-0.183767	0.052112	-3.526386	0.0007
TPD(-1)	1.24E-08	6.946520	1.792592	0.0773
D(TPD)	6.28E-08	1.703205	3.689971	0.0004
Long Run Coefficients				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
TPD	6.776789	2.970913	2.281753	0.0255
C	7.575762	2.872839	2.637030	0.0103

Source: Preparation of researchers according to the results of the standard program (12Eviews)

Table (6) presents the findings of the long-term response estimation based on the ARDL model about the correlation between public debt and the unemployment rate in the Iraqi economy for the period from 2004 to 2022:

1- The error of accounting sign function represent a long-term equilibrium relation between public debt and unemployment rate in the Iraqi economy from 2004 to 2022. This is evident from the corrected vector's coefficient of coint Eq(-1), where it is -0.183, with a probability value for this parameter of P 0.0007; thus meeting both necessary conditions associated with this coefficient: its negative value and statistical significance. As the error correction parameter is negative and significant at the 1% level, we get an expected duration for return to equilibrium of -0.183 time periods.

2- However, the long-term response to the trial manifestly has the most direct effect. When public debt increases the burden on the state and its economy, this results in increased unemployment I the Iraqi economy throughout observation period. From this it follows that raising public debt, or indeed any other sort of loans, places an impossible burden on Iraq, and so impedes development as to be in effect an impenetrable barrier. Furthermore, these loans are made in situations which impose a burden upon the Iraqi economy. The terms of lending mean that the state will repay money it owes. Moreover, in much of Iraqi lending is for running costs rather than investment as happens in some advanced countries and so when this occurs the unemployment rate in Iraq rises sharply.

The outcomes of the autocorrelation assessment and the variance heterogeneity examination.

Table (7) displays the results of the self-correlation test and the instability of the homogeneity of variation in the relationship between public debt and the unemployment rate in the Iraqi economy from 2004 to 2022 as follows.

Table 7: Outcomes of the self-correlation assessment and the instability of the homogeneity of the fluctuation in the link between public debt and the unemployment rate in the Iraqi economy from 2004 to 2022

Heteroskedasticity Test: Harvey			
F-statistic	4.877644	Prob. F (3,71)	0.0039
Obs*R-squared	12.81598	Prob. Chi-Square (3)	0.0051
Breusch-Godfrey Serial Correlation LM Test:			
F-statistic	0.916389	Prob. F (2,69)	0.8903
Obs*R-squared	1.252168	Prob. Chi-Square (2)	0.8815

Source: Preparation of researchers according to the results of the standard program (12Eviews).

Table (7) indicates that the estimated model is devoid of autocorrelation and variance homogeneity instability, since the computed test values suggest that the null hypothesis cannot be rejected.

Conclusions and Recommendations

First: Conclusions: The investigation yielded several results, the most significant of which were as follows:

Second: Recommendations: The investigation yielded a series of suggestions, the most significant of which were as follows:

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