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The Dynamics of the Impact of Public Expenditure on Economic Growth for the Period (1990-2021) - The Tunisian Model

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Abstract

Public expenditure is a crucial determinant that exerts a substantial influence on the trajectory of economic growth. The concept in question has undergone a transformation within the domain of economic discourse, with numerous scholarly works dedicated to examining this phenomena. Public expenditure is a complex and multifaceted concept that encompasses a range of theoretical and practical dimensions. The prevailing consensus among economists in characterizing public expenditure is the phenomenon of inflation, characterized by a sustained and significant rise in prices. Hence, employing the term "public expenditure" in the absence of specific contextual parameters or phenomena suggests an escalation in costs. Nevertheless, it is important to note that not all instances of price increases can be solely attributable to governmental expenditure.

The core focus of inquiry pertains to the impact of public expenditure on the rate of economic growth. To clarify, does the allocation of public funds have a discernible influence on the rate of economic growth in Tunisia within the time span of 1990 to 2021? Can inflation have a positive impact on the economic growth rates in Tunisia? The research hypothesis suggests a positive relationship between public expenditure and the economic growth rate in Tunisia throughout the period from 1990 to 2021.

The study yielded multiple findings, with the primary one being that both the main variable (government expenditure) and the dependent variable (economic growth) exhibited non-stationarity at the initial level, as indicated by their significant probability exceeding 5%. In each of the situations (With Constant, With Constant & Trend, Without Constant & Trend), the variables were not integrated at the zeroth order. The test findings suggest that all variables exhibit stationarity after being differenced once. This implies that the independent variable (government expenditure) as well as the dependent variable (economic growth) exhibited stationary behavior at the initial difference, as indicated by their probability values being below 5% across all scenarios (With Constant, With Constant & Trend, Without Constant & Trend).

Keywords: *Dynamics, Impact, Expenditure, Economic Growth.*

Introduction

Public expenditure is a very influential factor that exerts a substantial influence on economic growth. The notion of public expenditure has undergone development within the realm of economic discourse, and a multitude of scholarly works have examined this topic. Public expenditure is a complex and complete phenomenon that encompasses a range of theoretical and practical considerations.

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Within the realm of economics, there exists a prevailing perspective among scholars that characterizes public expenditure as a phenomenon associated with an atypical escalation in prices. Hence, the utilization of the phrase "public expenditure" denotes an increase in prices without explicitly delineating a specific circumstance or situation. Nevertheless, it is crucial to acknowledge that not all instances of price escalation can be solely attributable to public expenditure.

Public expenditure refers to the sustained and observable rise in the overall price level of a country, regardless of its level of economic development.

Research Problem:

The problem lies in the decline of economic growth rates in the Tunisian economy, despite significant expansion in fiscal policy aimed at adopting an accommodative approach to expand economic activity. Therefore, the research problem can be formulated by addressing the following questions:

1- Does public expenditure affect the economic growth rate, or in other words, does public expenditure impact economic growth in Tunisia for the period 1990-2021?
2- Can inflation contribute to increasing economic growth rates in Tunisia?

Research Hypothesis:

The research hypothesis states that public expenditure has a positive impact on the economic growth rate in Tunisia for the period 1990-2021.

Research Objective:

The research aims to address the research problem's questions and validate the research hypothesis, which posits that public expenditure has an impact on economic growth rates in Tunisia for the period 1990-2021.

The significance of the research:

The research derives its significance by understanding the impact of the public expenditure indicator on economic growth rates in Tunisia for the period 1990-2021, as public expenditure plays a significant role in influencing growth.

Research Methodology:

The research relies on a descriptive and analytical methodology, in addition to the quantitative approach. Through the descriptive approach, the study defines public expenditure and its types, as well as the concept of economic growth, its components, and its types. The analytical methodology is used to analyze the impact of public expenditure on economic growth rates in Tunisia for the period 1990-2021. Finally, the quantitative approach is employed to measure the effect of the public expenditure indicator on economic growth rates in Tunisia for the same period mentioned above.

Research Structure:

In order to comprehend the constituent elements of the research, it is important to construct a meticulously developed roadmap that visually depicts its many portions. The study is structured into three primary sections. Chapter one provides an overview of the theoretical economic framework pertaining to expenditure and its impact on economic growth. Chapter 2 provides a comprehensive examination of the correlation between public expenditure and economic growth in Tunisia throughout the timeframe spanning from 1990 to 2021. Chapter three of the study centers its attention on the quantification and examination of the influence exerted by public expenditure on the rates of economic growth. Ultimately, the investigation culminates in a comprehensive analysis of the results, leading to the formulation of pertinent conclusions and suggestions for future action.

Chapter One

The Theoretical Economic Framework of Public Expenditure and Economic Growth.

The notion of public expenditure has undergone changes in tandem with the advancement of economic, social, and political spheres, as well as the progression of intellectual schools throughout the era predominantly characterized by conventional ideologies in the 18th and 19th centuries. During this period, the state's involvement was confined to carrying out fundamental responsibilities such as ensuring security, defense, and justice, while upholding the ideal of economic freedom. Consequently, public expenditures were limited to a degree that allowed the state to just fulfill its conventional obligations.

The significance of examining public expenditure has experienced a notable surge in recent years due to the rising scope and influence of the state, as well as its heightened engagement in economic affairs. The study of public expenditure holds great importance due to its function as a mechanism employed by the state, via its economic policies, to accomplish its overarching objectives. Public expenditure encompasses several dimensions of governmental activity and the corresponding mechanisms for funding them. Furthermore, the subject of economic growth has attracted considerable interest from economists, as well as from political systems and specialists. This is due to its substantial influence on the overall progress of a nation across multiple domains. Henceforth, this chapter shall elucidate the subsequent aspects:

First: The Nature and Evolution of Public Expenditure, Its Development, and the Justifications for Utilizing It.

1- The Concept of Public Expenditure:

Public expenditure is defined as "a monetary amount spent by a public person with the purpose of achieving a public benefit" (Nashad, 2006, p. 27).

It can also be defined as "a collection of expenses that the state spends in a specific amount of money over a certain period aimed at satisfying specific needs of the society governed by this state" (Abdul Hameed, 2005, p. 173).

Public expenditure can also be defined as "the amounts spent by the state to provide services to citizens, purchase goods to enable the provision of services, assist a particular segment of society, or undertake various economic and social projects" (Al-Tikriti, 1986, p. 126).

2- The Evolution of Public Expenditure through the Evolution of the State's Role:

The issue of state intervention in economic activity has gone through several stages due to the development of economic thought, especially financial thought. With the increase in crises (inflation, recession) and the complexity of economic relationships, the market mechanism alone could not correct economic conditions. Additionally, the linkage between economic activity and social activity contributed to a reconsideration of the role played by state intervention in the economy.

These factors have contributed to a reassessment of the role that state intervention plays in the economy. The evolution of public expenditure is closely tied to the evolving role of the state, as it represents the predominant feature in public finance and defines the extent of the state's involvement in economic life. (Karim, 2009, p. 3)

a. Public Expenditure Under the Guardian State (Traditional Thought):

In the realm of the guardian state, classical thought was limited to performing basic functions, such as defense and justice, and engaging in some fundamental public projects. According to traditional economic thought and its fundamental assumptions, public expenditure was of a consumptive nature and confined within narrow limits.

The aspects of public expenditure under the guardian state can be clarified by focusing on essential institutions, which include the following: (Karim, 2009, p. 14)

• Defense Expenditure: These are considered essential expenditures, whether during times of war or peace. They vary from one country to another as they represent the sovereignty and control of the state.

• Justice Expenditure: This is an important and necessary expenditure aimed at safeguarding the interests of individuals, protecting their rights, and ensuring security. These expenditures include the salaries and compensations for those involved in the judicial system.

• Expenditure on Public Infrastructure: These are expenses incurred by the state to facilitate the movement of production factors, such as bridges, ports, and roads (infrastructure), as well as expenses for the training and qualification of workers, education, and healthcare. These expenditures generate returns through fees, dues, and taxes.

b. B - Public Expenditures in the Era of Government Intervention (Keynesian Thought): The second stage of development came after the appearance of economic crises accompanying capitalist economies, especially after the Great Depression in 1929. This led to the emergence of a school of thought that called for government intervention in the economy. The Keynesian theory emerged in the 1930s, which challenged the traditional idea of the neutrality of money. Keynes' ideas called for government intervention to boost effective demand by increasing public expenditure to reduce the gap between aggregate demand and aggregate supply. This led to an increase in government intervention. This evolution did not stop at crisis management but extended to economic and social structures. The concept of public expenditure in the era of government intervention can be summarized as follows: (Al-Ali, 2011, 49-50)

- An increase in public expenditures, their diversification, and development with the evolving role of the state and the expansion of its functions, contrary to what it was in classical thought. The state has become more actively involved in achieving economic balance, carrying out public projects, reconstruction, and income redistribution among different societal groups.

- A rise in the percentage of public expenditures relative to the national income, due to the increased public needs and prioritizing public expenditure over revenues to achieve economic balance.

- The transformation of public expenditure from neutral to influential in economic and social activities. It has become a tool in the hands of the state to address the crises faced by different economies.

c. - Public expenditures in the context of the producing state (socialism): The emergence of socialist thought came after the Russian Revolution in 1917, which introduced the ideas and principles of socialism based on the collective ownership of the means of production. The state became responsible for production and distribution, giving rise to the concept of the producing state. The state's role extended beyond maintaining economic stability and balance or addressing economic crises; it included a continuous and active participation to enhance economic growth rates. Consequently, the scope and volume of public expenditures significantly expanded to cover economic and social areas that were not present under the interventionist and guardian state. This increased the importance of public expenditures and made them a substantial portion of the national income, almost encompassing the entirety of the national income.

3- Justifications for Resorting to Public Expenditures: There are several justifications for resorting to public expenditures, and these justifications can be explained as follows:

a. Optimal Resource Allocation in the Economy: Optimal resource allocation in the economy refers to the process of distributing material and human resources among different needs due to the scarcity of resources. Based on this, these resources should be

utilized in the most efficient way to achieve the highest level of production with minimal costs. One of the means used by the state to influence resource allocation is through general fiscal policy and public expenditure policy, especially in increasing the efficiency of the available economic resources and using them more effectively (Kareem, 2009, 38).

b. Achieving Economic Stability: Economic stability refers to the stability of the general price level, and any imbalance in the general price level leads to economic disturbances and affects economic growth and income redistribution. Economic stability implies the optimal use of resources, and thus public expenditures contribute significantly to achieving economic stability and maintaining the natural level of unemployment and inflation through controlling the level of public expenditures (Al-Zamli and Al-Jubouri, 2014, 190-202).

c. Income Redistribution: Income and wealth redistribution means making changes to the initial distribution of income and wealth to reduce inequality among members of society. Any fiscal policy pursued by the government should aim to reduce the disparity between different income levels. The government, through public spending, seeks to support the prices of essential goods for low-income individuals or provide necessary support for productive activities geared towards producing basic goods.

Secondly: The Concept of Economic Growth, Its Types, and the Theories Explaining It

1. The Concept of Economic Growth

The pursuit of economic growth and development had a notable surge in developing nations subsequent to their attainment of political independence in the aftermath of World War II. The issue of development has emerged as a significant focal point, garnering attention from not only professionals in the field of economics but also from numerous official entities at both local and international levels. Economic development has become of significant importance for all nations, particularly those in the developing category. Economic development comprises a multitude of dimensions, with notable emphasis placed on the pivotal factors of economic growth and the augmentation of per capita income (Al-Qurayshi, 2007, p. 9).

Economic growth is defined as "the continuous increase in the Gross Domestic Product (GDP) or Gross National Product (GNP) that results in an increase in the average per capita real national income" (Abdulaziz, 2007, 73).

Economic growth is also defined as "the overall increase in the production of goods and services in a specific country over a defined period, which is the Gross National Product" (Alrashdan, 2008, 41).

It is also defined as: "The process in which real income continuously increases cumulatively over an extended period of time, typically a quarter of a century. This increase should be higher than the population growth rate while providing productive and social services, protecting renewable resources from pollution, and preserving non-renewable resources from depletion" (Abbas, 2011, 65).

2. Types of Economic Growth:

A- Automatic Growth: This is growth that occurs spontaneously from the self-sustaining forces inherent in the national economy, without following a scientific planning approach. Typically, this growth is slow, gradual, and intermittent, although it may sometimes experience short-term fluctuations. This is the pattern followed by advanced capitalist countries since the industrial revolution. This type of growth requires a high degree of flexibility in the cultural and social framework on which it is based, as the growth rate can quickly shift from one sector to another.

B- Transient Growth: This is the type of growth that lacks continuity and stability and typically emerges in response to external, often unforeseen factors. This growth quickly disappears with the disappearance of the external factors that caused it. Transient growth is a common scenario in many developing countries and often results from

developments in international trade. This situation is not sustainable and may vanish as quickly as it appeared, having little lasting impact on overall development.

C- Planned Growth: This type of growth arises from the process of scientific planning for some of the society's resources and needs. However, the effectiveness and strength of this type of growth are closely related to the capability of planners, the realism of the plans developed, the high efficiency of implementation and control, and the assistance and participation of members of the community at all levels in the planning process.

Thirdly: The Theories Explaining Economic Growth

1- Classical Economic Growth Theory: Western European countries witnessed the Industrial Revolution in the late 18th and early 19th centuries. Classical economists lived during this period and built their ideas and views on economic growth based on these developments. Some of the most important ideas came from the writings of economists like Adam Smith, Malthus, and Ricardo.

A- Adam Smith's Theory of Growth: Adam Smith made a significant and influential contribution to laying the groundwork for economic growth theories based on individual freedom. He did this by presenting the general principles governing wealth and income formation. Adam Smith believed that the economic system is a natural system capable of achieving automatic equilibrium. Therefore, he emphasized the importance of economic freedom and the absence of government intervention in economic activity because he believed that such interference hinders national economic growth. Smith argued that natural laws regulate economic life through what he famously called the "invisible hand." He also considered specialization and the division of labor as key factors in increasing production and productivity, leading to higher income, savings, and ultimately, higher rates of capital formation. (Fattouh, 2009, p. 12).

B- Thomas Malthus' Theory: Thomas Malthus is one of the most famous population theorists in history, and his impact has been enduring. His most significant contribution to economics is his theory known as the Malthusian theory of population, which he presented in 1798 in his work "An Essay on the Principle of Population." Malthus explained that population tends to increase at geometric rates (2, 4, 8, 16, 32, 64), while food supplies grow at arithmetic rates (1, 2, 3, 4, 5, 6, 7). Malthus argued that there is a continuous tendency in the human species to grow at rates greater and faster than the available resources. As a result, there is a continuous shortage of food supplies over the long term, resulting in the spread of famine, diseases, epidemics, and conflicts among people. These, in his view, act as positive checks that prevent the population from exceeding the level that the means of subsistence can support (Qiftan, 1984, pp. 179-180).

2- Neoclassical Growth Theory: The neoclassical economic thought emerged in the 1870s with the contributions of prominent economists from this new school, such as Jevons, Menger, Walras, and Alfred Marshall. They focused on analyzing marginal utility in determining the prices of production factors. Capital formation, in this theory, occurs by substituting labor with capital, separate from population theory. It relies on savings, which are influenced by interest rates and income levels. Investment, on the other hand, is determined inversely by the interest rate and the marginal productivity of capital. Population, technology, and international trade play encouraging roles in expanding production and achieving economic growth. Neoclassical growth theory encompasses three main ideas (Ahmed, 2013, pp. 37-38).

The Second Section

Analyzing the Correlation between Economic Growth and Public Expenditure in Tunisia for the Period 1990-2021

First: Analysis of Economic Growth in Tunisia for the Period 1990-2020

Tunisia represents an economic paradox. It possesses all the necessary ingredients to become a "Mediterranean Tiger." However, it seems that these economic potentials are

not fully exploited. On the contrary, the Tunisian economy suffers from insufficient job creation rates, weak export performance, and widespread corruption. Despite a decrease in poverty rates, regional disparities have persisted over time. The Tunisian economy has grappled with these issues over the past decade, eventually leading to the outbreak of the 2011 revolution.

Tunisia has made significant political progress, culminating in the adoption of a new consensus-based constitution. However, the economic system that was in place at that time hasn't seen substantial changes. The demands of Tunisians for economic opportunities have yet to be fully realized. The unfinished revolution poses a challenge to Tunisians, requiring a reevaluation of the economic development model and a more comprehensive approach to introducing policy reforms. These reforms could potentially accelerate economic growth, achieve shared prosperity, create new job opportunities, and enhance regional development.

A- Analysis of the Performance of Fiscal Policy in Enhancing Tunisian Economic Growth

Tunisia has experienced several stages and evolutions in its fiscal policy, resulting in significant implications for the overall budgetary framework. The general budget is widely regarded as the principal instrument of fiscal policy, encompassing two key elements: public expenditures and revenues.

The pursuit of economic growth and development requires the government to allocate expenditures in order to attain its economic goals. The evidence of this can be observed from the data presented in Table 8. The Tunisian government has constantly implemented a deliberate policy aimed at directing its spending operations in order to effectively fulfill a majority of its economic objectives. The aforementioned phenomenon can be attributed to the expanding involvement of the government in economic endeavors, in accordance with the imperatives of development and economic advancement.

The data indicates that there was a rise in the proportion of total public expenditure to Gross Domestic Product (GDP) from 38.3% in 1985 to about 40.4% in 1986. Nevertheless, Tunisia was able to decrease this percentage from 36.8% in 1990 to 33.1% in 1996, demonstrating the efficacy of the contractionary strategy implemented by Tunisia during that specific timeframe. The government demonstrated a notable ability to exert substantial influence over fiscal policy, as evidenced by the consistent levels of public expenditure as a proportion of GDP. According to the Unified Economic Report (2001, p. 24), there was a decline in the percentage from 33.1% in 1996 to approximately 31.6% in 2000.

Table (1) Tunisia's General Budget for the Period (1990-2021) in Billion Tunisian Dinars

The Year	Total General Revenues	Percentage Growth of General Revenues	Total General Expenditures	Percentage Growth of General Expenditures	Surplus or Deficit (Net Borrowing)
1990	2.895	---	3.488	---	- 593
1991	3.082	%6.4	3.806	%9.1	- 724
1992	3.505	%13.7	4.048	%6.3	- 544
1993	3.936	%12.2	4.477	%10.5	- 541
1994	4.174	%6.0	4.694	%4.8	- 519
1995	4.299	%2.9	5.182	%10.3	- 883
1996	4.672	%8.6	5.797	%11.8	- 1.125

1997	5.012	%7.2	5.904	%1.8	- 891
1998	5.557	%10.8	6.269	%6.1	- 739
1999	5.983	%7.6	6.854	%9.3	- 871
2000	6.431	%7.4	7.423	%8.3	- 993
2001	7.031	%9.3	7.988	%7.6	- 957
2002	7.447	%5.9	8.326	%4.2	- 879
2003	7.728	%3.7	8.710	%4.6	- 981
2004	8.523	%10.2	9.378	%7.6	- 856
2005	8.982	%5.3	10.119	%7.9	- 1.137
2006	9.848	%9.6	10.968	%8.3	- 1.120
2007	10.907	%10.7	12.197	%11.2	- 1.290
2008	13.364	%22.5	13.724	%12.5	- 339
2009	13.572	%1.5	15.164	%10.4	- 1.592
2010	15.571	%14.7	15.873	%4.6	- 302
2011	16.730	%7.4	18.893	%19.0	- 2.163
2012	17.329	%3.5	20.949	%10.8	- 3.620
2013	18.786	%8.4	24.360	%18.4	- 5.574
2014	20.971	%11.6	23.629	- %3.0	- 2.658
2015	20.202	- %3.6	24.646	%4.3	- 4.444
2016	20.338	%0.6	25.931	%5.2	- 5.592
2017	23.582	%15.9	29.303	%13.0	- 5.720
2018	27.590	%16.9	32.410	%10.6	- 4.819
2019	31.885	%15.5	36.315	%12.0	- 4.431
2020	30.444	- %4.5	41.268	%13.6	- 10.824
2021	33.114	%8.7	41.684	%1.0	- 8.570

Source: International Monetary Fund, Tunisia Country Data for the Period (1990-2021), available at https://www.imf.org/en/Publications. Percentages calculated by the researcher.

B- Analysis of General Expenditures and Their Impact on Economic Growth for the Period (1990-2021)

By tracking the components of public expenditure in the Republic of Tunisia, it can be classified into current expenditure, investment expenditure, and net borrowing. This classification distinguishes between investment expenditures and current expenditures, based on the fact that investment expenditures are considered exceptional (non-routine) expenses that contribute to increasing the country's productive capacity since they are considered productive expenses. As for current expenditures, they are considered routine expenses characterized by their regularity as they are continuous and necessary for the operation of facilities and public infrastructure; thus, they are consumption expenses.

The major components of public expenditure have significantly grown, especially when we focus on current expenditure. It's noticeable that current expenditure constitutes a substantial portion of the total public expenditure. During the 1990s, in particular, there

was a substantial increase in this type of expenditure. It represented approximately 64% of the total expenditure during the period (1975-1980), and it further rose to about 65.5% during the period (1981-1985). By the year 1990, it reached around 72.5% and increased to about 78% during the period (1996-2000). This indicates that current expenditure constitutes the largest proportion of general expenditure due to its significant importance in maintaining all state public facilities (Annual Financial Report, 2002, p. 31).

As for the period (2001-2005), expenditures increased from 7,988 billion Tunisian Dinars to approximately 10,119 billion Tunisian Dinars. This was due to the commitment of the Republic of Tunisia to a balanced expenditure policy, which enabled them to avoid significant growth in public expenditure. This indicates stability in the growth of public expenditure in Tunisia.

We can observe that operational expenditures reached 5,010.7 million Tunisian Dinars in the year 2002, and they increased to around 5,335.4 million Tunisian Dinars in 2003. They further rose to 6,554.5 million Tunisian Dinars in 2005, compared to 5,911.5 million Tunisian Dinars in 2004, recording an increase of 643 million Dinars. Out of this, 338 million Dinars were allocated for public leasing to face the financial impact of the salary increases, and 414 million Dinars were allocated to support fuel due to rising oil prices.

As for expenditures related to wages and salaries, they represent the largest portion of operational expenditures compared to other expenditures. In the year 2005, these expenditures reached 4,605.3 million Tunisian Dinars, while they did not exceed 3,684 million Dinars in the year 2002. This indicates a significant increase in this type of expenditure during the period (2001-2005), making these expenditures account for 12.3% of the Gross Domestic Product in 2005. They represent 70% of operational expenditures and approximately 50% of the total expenditures. The reason for the increase in wage expenditures is the policy of increasing them, costing the budget approximately 240 million Dinars, while appointments and promotions cost the budget around 98 million Dinars (Darboueri & Miftah, 2014, p. 254).

As for expenditures on means and equipment, including rental expenses, fuel, water, electricity, correspondence, telephone, cars, and others, these expenditures have increased significantly since 2002. Their value was 502 million Tunisian Dinars and reached about 601.2 million Dinars in 2006. This increase reflects the government's ongoing efforts to cover the real needs of public services (purchasing and consumption of goods and services). The public services sector receives the largest share of these services, with its value reaching approximately 267.3 million Dinars in 2004 and increasing to around 284.6 million Dinars. The social sector follows, representing 202.8 million Dinars of the means and equipment value in 2004, rising to 217.4 million Dinars. In the last position is the economic sector, which represents 82.5 million Dinars in 2004, increasing to 99.2 million Dinars in 2006 (Unified Economic Report, 2007, p. 33).

The value of public intervention (subsidies and transfers) has surged to reach 1,579.4 million Tunisian Dinars in 2006. It was primarily directed to support fuel with an allocation of approximately 86 million Dinars, and around 45.8 million Dinars were allocated to support essential resources. These expenditures were aimed at covering various economic, social, and cultural state interventions, as well as contributing to international organizations.

Referring to Table 1, we notice that the period from 2007 to 2013 witnessed a new increase in total expenditures. They rose from 12,197 million Dinars in 2007 to approximately 24,360 million Dinars in 2013. This can be attributed to several reasons, including the increase in operating expenses, which went from around 7,904 million Dinars in 2007 to about 9,365 million Dinars in 2009 and 10,001 million Dinars in 2010. Operating expenses continued to rise, reaching approximately 14,644 million Dinars in 2012. This increase in operating expenses was due to a decrease in compensation expenses and a decline in prices of subsidized goods such as grains, oil, and paper.

As for wage expenditures for the period from 2007 to 2013, they represented a significant portion of operating expenses. They increased from 5,327.5 million Dinars in 2007 to approximately 8,656 million Dinars in 2013. Following that, we find interventions in the

second position, with a value of about 1,940.7 million Dinars in 2007, which then increased to around 3,930.9 million Dinars in 2011. Regarding assets and equipment, their value has also increased, but it is significantly lower than wage expenditures and interventions. Their value moved from 636.3 million Dinars in 2007 to 991.0 million Dinars in 2013 (General Budget Report, 2014, 17).

As for the period from 2014 to 2020, public expenditures increased to approximately 41,268 million Dinars in 2020, after being around 23,629 million Dinars in 2014, which represents an increase of approximately 13.6%. This is the highest value of public expenditures during the period from 1990 to 2021. Several events coincided and led to a significant increase in the volume of public expenditures, including the severe global recession in 2014 and the health crisis represented by the coronavirus in 2020, which led to the closure of global trade. This prompted the government to fulfill its social role by assisting individuals and providing them with healthcare and other services.

In general, it can be said that the first component of the structure of public expenditures, represented by operating expenses, constitutes a significant portion of total public spending. This component has shown a continuous increase during the study period (1990-2021), indicating an acceleration in economic activity in Tunisia.

As for investment expenditures, they rank second and have averaged around 24.2% of total spending during the study period (1990-2021). In the earlier period from 1990 to 2000, they represented approximately 20% of total spending. In the period from 2001 to 2020, they accounted for about 21% of total spending. These proportions indicate that the Tunisian government consistently aims to coordinate between the two types of public expenditure, recognizing their importance in the economy. Net borrowing expenditures, on the other hand, constitute a very small percentage of total public spending. They represented around 6.1% of total spending in 1996 but decreased to 0.8% in 2000. This suggests that the Tunisian government allocates most of its expenditures to current spending, followed by investment spending, due to the economic situation's requirements during the reform and post-reform periods.

Let's not forget development expenditures, which the government allocates to enhance investment levels. This is achieved through the development of infrastructure, human resources, and increased investments in cultural and scientific research fields, as well as supporting production capacities in various priority sectors. The main objectives of these expenditures include: (General Budget Report, 2014, 9)

- Continuing to liquidate administratively subject properties such as cooperative lands with the aim of incorporating them into the economic cycle.
- Rationalizing the management of public properties and improving ways to invest them to generate real estate savings for infrastructure projects.
- Preserving the national real estate balance and utilizing it as a primary pillar for agricultural production.

Section Three

Measuring the Impact of Public Expenditure on Economic Growth in Tunisia for the Period 1990-2021

To verify the validity of the pre-established hypothesis, this section will measure the impact of public expenditure on the economic growth rate in the country of Tunisia. This will be accomplished using the outputs of the statistical software program Eviews 12, for the duration of the study, covering the period from 1990 to 2021. To begin, the variables used in the standard model are identified, as presented in Table (2):

Table (2) Variables of the Standard Model - Tunisia

variable symbol	Variable name	variable type
Economic Growth Variables		
Y	Economic growth	dependent
Macroeconomic variables		

X1	Public expenditure	independent

The source is: The table is prepared by the researcher based on the model description.

First, the overall stationary degree of each variable is determined, and two Dickey-Fuller and Phillips-Perron unit root tests are employed to detect the stationarity of the study variables as follows:

First, the Unit Root Test (stationarity test): Both the Dickey-Fuller Expanded and Phillips-Perron tests are among the most widely used tests for assessing the stationarity of economic variables, as follows:

1. The Augmented Dickey-Fuller (ADF) Test:

The Expanded Dickey-Fuller (ADF) test is one of the most important tests used to measure the stationarity of economic variables. This test relies on the significance of the variable for three possibilities (with a constant, with a constant and a trend, without a constant and without a trend). If the p-value is less than 5%, it indicates the stationarity of time series data, and vice versa. Table (4) illustrates the results of the Expanded Dickey-Fuller (ADF) test in Tunisia.

Table (3) Results of the Augmented Dickey-Fuller (ADF) test - Tunisia

Variable name	variable symbol	Level			The first difference		
		With Constant	With Constant & Trend	Without Constant & Trend	With Constant	With Constant & Trend	Without Constant & Trend
Economic growth	Y	0.6766	0.9440	0.9895	0.0046	0.0204	0.0017
Public expenditure	X1	0.9919	0.9959	0.9295	0.0099	0.0075	0.0100

Source: Compiled by the researcher using EViews 12 software.

According to Table 3, both the main variable (government expenditure) and the dependent variable (economic growth) were found to be non-stationary at the original level due to their very high p-values, which were greater than 5%. This was the case for all scenarios (With Constant, With Constant & Trend, Without Constant & Trend). Therefore, the variables are non-integrated at the zeroth order.

When taking the first difference, the test results indicate stationarity for all variables at the first difference level. This means that both the independent variable (government expenditure) and the dependent variable (economic growth) became stationary at the first difference, as their p-values were less than 5%, and this was consistent across all scenarios (With Constant, With Constant & Trend, Without Constant & Trend).

2. Phillips-Perron Test:

The Phillips-Perron test is one of the stationary tests typically used in short time series data. It provides more accurate results compared to the Phillips-Perron test. The results of the Phillips-Perron stationary test in the case of Tunisia are illustrated in Table (4).

It is evident from Table 4 that both the independent variable (government expenditure) and the dependent variable (economic growth) were non-stationary at the original level due to their very high p-values, which were greater than 5%. This holds true for all cases (With Constant, With Constant & Trend, Without Constant & Trend). Consequently, the variables are non-integrated at the zero level.

Table (4) Results of Stationarity (Phillips-Perron) – Tunisia

Variable name	variable symbol	Level			The first difference		
		With Constant	With Constant & Trend	Without Constant & Trend	With Constant	With Constant & Trend	Without Constant & Trend
Economic Growth	Y	0.6871	0.8736	0.9551	0.0039	0.0210	0.0015
Public Spending	X1	1.0000	1.0000	0.9999	0.0320	0.0041	0.0350

Source: Prepared by the researcher based on the results of Eviews12 program.

When taking the first difference, the test results indicate that all variables become stationary at the first difference. This means that both the independent variable (government spending) and the dependent variable (economic growth) are stationary at the first difference because their p-values were less than 5%. This applies to all cases (With Constant, With Constant & Trend, Without Constant & Trend). Therefore, we can resort to the Autoregressive Distributed Lag (ARDL) model, provided that the variables are stationary at the level or in the first difference or a mix of both. Hence, the conditions for the ARDL model have been met.

Secondly, estimating the model for Tunisia:

The second step involves using the most appropriate model to measure the relationship between the variables. The Autoregressive Distributed Lag (ARDL) methodology will be employed for automatically distributed lags, and Table (5) illustrates the initial estimation of the model - Tunisia.

Table (5) Initial Model Estimation – Tunisia

Dependent Variable: Y			
Method: ARDL			
Date: 09/16/23 Time: 20:12			
Sample (adjusted): 1998 2021			
Included observations: 24 after adjustments			
Maximum dependent lags: 8 (Automatic selection)			
Model selection method: Akaike info criterion (AIC)			
Dynamic regressors (1 lag, automatic): D(X1)			
Fixed regressors: C			
Number of models evaluated: 16			
Selected Model: ARDL(8, 1)			
R-squared	0.946632	Mean dependent var	13435.21
Adjusted R-squared	0.905579	S.D. dependent var	5612.212
S.E. of regression	1724.519	Akaike info criterion	18.04685
Sum squared resid	38661553	Schwarz criterion	18.58679
Log likelihood	-205.5622	Hannan-Quinn criter.	18.19009

F-statistic	23.05903	Durbin-Watson stat	2.022856
Prob(F-statistic)	0.000001		

Source: Prepared by the researcher based on the results from EViews 12 software program.

From Table (5), the initial estimation of the model for Tunisia is evident. It is apparent that the coefficient of determination (R-squared) explaining variations in economic growth due to changes in public spending is 94%. This means that 94% of the economic growth variation can be attributed to changes in public spending.

As evident from Table (5), the Durbin-Watson statistic was found to be 2.02, indicating that the model does not have a problem of serial autocorrelation.

Additionally, it's clear that the preferred criterion for measuring the relationship in Tunisia is the Akaike Information Criterion (AIC), which has a value of 18.0, lower than the values of other criteria.

Moreover, the overall probability value for the model is 0.00001, signifying that the model is entirely acceptable. Therefore, further model tests for Tunisia can be conducted.

Thirdly, the test of bounds (cointegration) in Tunisia:

Table (6) Cointegration Test – Tunisia

ARDL Long Run Form and Bounds Test				
Dependent Variable: D(Y)(				
Selected Model: ARDL(8, 1)(				
Case 2: Restricted Constant and No Trend				
Date: 09/16/23 Time: 20:16				
Sample: 1990 2021				
Included observations: 24				
F-Bounds Test				
Test Statistic	Value	Sign if	I(0)	I(1)
F-statistic	4.197743	10%	3.02	3.51
K	4	5%	3.62	4.16
		2.5%	4.18	4.79
		1%	4.94	5.58

Source: Prepared by the researcher based on the results from EViews 12 software program.

The statistical analysis presented in Table 6 demonstrates that the F-statistic for the Fisher test yielded a value of 4.197743. This value exceeds the upper critical limit for I(1) at a 5% significance level, which is 4.16. Therefore, this implies the presence of a cointegrating relationship between the dependent variable (economic growth) and the independent variable (public spending). Based on the available evidence, we have chosen to embrace the alternative hypothesis, which proposes the presence of a cointegrating relationship between the dependent variable (economic growth) and the independent variable (public spending). Conversely, we have rejected the null hypothesis, which asserts the lack of a cointegrating relationship between these two variables. Consequently, we can refer to the results of the short-run and long-run impacts and the error correction coefficient.

Fourthly, the results of the short-term and long-term effects in Tunisia:

The autoregressive distributed lag model provides us with parameters for short-term and long-term effects, as well as error correction coefficients that indicate the correction occurring in the short term, which can be addressed in the long term. Table (7) illustrates the results of the short-term and long-term effects in Tunisia, as follows:

Table (7) Results of Short-Term and Long-Term Effects

ARDL Long Run Form and Dependent Variable: D(Y) Selected Model: ARDL(2, 0) Case 2: Restricted Constant and No Trend Date: 09/18/23 Time: 20:35 Sample: 1990 2021 Included observations: 30 Included observations: 31				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
Y1(-1)*	-0.142120	0.029078	-0.488780	0.0042
X1**	3.007568	2.48E+08	2.48E+08	0.0000
Levels Equation Case 2: Restricted Constant and No Trend				
X1	2.12E+09	1.63E+10	0.129763	0.0089
C	7.81E+10	1.52E+11	0.513371	0.0061

Source: Prepared by the researcher based on the results from EViews 12 software program.

1. Public spending has a positive impact on short-term economic growth, as an increase in public spending by one unit leads to a 3% increase in economic growth with a probability of 0.00000, which is statistically significant as it is less than 5%.

2. Public spending also has a positive impact on long-term economic growth, as an increase in public spending by one unit results in a 2.1% increase in economic growth with a probability of 0.0089, which is less than 5% and therefore statistically significant.

Furthermore, as indicated in Table (7), the error correction coefficient has reached -0.142120 with a significance of 0.0042. Consequently, it aligns with the expectations for error correction coefficients, which specify that the error correction coefficient should be negative and statistically significant. The result of the error correction coefficient suggests that the imbalances that occur in the short term can be corrected in the long term by 14% by the fiscal policymakers in Tunisia.

Fifthly, the standard issues - Tunisia:

1. Normality of Residuals Issue:

The test for the normality of model residuals relies on the p-value from the Jarque-Bera test. If the p-value is greater than 5%, we accept the null hypothesis that residuals are normally distributed. Conversely, if the p-value is less than 5%, we accept the alternative hypothesis that residuals are not normally distributed. Figure (1) illustrates the normal distribution of residuals in Tunisia.

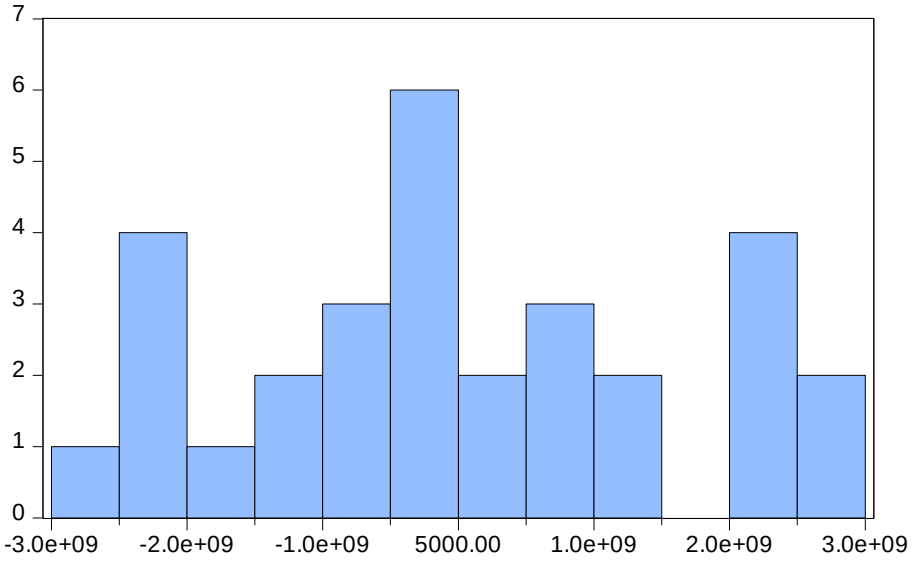

Figure 1: Normal Distribution of Residuals - Tunisia

Source: Prepared by the researcher based on the results from EViews 12 software program.

As evident from Figure (1), the residuals of the model are normally distributed since the probability value is 0.459713, which is greater than 5%. Therefore, we accept the null hypothesis that residuals follow a normal distribution in the Tunisia model.

2- Autocorrelation Issue:

Table (8) Results of Autocorrelation Issue – Tunisia

Breusch-Godfrey Serial Correlation LM Test:			
F-statistic	0.168814	Prob. F(2,24)	0.8457
0.416180 Obs*R-squared		Prob. Chi-Square(2)	0.8121
Test Equation: Dependent Variable: RESID Method: ARDL Date: 09/18/23 Time: 20:45 Sample: 1992 2021 Included observations: 30 Presample missing value lagged residuals set to zero.			

Source: Prepared by the researcher based on the results from EViews 12 software program.

The presence of autocorrelation is determined by the p-value for the Chi-Square test, denoted as Prob. Chi-Square(1). If this p-value is greater than 5%, we accept the null hypothesis, indicating the absence of autocorrelation. Conversely, if the p-value is less than 5%, we accept the alternative hypothesis, signifying the presence of autocorrelation. Table (8) illustrates the results of the autocorrelation issue in Tunisia.

It is evident from Table (8) that there is no autocorrelation issue, as the p-value for the Chi-Square test is 0.8121, which is greater than 5%. Therefore, we accept the null hypothesis, indicating the absence of autocorrelation in the Tunisia model.

3- Heteroscedasticity Issue:

The presence of heteroscedasticity is determined by the p-value for the Chi-Square test, denoted as Prob. Chi-Square(1). If this p-value is greater than 5%, we accept the null hypothesis, indicating the absence of heteroscedasticity. Conversely, if the p-value is less than 5%, we accept the alternative hypothesis, signifying the presence of heteroscedasticity. Table (9) illustrates the results of the heteroscedasticity issue in Tunisia.

Table (9) Results of Heteroscedasticity Issue – Tunisia

Heteroskedasticity Test: ARCH			
F-statistic	0.589050	Prob. F(1,27)	0.4494
0.619175 Obs*R-squared		Prob. Chi-Square(1)	0.4314
Test Equation: Dependent Variable: RESID Method: ARDL Date: 09/18/23 Time: 20:45 Sample: 1992 2021 Included observations: 30 Presample missing value lagged residuals set to zero.			

Source: Prepared by the researcher based on the results from EViews 12 software program.

It is evident from Table (9) that there is no heteroscedasticity issue, as the p-value for the Chi-Square test is 0.4314, which is greater than 5%. Therefore, we accept the null hypothesis, indicating the absence of heteroscedasticity in the Tunisia model.

4. Structural Stability of the Tunisia Model:

After estimating the Autoregressive Distributed Lag (ARDL) model, conducting cointegration tests, error correction modeling, and performing standard issue tests, the structural stability of the model is assessed. This involves conducting structural stability tests on the model, such as the Cumulative Sum of Residuals (CUSUM) and the Cumulative Sum of Squares of Residuals (CUSUM of Squares) tests. The results of these tests are illustrated in Figures (2) and (3):

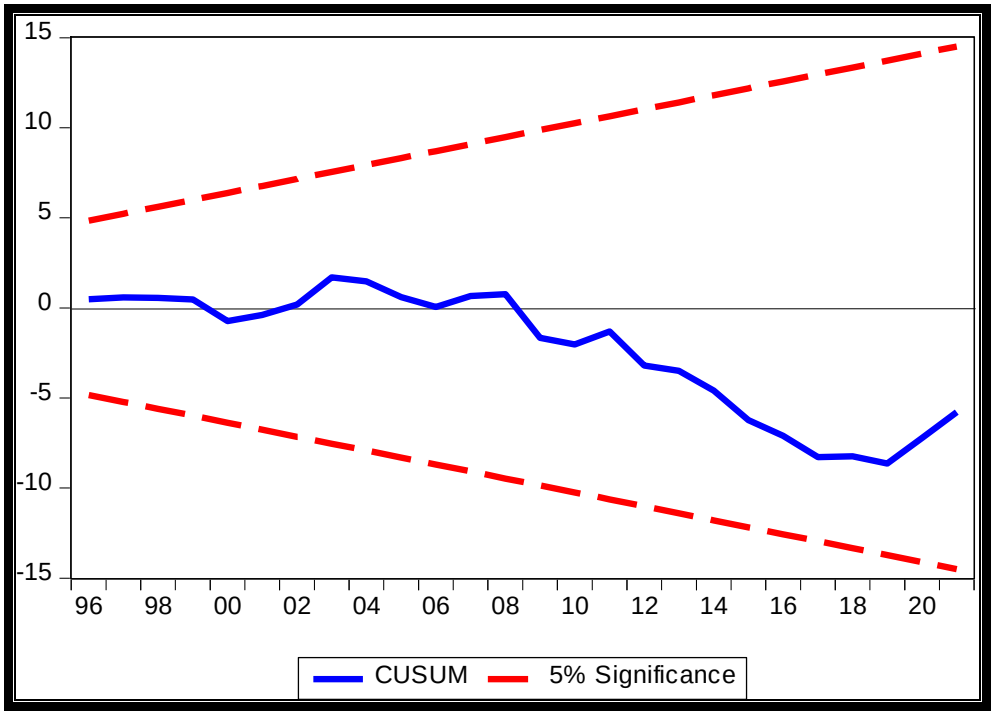

Figure (2) Structural Stability Test (CUSUM) - Tunisia

Source: Prepared by the researcher based on the results from EViews 12 software program.

It is evident from Figure (2) that this is a Cumulative Sum of Residuals (CUSUM) test, with the red dashed lines indicating the critical boundaries at a 5% significance level. The connected blue series represents the cumulative sum of residuals for the model. Structural stability occurs when the cumulative series remains within the red critical boundaries. Therefore, it appears that the Tunisia model has been stable throughout the study period.

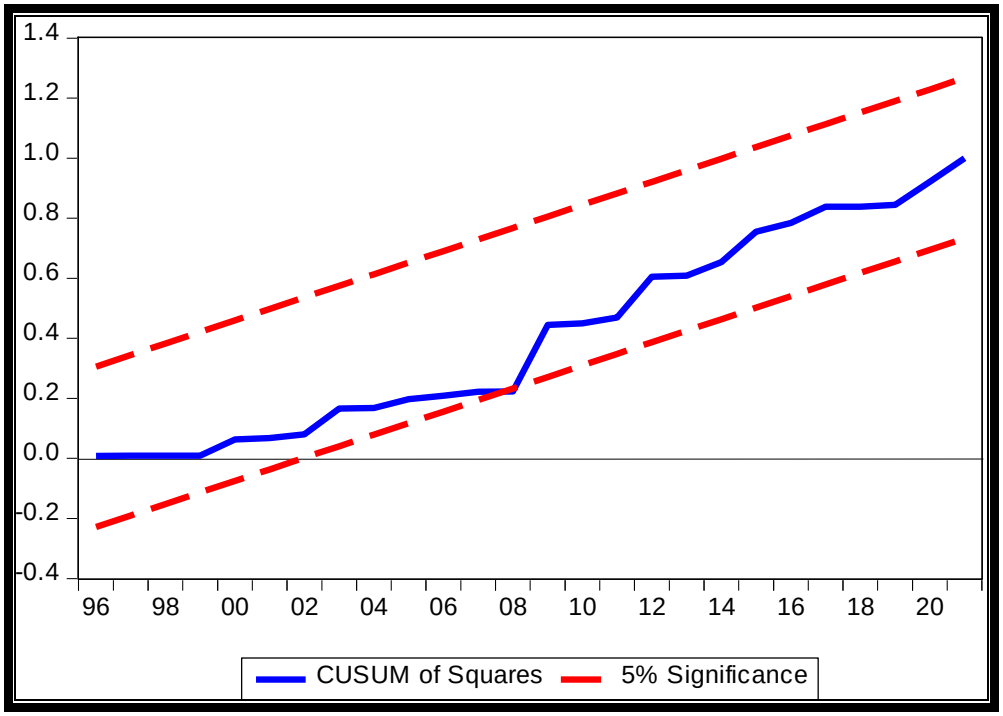

Figure (3) Structural Stability Test (CUSUM of Squares) - Tunisia

Source: Prepared by the researcher based on the results from EViews 12 software program.

As for Figure (3), it illustrates the Cumulative Sum of Squares of Residuals test (CUSUM of Squares). Structural stability is indicated when the blue cumulative series remains within the red critical boundaries. Therefore, it is evident that the model in the study has been stable according to the Structural Stability Test (CUSUM of Squares).

Based on the information provided, it is evident that there is a common cointegration relationship between the dependent variable (economic growth) and the independent variable (public spending). In the short term, an increase in public spending by one unit leads to a 3% increase in economic growth with high statistical significance (p-value of 0.00000), as it is less than 5%.

In the long term, public spending is positively related to economic growth. An increase in public spending by one unit results in a 2.1% increase in economic growth with statistical significance (p-value of 0.0089), which is less than 5%. Additionally, the error correction coefficient is -0.142120, with statistical significance (p-value of 0.0042), indicating that short-term imbalances can be corrected in the long term by 14% by fiscal policymakers in Tunisia. This suggests that public spending has a significant and positive impact on both short-term and long-term economic growth in Tunisia.

Conclusions:

1. The study finds that both the main variable (government spending) and the dependent variable (economic growth) were non-stationary at the original level due to their very high p-values, which were greater than 5%. This applies to all cases (With Constant, With Constant & Trend, Without Constant & Trend), indicating that the variables are non-integrated at level zero.

2. It becomes evident from the test results that all variables became stationary at the first difference level. In other words, both the independent variable (government spending) and the dependent variable (economic growth) became stationary at the first difference level because their p-values were less than 5% in all cases (With Constant, With Constant & Trend, Without Constant & Trend).

3. The Phillips-Perron test indicates that both the independent variable (government spending) and the dependent variable (economic growth) were non-stationary at the original level due to their very high p-values, which were greater than 5%. This holds for all cases (With Constant, With Constant & Trend, Without Constant & Trend). Therefore, the variables are non-stationary at level zero.

4. Results of the Phillips-Perron test when taking first differences indicate that all variables became stationary at the first difference level. In all cases (With Constant, With Constant & Trend, Without Constant & Trend), both the independent variable (government spending) and the dependent variable (economic growth) became stationary at the first difference level as their p-values were less than 5%. Therefore, the AutoRegressive Distributed Lag (ARDL) model can be used as the variables meet the necessary conditions.

5. The research concludes that the R-squared value, which explains the variation in economic growth due to changes in government spending, amounts to 94%. This means that 94% of the changes in economic growth can be attributed to changes in government spending. The Durbin-Watson statistic was 2.02, indicating no serial autocorrelation in the model.

6. The overall significance probability of the model was 0.00001, signifying that the model is entirely acceptable. Further tests can be conducted on the model for Tunisia.

7. Cointegration testing reveals that the F-statistic for the Fisher test exceeds the critical value of I(1) at a 5% significance level. This suggests a cointegration relationship between the dependent variable (economic growth) and the independent variable (government spending). Therefore, the alternative hypothesis, which posits a cointegration relationship, is accepted, and the null hypothesis, suggesting no cointegration relationship, is rejected. This allows for the examination of short-run and long-run effects and error correction terms.

8. Government spending has a positive impact on economic growth in the short term, with a 3% increase for each unit increase in government spending, supported by a p-value of 0.00000. In the long term, government spending is positively correlated with economic growth, leading to a 2.1% increase for each unit increase in government spending, with a p-value of 0.0089, which is less than 5%.

9. The research finds no autocorrelation issue as the Chi-Square probability value for the Chi-Square Lagrange Multiplier test was 0.8121, greater than 5%.

10. There is no problem of heteroscedasticity, as indicated by a Chi-Square probability value of 0.4314, which is greater than 5%.

Recommendations:

1. Those interested in economic management and those aiming to boost economic growth rates in any country around the world should take into consideration traditional economic factors and public spending, as they have a direct impact on raising or lowering growth rates.

2. Economic policymakers in any country worldwide should work to support and solidify subsidiary policies that lead to expanding economic, trade, and investment freedoms, as well as labor and business freedoms. This will work to increase public spending, leading to higher productivity and profitability, which, in turn, results in an increase in the growth rate.

3. Those involved in economic affairs should not accept economic ideas and sayings as sacred truths that are always correct. They should, instead, discover their validity by conducting numerous experimental studies on various samples before using these sayings to shape various economic policies.

4. Economic researchers should pay attention to traditional economic factors and indicators when conducting research related to economic growth and government spending. The role and impact of these traditional economic factors may be more significant than that of commonly accepted economic factors, especially given the large number of mentioned indicators, which have been widely issued by international entities and are readily available on the internet.

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