

The impact of public spending on economic growth in Morocco from 1960 to 2022: An ARDL bounds approach



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ABSTRACT

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The impact of public spending on economic growth is a major topic in macroeconomics that has been debated for a long time. This debate has recently intensified particularly in the Moroccan context. This research examines how public spending has affected economic growth in Morocco from 1960 to 2022. To achieve this objective, we have selected a quantitative approach with an econometric analysis to assess the variables in question. Research methodology employs the Autoregressive Distributed Lag (ARDL) bounds testing approach. This study analyzes at a time the short- and long-run effects of public spending on economic growth using time-series data. The study's findings indicate a significant and positive impact of public expenditures on economic growth both in the short- and long- run. The results of this study are consistent with earlier studies despite using different variables that support the validity of our findings. Our research provides robust insights into the dynamics of public spending and economic growth in Morocco by spanning such an extensive period. The ARDL bounds testing approach allows for a nuanced understanding of the immediate and delayed effects of public expenditures. The findings of this research underscore the importance of public spending in fostering economic growth and highlight the potential benefits of maintaining or increasing such expenditures.

Contribution/ Originality: This paper significantly contributes to existing knowledge in several ways. First, the findings offer further empirical support for previous research. Second, the study spans a large period from 1960 to 2022 providing ample data for time series analysis using the recently introduced ARDL bounds testing approach.

1. INTRODUCTION

The relationship between public spending and economic growth has been central in economic debates, especially since the Great Depression. The classical theory argues for minimal state intervention contending that excessive public expenditures can hinder a nation's path to prosperity by diverting resources from the private sector (Smith, 1776).

However, Keynesian economics suggests that government intervention through increased spending can stimulate demand and drive growth during economic downturns (Keynes, 1936). This perspective promotes focused governmental spending on healthcare, education and infrastructure to stimulate the economy. The relationship between these two aggregates is a critical aspect of economic policy that contributes to the development of a

country. In the 1980s, endogenous growth models were developed more realistically (Romer, 1986). In his article, he created the first endogenous growth model. He explored how public spending can influence long-term economic growth by facilitating innovation, research and development as well as the accumulation of human capital. He emphasized the function of investments in promoting the accumulation of knowledge and technologies, creating positive externalities that benefit the entire economy and promote long-term productivity and growth.

Barro (1990) introduced a growth model in which public spending plays a leading role. An important aspect of the production function is the public sector's growth-promoting role. This includes funding for research, development, infrastructure and investment in education to enhance human capital. Lucas (1988) a proponent of the rational expectations theory argues that excessive public spending can lead to uncertainty and distortions in private investment decisions potentially impeding economic growth. Instead, he promotes the accumulation of human capital as a growth driver. According to Lucas (1988) fiscal policies are ineffective in stimulating long-term economic growth.

Neoclassical economists have emphasized the limits of fiscal policy especially the harmful effects of deficits and public debt. In developed countries, fiscal policies have prioritized fiscal balance and price stability. These economists believed that excessive public spending could weaken economic growth. They proposed reducing public spending and implementing a stable monetary policy to foster economic growth. Similarly, Lothian (2009) believed that excessive public spending leads to inefficient allocation of resources and distortion of market mechanisms which can hinder economic growth by preventing market forces from operating freely and effectively. Hayek (1942) considered that excessive public spending leads to inefficient allocation of resources and distortion of market mechanisms. This could hinder economic growth by preventing market forces from operating freely and effectively.

The beneficial impact of fiscal policy has been the subject of recent economists' discussions (Blanchard & Perotti, 2002) emphasizing the importance of evaluating its effects on crucial macroeconomic measures such as GDP.

Countries seek economic growth to enhance citizens' well-being, create jobs and bolster the economy. Fiscal policies are critical in this pursuit reflecting a nation's economic priorities and circumstances.

Numerous researchers have confirmed that public sector spending has an indirect but stimulating influence on economic growth (Odhiambo, 2015). Wagner's law which asserts a significant association between public spending and economic growth, continues to generate significant interest despite being formulated a century ago (Iheanacho, 2016). The relationship between public spending and economic growth is a crucial issue for policymakers and researchers although it is still challenging to examine (Ibrahim, 2019). Generally, researchers agree that public spending is a significant tool that could influence economic performance (Adu, 2013). Public spending represents the most reliable way for public authorities to meet the collective needs of citizens and is financed by revenues from taxes and other sources of finance (Mallick, Das, & Pradhan, 2016). This spending is generally directed towards maintaining stability and promoting faster economic growth (Antwi, 2013). It is a fiscal instrument that collects and appropriately uses all revenues for the country's benefit. Hence, the government spends in different areas of the economy. Public spending is divided into the following two categories: current and recurrent. Recurrent expenditure includes wages, salaries, labor and consumables while capital expenditure encompasses investments in hospitals, schools, roads and other infrastructure that can contribute to a country's growth and development (Akanbi, 2019). As a result, great importance is attached to the role of public spending in the economy to overcome significant challenges of a country such as inflation, unemployment, inequality, exchange rate instability, oil prices and balance of payments stability (Aziz & Asadullah, 2017). A country's economic growth should improve living standards through advances in education, access to healthcare, infrastructure, housing, better roads and so on. These enhancements address human capital development problems and foster the country's vital economic activities.

Planning development initiatives and policies at the national level always revolves around the issue of creating sustainable economic growth through public spending. Morocco must decrease government spending, promote private investment and advance sustainable economic growth like all developing countries. Economic growth is increasing but is closely linked to the agricultural sector which depends on climatic conditions. In recent years, Morocco has tried to plan economic development projects to give its economy a place on a global scale and make it a model country. Morocco has made strategic decisions focusing on fiscal policy to achieve these goals. Recent changes in the global economy have highlighted the importance of effective management and budget constraints for economies. Resource scarcity especially in emerging economies should prompt the relevant governments to pay more attention to the quality of public spending.

Studying the impact of public spending on economic growth is essential for governments to understand how it affects the economy and assess the effectiveness and efficiency of their fiscal policies. Public expenditure can have direct or indirect effects on the economy. For example, infrastructure investment can increase productivity and production capacity, ultimately boosting economic growth. Conversely, indirect effects can stabilize the economy during recessions and stimulate private investment. Assessing the impact of spending on critical sectors of a country's economy determines which sectors benefit from public expenditure and which do not.

Public spending has several benefits including mitigating external shocks' impact on the national economy. During recessions, public spending increases and revenues decrease leading to fiscal imbalances. This imbalance can result in a shift in revenues from the public administration to households and businesses helping to reduce the impact of the economic slowdown on their revenues. Conversely, during period of strong economic growth, taxes and social security contributions tend to increase while spending decreases, dampening domestic demand growth.

Public revenues and spending generally act as automatic stabilizers, helping buffer cyclical economic activity fluctuations. However, imposing quantitative limits on budget deficits could undermine this mechanism.

It is uncertain how spending affects economic growth as the impact varies depending on how public expenditure is specified and treated in each country. Therefore, a single agreement cannot be reached on the precise nature of the impact.

This study attempts to answer the following question: What is the impact of public spending on economic growth in Morocco?

The study follows this structure: The first section is an introduction. The second section includes a literature review and the third outlines the methodology. The fourth section presents the findings followed by a discussion of policy implications in the fifth section. Finally, the study concludes in the sixth section.

2. LITERATURE REVIEW

Several studies have explored the relationship between public spending and economic growth highlighting that the impact of this relationship can vary depending on different categories of public spending and may influence the standard of living. The level of development of each country also influences the impact. For instance, a study by Nubukpo (2007) focused on the West African Economic and Monetary Union countries (WAEMU) and suggested that gross public spending does not significantly impact economic growth in most parts of the region. However, Ouattara (2007) presented a contrasting view showing that WAEMU countries consider the externality and productivity of public spending to impact economic growth positively.

Nketiah-Amponsah (2009) in Ghana examined the effects of aggregate and disaggregated expenditures on economic growth between 1970 and 2004. The study discovered that overall government expenditure slows economic growth but expenditure on infrastructure and health improves it. Education spending has no clear short-term effect.

According to research done in the Nigerian context by Okoro (2013) there is a long-term balance between public spending and economic development with dynamic short-term changes.

Hasnul (2015) analyzed time series data from 1970 to 2014 in Malaysia revealing a negative link between government spending and economic growth over 45 years. Conversely, Balaj and Lani (2017) studied the impact of public spending on Kosovo's economy from 2000 to 2016 showing a positive connection with economic growth, although only partially dependent on it.

Shkodra, Krasniqi, and Ahmeti (2022) examined the effect of public spending on economic growth using the regression model. The results indicate positive coefficients for social transfers, wages and salaries, subsidies and capital interventions suggesting that higher investments in these areas lead to increased economic growth.

Alshammary (2022) investigates the varying impacts of government expenditure on economic growth across 20 Middle Eastern and North African (MENA) nations from 1990 to 2016. Findings reveal a dynamic adjustment in economic growth within the MENA region from a short-term perspective that occurs in the long-run perspective. Government spending promotes economic development.

According to the study conducted by El Husseiny (2023) monetary and fiscal policies positively impacted Egypt's long-term economic activity from 1960 to 2019. Fiscal policy has a more significant, predictable and immediate impact on economic activity than monetary policy. However, monetary policy is more effective in increasing the growth rate of nominal GDP. Mustafa and Abdullahu (2024) examine the relationship between public spending, foreign investment and gross domestic product (GDP) growth in the Western Balkan countries from 2002 to 2021. The findings show that some independent factors consistently impact GDP growth while others significantly impact real growth. Abdelli, Gheraia, Sekrafi and Abid (2024) study analyzes expenditures across four governmental sectors in Tunisia from 1980 to 2022. The study investigates the impact of government sector expenditures on Tunisia's gross domestic product (GDP) using a non-linear autoregressive distributed lag (NARDL) model. The findings indicate a positive relationship between government spending on agriculture and health and GDP while spending on the military and education shows a negative relationship.

In Morocco, numerous studies have analyzed the impact of public spending on economic growth. Tahtah (2013) uses an error correction model to demonstrate that fiscal expenditures on investment, education, transport and communication stimulate growth and promote private investment (Bahaddi & Karim, 2017). The authors conclude that the effects of public spending on economic growth are evident in the long-run using the Vector Error Correction Model (VECM). However, a study by Elalaoui (2018) suggests a significantly negative impact of total public expenditure on growth in Morocco. Private consumption has a positive effect and investment spending has a negative impact due to the unproductive nature of debt-financed government spending. A study that uses an ordinary least squares model for 1980-2016 (Echaoui & Skikra, 2021) indicates that public spending on operations and investment positively impacts economic growth. However, this impact is not statistically significant. Significant research has been done on the relationship between public spending and economic growth. However, there has yet to be a consensus on how the composition and specificity of spending influence growth rates. Research findings differ based on calculation methods, spending structures and the regions studied. Only a few studies have examined the impact of public spending on economic growth in Morocco. Studies on public spending's impact on economic growth are divided. Some research has shown a positive correlation while others indicate a negative one. This suggests that the relationship between public spending and economic growth largely depends on the structure of public spending and economic conditions unique to each country.

3. METHODOLOGY

3.1. Data Sources, Hypotheses and Model Specification

3.1.1. Data Sources

In this section, we examine the impact of spending and economic growth in Morocco using EViews 10 software and the ARDL bounds test approach. The empirical analysis will use the World Bank database's annual time series to cover the period from 1960 to 2022.

Table 1. Data summary.

Variables		Expected impact on GDP	Period	Source
Dependent variable	Natural logarithm of nominal GDP	-	From 1960 to 2022 (62 annual observations per variable)	WBG*
	(LNGDP)			
Independent variables	Natural logarithm of government expenditures	Positive		WBG
	(LEXP)			
	Natural logarithm of household expenditures	Positive		
	(LEXP)			
Natural logarithm of exports	Positive	WBG		
(LEXP)				

Note: *The meaning of abbreviations
WBG: World bank group.

3.1.2. Hypotheses

This study uses econometric modeling to analyze the impact of public expenditure on economic growth in Morocco to examine our research questions. Our research follows a positivist approach guiding us to test the following hypotheses:

H_{1-2} : Government expenditure positively impacts short-term economic growth in Morocco.

H_{1-3} : Government expenditure positively impacts long-term economic growth in Morocco.

3.1.3. Model Specification

ARDL bounds testing is a statistical method used in econometrics to examine long- and short-term relationships among variables particularly in time series data. It shows that the statistical properties of the data (such as mean or variance) may vary over time.

The ARDL model is a statistical technique that simultaneously captures short-run and long-run dynamics in a single framework. One of its key features is its ability to handle mixed-order integrated time series data where the variables in the model have different orders of integration by incorporating autoregressive components.

The efficacy of our model can be empirically tested using an autoregressive distributed lag (ARDL) model as follows:

$$ngdp = f(exg, exh, export) \quad (1)$$

$ngdp$ refers to nominal GDP which measures economic growth. exg refers to government consumption expenditures, exh refers to final household consumption expenditures and $export$ refers to exports in nominal terms. The selection process was based on empirical studies and literature reviews conducted in different countries.

In addition, we apply an additional version of our model that follows the mentioned specifications and records all variables in their natural form. The log-log model that we used in our study is the specification for our multivariate regression model. We will use the data in natural logarithm to derive elasticities as follows:

$$lngdp = f(lexg, lexh, lexport) \quad (2)$$

Where $lngdp$ is the natural logarithm of nominal GDP, $lexg$ is the natural logarithm of government final consumption expenditure, $lexh$ is the natural logarithm of household consumption expenditure and $lexport$ is the natural logarithm of exports.

$$lngdp_t = \beta_0 + \beta_1 lexg + \beta_2 lexh + \beta_3 lexport + \varepsilon \quad (3)$$

t: Represents the period (i.e. year).

ε : This is the error term.

β_i : Represents the constant term (where $i = 1, 2, 3$) and represents the coefficients of the examined explanatory variables.

The equation of long-run estimate is:

$$\Delta(\text{lngdp})_t = \alpha_0 + \delta_1 \text{lngdp}_{t-1} + \delta_2 \text{lexg}_{t-1} + \delta_3 \text{lexh}_{t-1} + \delta_4 \text{lexport}_{t-1} + \sum_{i=1}^p \rho_i \Delta(\text{lngdp}_{t-i}) + \sum_{i=1}^p \gamma_i \Delta(\text{lexg}_{t-i}) + \sum_{i=1}^p \theta_i \Delta(\text{lexh}_{t-i}) + \sum_{i=1}^p \lambda_i \Delta(\text{lexport}_{t-i}) + \varepsilon_t \quad (4)$$

Where

Δ : The first difference operator.

α_0 : Constant.

$\delta_1, \delta_2, \delta_3, \delta_4$: The long-run effects.

The short-run version of the ARDL model is represented as follows:

$$\Delta(\text{lngdp})_t = \alpha_0 + \sum_{i=1}^p \delta_i \Delta(\text{lngdp}_{t-i}) + \sum_{i=1}^p \rho_i \Delta(\text{lexg}_{t-i}) + \sum_{i=1}^p \theta_i \Delta(\text{lexh}_{t-i}) + \sum_{i=1}^p \lambda_i \Delta(\text{lexport}_{t-i}) + \text{Uecm}_{t-1} + \varepsilon_t \quad (5)$$

Where

ecm_{t-1} : This is the error correction model.

The error correction model includes a term for the adjustment rate towards long-term equilibrium after a short-term shock. Therefore, the coefficient of this term should be negative and statistically significant.

4. FINDINGS

4.1. Unit Root Test Results

We must perform unit root tests such as Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) tests to verify whether a series is stationary. These tests help us determine if the series is stationary or not. The ADF in Table 2 and PP in Table 3 tests indicate that the variables are stationary at level or in the first difference. Each variable in our model has an integration order of I (0) or I (1). However, none of them is I (2) or higher further confirmed by the PP test. Therefore, the integration condition is satisfied. We can use the ARDL bound approach based on these findings.

Table 2. ADF unit root test results.

Variables		T-statistic (Test for unit root at level)	ADF test			T-statistic (Test for unit 1er in difference)	Order of integration
			Critical values				
			1%	5%	10%		
Dependent variable	LNGDP	7.24	-2.61	-1.94	-1.61	-1.96***	I(1)
Independent variables	LNEXG	3.24	-2.60	-1.94	-1.61	-6.13***	I(0)
	LNEXH	3.61	-2.60	-1.94	-1.61	-2.02***	I(1)
	LNEXPORT	6.23	-2.60	-1.94	-1.61	-4.41***	I(1)

Note: *** rejection of null hypothesis at 1% of significance level.

Table 3. PP unit root test results/

Variables		T-statistic (Test for unit root at level)	PP test			T-statistic (Test for unit root in difference)	Order of integration
			Critical values				
			1%	5%	10%		
Dependent variable	LNGDP	6.22	-2.60	-1.94	-1.61	-5.94***	I(1)
Independent variables	LEXG	2.91	-2.60	-1.94	-1.61	-6.33***	I(1)
	LEXH	6.59	-2.60	-1.94	-1.61	-5.97***	I(1)
	LEXPORT	4.35	-2.60	-1.94	-1.61	-5.14***	I(1)

Note: *** rejection of null hypothesis at 1% of significance level.

4.2. Optimal ARDL Model Estimation

The empirical results of the estimated ARDL model are essential for discussion. We first used the ADF and PP unit root tests to assess stationarity and then we used the bounds test to see if any long-term relationships existed. Subsequently, we selected the ARDL model which corresponded to the optimal number of lags and minimized the Akaike criterion. Our selected model is 4,3,1 and the most optimal of the other models (see Figure A1).

5. BOUNDS TEST LONG- AND SHORT-RUN ESTIMATION

5.1. Test of Cointegration: Bounds Co-Integration Test

The following three hypotheses interpret the results of the bound test:

H1: Fisher value > upper bound presence of cointegration.

H2: Fisher value < lower bound, no cointegration.

H3: Fisher value between the two bounds, no conclusion.

The bounds test is a crucial step for examining the presence of a long-run relationship. When conducting the bounds cointegration test, the results confirm the presence of a cointegration relationship and the alternative hypothesis H1 is accepted. The results in Table 4 indicate that the F-statistic value of 6.878585 is greater than the upper bound of the critical values regardless of the chosen critical threshold (10%, 5%, 2.5% and 1%).

Table 4. Bounds test result.

Test statistic	Value	Signification	Lower bound I(O)	Upper bound I(1)
F-statistic	6.8785*	10%	2.37	3.2
		5%	2.79	3.67
		2,5%	3.15	4.08
		1%	3.65	4.66

Note: *reject the null hypothesis at 1% of significance.

We can refute the null hypothesis from the test outcomes and infer that the examined variables have a long-term equilibrium (cointegration) relationship.

5.2. ARDL Long-Run Estimation.

Government expenditures (LEXG) positively and significantly impact economic growth. A 1% increase in LEXG can lead to a 0.10% increase in GDP. Household final consumption expenditures (LEXH) also significantly impact economic growth with a 1% increase resulting in a 0.59% increase in GDP. Additionally, exports (LEXPORT) positively affect long-term economic growth with a 1% increase in exports associated with a 0.26% increase in national production.

Table 5. ARDL Long-run estimation.

Levels equation				
Case 2: Restricted constant and no trend				
Variable	Coefficient	Std. error	t-statistic	Prob.
LEXG	0.106***	0.019	5.531	0.000
LEXH	0.597***	0.032	18.673	0.000
LEXPORT	0.263***	0.026	10.095	0.000
C	1.664	0.251	6.630	0.000

Note: *** mean significant at 1%.

5.3. ARDL Short-Run Estimation

Table 6 displays the short-term error correction model (ECM) results indicating that the variables significantly impact economic activity in the short-run. The final consumption expenditure by the general government variable shows a significant positive coefficient at lag 0 and lag 1 but a negative coefficient at lag 2. Conversely, the final

consumption expenditure by household variable has a positive coefficient. Exports are excluded from the short-term form according to the automatic lag selection procedure. The coefficient of CointEq (-1) reflecting the adjustment speed is statistically significant and demonstrates the expected negative direction. This validates the presence of a long-term relationship among the variables under examination. Furthermore, the absolute magnitude of this coefficient suggests that approximately 70% of any deviation from the long-term equilibrium path at a given point will be rectified in the subsequent period to reach the long-term equilibrium path.

Table 6. ARDL-ECM short-run estimation.

Case 2: Restricted constant and no trend				
Variables	Coefficient	Std. error	t-statistic	Prob.
D(LNGDP(-1))	-0.006	0.070	-0.097	0.922
D(LNGDP(-2))	0.231***	0.058	3.961	0.000
D(LNGDP(-3))	0.153**	0.067	2.266	0.028
D(LEXG)	0.121***	0.031	3.891	0.000
D(LEXG(-1))	0.065*	0.033	1.942	0.058
D(LEXG(-2))	-0.050	0.031	-1.600	0.117
D(LEXH)	0.625***	0.060	10.284	0.000
CointEq(-1)*	-0.701***	0.114	-6.143	0.000

Note: ***, **, * indicate the 1%, 5% and 10% significant levels, respectively.

5.4. Residual and Stability Diagnostic Tests

5.4.1. Residual Diagnostics Test

Table 7 summarizes the diagnostic tests used to study the estimated ARDL model's quality. The Breusch-Godfrey autocorrelation test shows a Fisher probability of 0.7534 higher than 5%. Therefore, we accept the null hypothesis which suggests that there is no autocorrelation in the errors. The heteroscedasticity test displays a probability of 0.014 which leads us to accept the null hypothesis. This suggests that there is no heteroscedasticity, stable variance and a normal distribution of the residuals.

The normality test indicates that the null hypothesis is accepted using the Jarque-Bera probability of 0.85. This suggests that the residuals are normally distributed.

Table 7. ARDL diagnostic test.

Diagnostic tests	Test statistic	F-statistic	Probability
Heteroscedasticity	Breusch-Pagan-Godfrey	2.554	0.014
Autocorrelation	Breusch-Godfrey serial correlation	0.285	0.753
Normality	Jarque-Bera	0.305	0.858
Ramsey	RESET test	0.141	0.708

5.4.2. Stability Diagnostic Tests

The results of the diagnostic tests confirm that the estimates are robust showing no signs of autocorrelation, heteroscedasticity or non-normal distribution of residuals. Additionally, the Ramsey RESET test supports the model's correct specification. The estimated coefficients' stability is confirmed by the CUSUM and CUSUM of squares tests as they fall within the critical bounds at the 5% significance level. Figure 1 indicates that the blue line consistently stays below the 5% significance line supporting the stability of the estimated model. Similarly, Figure 2 shows that the CUSUM of squares stability test demonstrates the model's stability as the blue line remains within the 5% significance line. The model has also been found to be structurally stable based on the CUSUM and CUSUM2 tests.

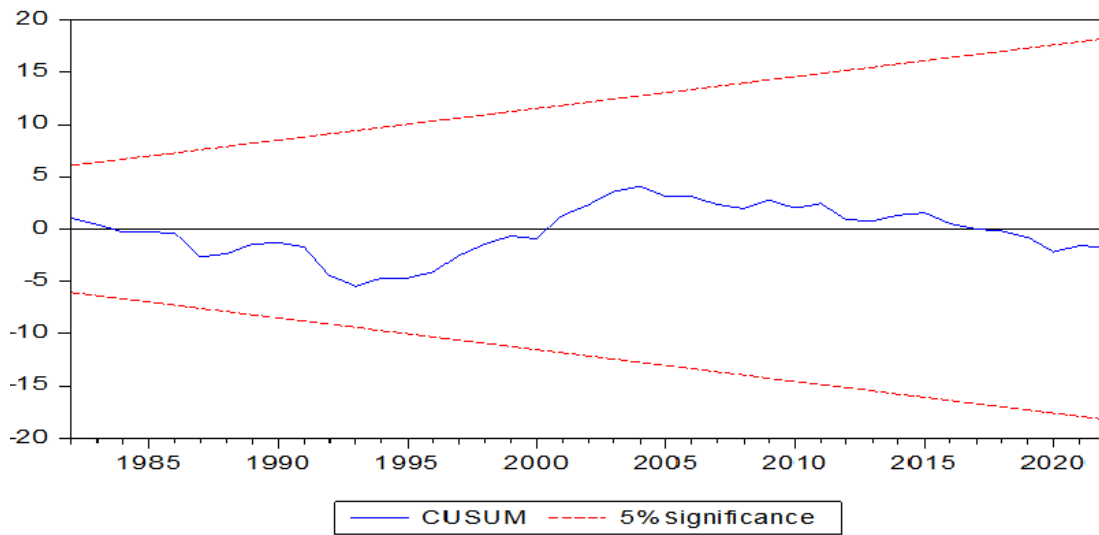


Figure 1. CUSUM test.

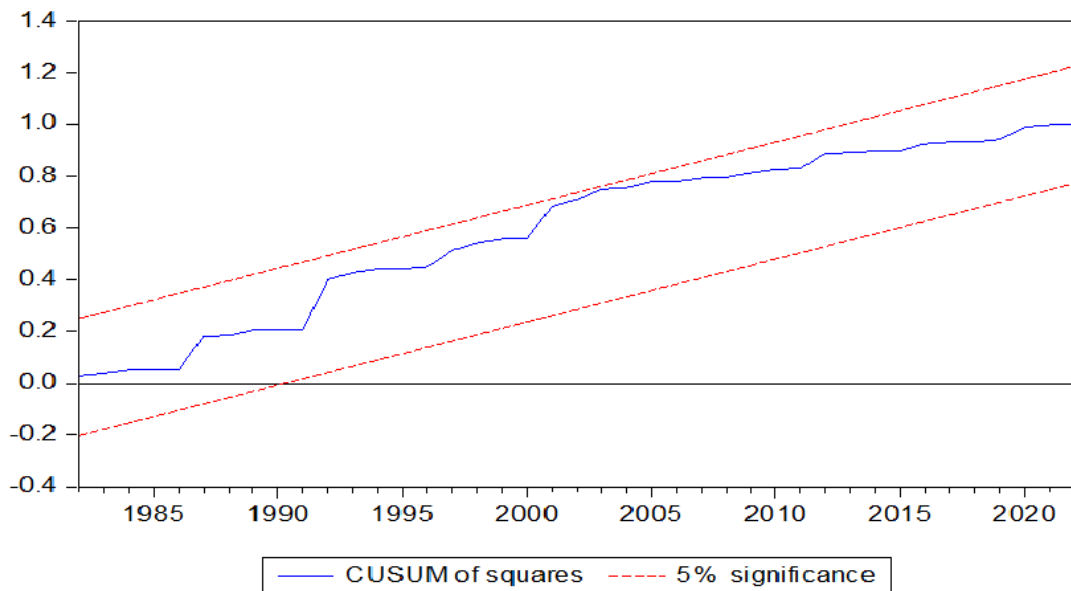


Figure 2. CUSUM of squares test.

6. DISCUSSION

We have successfully determined the relationship between public spending and economic growth through our research. A solid and enduring positive relationship has been established as evidenced by the bound test. The robustness of our model is further supported by an F-statistic value of 6.8785 surpassing critical thresholds. Our empirical analysis has shown a positive correlation among variables using the ARDL bounds test. Therefore, we assert that spending significantly enhances short-term economic growth. We confirm its positive influence on Moroccan economic growth by examining our framework's short- and long-term dynamics. The findings confirm and validate our research hypotheses H1 (a) and H1 (b).

Our assessment also effectively gauged the enduring effects of various components of government spending, household consumption and exports on Moroccan economic growth.

Most econometric analyses worldwide have concluded that public spending positively and significantly impacts economic growth. The results obtained by our model indicate a positive and significant impact. Therefore, we can deduce that our results align with numerous studies examining the relationship between public expenditure and economic growth. These studies have also found positive impacts such as those of Al-Shatti (2014), Balaj and Lani (2017), Facchini and Seghezza (2018), Lin and Zhu (2019), Senekovič, Kavkler, and Bekő (2019) and Abdelli et al.

(2024). However, other studies such as those by Alexiou (2009), Miron (2010), Hasnul (2015), Iheanacho (2016), Aydin (2019) and Barlas (2020) revealed a negative effect. So, we cannot expect to achieve a single agreement or similarity in results because each study differs in variable selection, model specification and the economic context and particularities of the studied country.

Our results are mainly explained by the productive nature of public spending and its allocation to growth-enhancing sectors. These sectors play a strategic role in the economic and social context as increased spending positively impacts overall production. This positive effect also reflects the level of public participation and responsibility highlighting the economic policy pursued by the state and the importance of its role in promoting economic activity. As a result, the structure of public spending plays a crucial role in distinguishing between productive and non-productive expenditure. The structure of public spending in Morocco plays an essential role in both long- and short-term economic growth. This analysis provides a basis for future research to examine the relationship in greater detail. Future surveys will explore public spending in a disaggregated way to distinguish between productive and non-productive expenditures. Our results are consistent with the empirical literature review and several econometric studies which also confirm the positive and significant impact of government spending on economic growth. However, it should be noted that some studies needed help to identify a clear relationship between these two economic variables. The diversity of results highlights the inability to reach a single consensus, as factors such as the composition, structure and specificity of spending and the method or model chosen significantly influence the results. This variation is evident in the different countries and continents examined in the literature.

7. CONCLUSION

We can infer that public spending positively impacts economic growth in the short- and long- term based on the results obtained. The short- and long-term relationship estimations within the specified framework conclude that public spending positively impacts economic growth. These results are primarily explained by the productive nature of public expenditure and its allocation to sectors that promote growth. This positive effect also reflects the level of public participation and responsibility highlighting the state's economic policy and its importance in promoting economic activity. In the short-run, public spending stimulates economic growth by increasing overall demand. When the government invests in infrastructure projects such as road construction, bridges or public buildings, it generates demand for goods and services needed for these projects, thereby boosting production and employment in the relevant sectors. Similarly, spending on social programs such as food assistance or subsidies can increase low-income households' purchasing power stimulating consumption and overall demand. This short-run effect can help mitigate periods of economic slowdown and promote growth. Indeed, the positive short-term impact stimulates demand and helps reduce economic fluctuations. In the long-run, the positive effect of public spending has a lasting impact on economic growth by investing in critical areas such as education, healthcare, infrastructure and research and development. Investments in education improve skills and workforce productivity, stimulating economic growth by increasing the economy's production capacity. Similarly, spending on infrastructure enhances the efficiency and competitiveness of businesses promoting private investment and long-run growth. Furthermore, investments in research and development foster innovation and the development of new technologies which can boost the productivity and competitiveness of the economy in the global market. Indeed, the positive long-term impact strengthens the foundations of growth by enhancing human capital and infrastructure.

In this regard, the structure of public spending plays a crucial role. Fiscal policy focused on rationalizing public spending, encouraging productive expenditures and combating wasteful spending while optimizing tax revenues based on the results obtained during this study period. There is a need for an efficient financial policy that considers the impact of the structure of public expenditure on economic growth. We have successfully estimated the long-term effects of components of public spending on economic growth in Morocco using the ARDL model. Future

studies could explore how other key policy variables can complement the established link between public spending and economic growth to generate positive effects of public expenditure on economic growth.

7.1. Future Research Suggestions and Limitations

Future studies could use interactive regressions to analyze the complementary role of other policy variables and examine the thresholds at which public spending positively influences economic growth.

This study is limited because it examines the impact of public spending on economic growth as a whole, making it difficult to assess this impact specifically at the national level. Therefore, it is strongly recommended that a disaggregated analysis be used enabling us to know which sector's spending has the most significant impact on economic growth. This will assist policymakers in choosing public policies that positively impact economic growth and reducing spending that negatively affects growth so that future studies can consider this.

This article aims to illuminate the relationship between public spending and economic growth in Morocco. It focuses on development emphasizing the importance for a country to understand how various components of public expenditure contribute to the growth process.

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WEBSITES/DATABASES

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APPENDIX

Table A1 presents the descriptive statistics of the examined variables. It is worth noting that all variables have a left-hand skewness (Skewness <0). Additionally, the variables are flatter than a normal distribution (coefficient <3). Moreover, all variables exhibit normal distribution (Jarque-Bera probability >5%).

Table A1. Descriptive statistics of the study's variables.

LNGDP	LEXG	LEXH	LEXPORT
Mean	26.780	25.317	26.122
Median	26.785	25.440	26.297
Maximum	27.803	26.223	27.286
Minimum	25.414	24.082	24.707
Std. dev.	0.699	0.580	0.823
Skewness	-0.186	-0.623	-0.197
Kurtosis	1.890	2.478	1.733
Jarque-Bera	3.255	4.797	4.622
Probability	0.196	0.090	0.099
Sum	1526.499	1594.997	1645.702
Sum sq. dev.	27.401	20.927	42.008
Observations	57	63	63

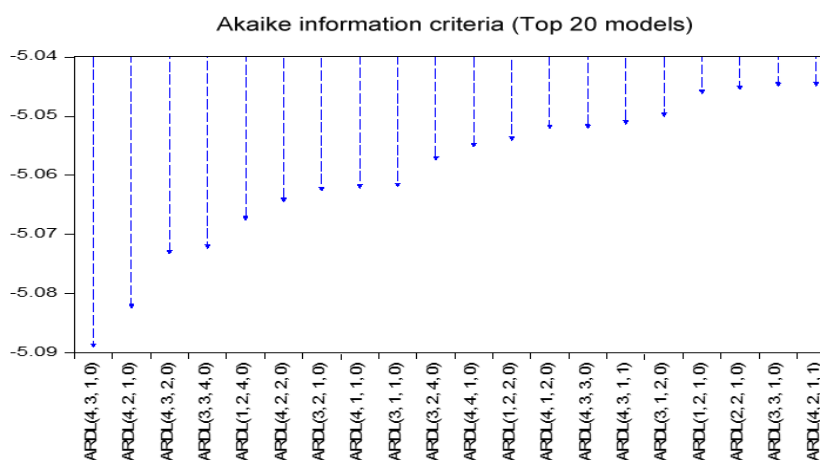


Figure A1. Criteria graph.

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