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The Relationship between Public Expenditures and the GDP-Growth in Algeria: an Empirical Study Using the ARDL Model

العلاقة بين النفقات العامة ونمو الناتج المحلي الإجمالي في الجزائر: دراسة قياسية باستخدام نموذج ARDL

Dr. Smaili Nabila[1], Dr. Khelassi Abdel-illah[2]

[1] Mouloud Mammeri University- Tizi Ouzou (Algeria), nabila.smaili@ummto.dz

[2] Abou Bekr Belkaid University- Tlemcen (Algeria), khelassi_abdelilah@yahoo.fr

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Abstract:

This study aims to analyze and measure the relationship between public expenditures and the GDP growth in Algeria during the period 1990-2019 in the short and long terms, using the autoregressive distributed lag (ARDL) co-integration technique in which the Gross Domestic Product (GDP) is a dependent variable, while public expenditures, oil prices and foreign direct investment were also included as explanatory variables. The main findings indicate that there is a long-run equilibrium relationship between public expenditures and gross domestic product, as Algeria seeks to raise the rate of GDP growth of and achieve economic development by increasing the volume of public expenditures based on an expansionary financial policy that is backed by oil revenues.

Keywords: Public expenditures; GDP; Oil Prices; ARDL Model; Algeria.
JEL Classification Codes: C 29, E 6, H 50

ملخص:

تهدف هذه الدراسة إلى تحليل وقياس العلاقة بين النفقات العامة و وتطور الناتج المحلي الإجمالي في الجزائر خلال الفترة 1990-2019 في الأجلين القصير والطويل وذلك باستخدام منهج الانحدار الذاتي لفترات الإبطاء الموزعة (ARDL)، بحيث تم اعتماد الناتج المحلي الإجمالي (GDP) كمتغير تابع، في حين أن بقية المتغيرات المفسرة تمثلت في النفقات العامة وأسعار النفط بالإضافة إلى الاستثمار الأجنبي المباشر، وتبين من خلال نتائج التحليل القياسي وجود علاقة توازنية في الأجل الطويل بين النفقات العامة والناتج المحلي الإجمالي، حيث أن الجزائر تسعى إلى رفع معدل النمو الاقتصادي وتحقيق التنمية الاقتصادية من خلال زيادة حجم الإنفاق العمومي بالارتكاز على سياسة مالية توسعية معتمدة في ذلك على عائدات البترول.

كلمات مفتاحية: النفقات العامة.، الناتج المحلي الإجمالي.، أسعار النفط.، منهج الانحدار الذاتي لفترات الإبطاء الموزعة.، الجزائر.

تصنيفات JEL : C 29، E 6، H 50

Corresponding author: Khelassi Abdel-illah, **e-mail:** khelassi_abdelilah@yahoo.fr

INTRODUCTION:

Public expenditures policy is a very important tool for promoting inclusive growth. Expenditure policy affects economic growth and income distribution in both the short and long terms. For example, social spending increases access to public services provides value in the short run, while public expenditures in the long run reduces income poverty and inequality directly (Younes, Jon, Nora, & Mohamed, 2021, p. 06)

The financial literature considers public expenditures as the most important tool for financial policy in terms of effectiveness in achieving economic growth. Public expenditures is a general indicator that highlights the economic situation and largely reflects the rest of the economic indicators. It is one of the objectives of economic policies. Public expenditures reflects the government's role in the economy, as it is the tool that the government uses to develop its economy. Effective use of public expenditures means achieves a set of political and economic goals. There has always been a debate about the government's role in economic life and the scope of its intervention, which has always been linked primarily to the volume of public expenditures, and this reflects the reality of the government's developmental role (Merim & Djaber, 2019, p. 226).

According to Keynesian theory, public expenditures has a positive effect on economic growth. The Keynesian theory assumes that the more government spending, the higher will be economic growth as a result of expansionary financial policy. The hypothesis is that when public expenditures trends rise, production will follow the same path, stimulating aggregate demand and increasing GDP levels. Private investment is another channel through which government spending can have positive effects on the growth of the economy (Sheilla & Nicholas M, 2019, pp. 83 - 84).

Development policy is often based on the expansion of public expenditures as one of the solutions aimed at raising the domestic product and achieving development goals. This has prompted many developed and developing countries to raise the volume of state intervention in economic activity through public spending.

Algeria, like many countries that adopted the interventionist approach in economic life, sought to adopt a Keynesian-oriented economic policy aimed at raising the rate of gross domestic product and achieving economic development by increasing the volume of public expenditures based on an expansionary financial policy based on high Oil revenues in recent years.

- **Research problem:**

The observer of the economic conditions in Algeria during the last three decades notices that the state's intervention in economic activity depends on the economic situation the country is going through due to the inability of markets to create economic and even social balance. This has made the state's intervention essential to correct market failures by edicting economic measures represented in public expenditures to address this situation and work to

raise the gross domestic product. On this basis, we can formulate the problem of the study as follows:

What is the impact of public expenditure on the GDP growth in Algeria during the period 1990-2019?

- **The main hypothesis:**

The study assumes the existence of a direct relationship with a significant impact between public expenditures and the growth of GDP in the short and long terms.

- **Objective and importance:**

This study aims to identify an important aspect of the Algerian economy, namely, the analyze and find out the form of the relationship between public expenditures in Algeria and the growth of GDP in the short and long terms. By building a standard model that helps us analyze and measure.

1- Previous studies and research findings:

There are several studies that dealt with the issue of the relationship of public expenditures with GDP, whether in theory or even in practice throughout several countries. The following is a brief presentation of the most important of these studies:

- **Study in Algeria entitled: The Impact of the public spending structure's development on the growth of the individual domestic product in Algeria, an econometric study.**

Through this study, the two researchers aimed to analyze the impact of the development of the tunnel structure year on the individual GDP In Algeria during the period (1974 – 2017). The study relies on the Autoregressive Distributed Lag Approach (ARDL). It found a long-term equilibrium relationship between individual GDP and the evolution of the structure of public spending in Algeria in addition to the great impact and the moral of gross fixed capital formation in the long run. On the contrary, general consumption variable final expenditure showed no effect (Seddiki & Boucha, 2021, pp. 485 - 503).

- **Study in EU under the title: The long-term impact of public expenditures on GDP-growth.**

The study sought to analyze the correlation between different types of public expenditures and GDP growth in different European Union countries. This is based on the database which was composed of the Classification of the Functions of Government (COFOG) of public spending, which contains data of 25 EU economies in the period 1996–2017. The standard economic models that have been applied were: first- differences general method of moment (GMM), fixed effects panel and ordinary least squares (OLS) models. The study found out

that spending on social protection proved to have a negative, statistically significant and robust impact on GDP growth. The results are similar to general public spending, and while spending on public order also has a significant and robust coefficient, its sign is ambiguous (GABOR & ADAM, 2020, pp. 403 - 419).

- **Study in Palestine tagged with : Causality Between Public Expenditure and GDP Growth In Palestine: An Econometric Analysis Of Wagner's Law.**

This study aimed to explore the causal relationship between public expenditure and the GDP growth in the Palestinian territories over the period of 1994-2013. The study adopted the latest developments of econometric techniques . The Hypothesis of a long-run relationship between public expenditure and GDP growth has been tested by Engle-Granger co-integration test depending on the results of the six versions of Wagner's Law. The results concluded that there is a co-integration between public spending and GDP growth.. Such results indicate that there is a long-run relationship between public expenditure and GDP growth for the Palestinian case. we also found that both public expenditure and GDP have a cause effect on each other, the findings also suggest that both public expenditure and GDP are growing substantially and hence validate Wagner's Law in the case of Palestine (Omar Mahmoud, 2015, pp. 189 - 199).

- **Study in Zambia entitled : Effects of Public Expenditure on Gross Domestic Product in Zambia from 1980 - 2017: An ARDL Methodology Approach.**

The research paper sought to explore the fundamental changes in public expenditure and the resulting effect on the gross domestic product using an ARDL approach for time series data over the period 1980-2017. The aim was to identify changes in GDP performance since 1980. The results of joint integration showed a long-term relationship between GDP and government spending. In this regard, changes in government expenditure have a strong converse effect on GDP which has increased significantly in the past decade, is seen to have had negative effects both in the short and long runs. As opposed to the theory, increased government expenditure may not be ideal for the growth of the economy in Zambia (Mubanga, Jane, Mutinta, & Notulu, 2019, pp. 103 - 111).

- **Study in Libya: The relationship between government spending and GDP in Libya, an applied study using joint integration and causation during the period (1970-2012).**

The study came as an attempt to highlight the relationship between government spending and gross domestic product in the Libyan economy and to determine the direction of this relationship during the period (1970-2012). The economic balance in society, as the standard study, showed that there is a long-term equilibrium relationship between government spending and non-oil GDP, and this explains that the Libyan economy is highly dependent on government spending in promoting economic growth (Sharaf El-Din, 2017).

2- Methods and Materials:

2-1 Study methodology

For the purpose of achieving the goal of the study, the depend was based on the methodology used in economic studies, the analytical approach was applied when talking about the evolution of the variables in question, and then adopted the quantitative standard method to study the impact of public expenditures on the gross domestic product, through a modern methodology, the ARDL model.

2-2 The study's variables and sources

A set of variables, one dependent and the other independent, was adopted, enabling us to build an explanatory model of the impact of public expenditures on the gross domestic product in Algeria, and the period between 1990 and 2019 was selected to conduct the study, where annual data of 30 views per calculated variable were selected, as:

- GDP: A dependent variable, symbolizing Gross domestic product.
- EX: Independent variable, symbolizing public expenditures.
- FDI: Independent variable, symbolizing foreign direct investment.
- OP: An independent variable, symbolizing oil prices.

The study data was collected from several credible databases:

- World Bank database on the website: https://data.albankaldawli.org
- The database of the Directorate General of Assessment and Policy on the website: http://www.dgpp-mf.gov.dz
- National Office of Statistics on the website: https://www.ons.dz

2-3 Study model

The ARDL model is a standard least squares regression with lags for both the independent and dependent variable as slopes. The model has been used in econometrics for decades and has recently gained popularity as a method to check the co-integration of economic variables proposed by Pesaran and Shin (1999) and extended by Pesaran et al. (2001), in economic literature. The term 'cointegration' are used to show that there is a long-run equilibrium among economic variables that converge over time and the ARDL approach is considered as a state-of-the-art co-integration technique used to examine the dynamics and balance of relationships between dependent and independent variables (Abonaze & Elnabawy, 2020, p. 25).

The model can be formulated in its mathematical form as follows:$\boldsymbol{GDP = f(EX, FDI, OP)}$
Based on the previous methodology, ARDL model of joint integration was formulated as follows:

$$GDP = B_0 + B_1 GDP_{t-1} + B_2 EX_{t-1} + B_3 \mathrm{FDI}_{t-1} + B_4 OP_{t-1} + \sum_{i=1}^{p} y_1 \Delta GDP_{t-p} + \sum_{i=1}^{p} y_2 \Delta EX_{t-p} + \sum_{i=1}^{p} y_3 \Delta \mathrm{FDI}_{t-p} + \sum_{i=1}^{p} y_4 \Delta OP_{t-p} + \varepsilon i$$

Where:

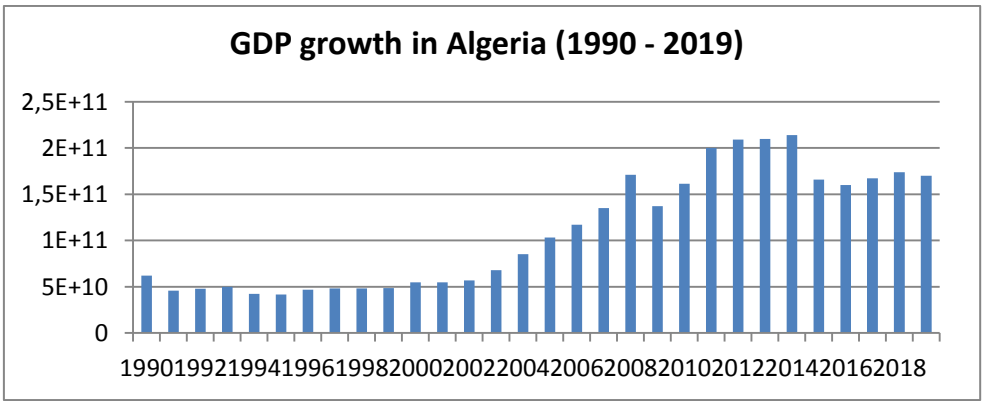
ε: The error limit. Δ: The first difference. **GDP:** Gross domestic product.
EX: public expenditures. **OP:** oil prices. **FDI:** foreign direct investment.
(B_1, B_2, B_3, B_4): long-term relationship coefficients.
(y_1, y_2, y_3, y_4): short –term relationship coefficients.

3- Results and discussion:

3-1 Analysis of the development of study variables during the study period

- **Gross domestic product (GDP):**

Fig (1): development of GDP in Algeria (The current value of the dollar)



Source: Prepared by researchers based on World Bank data

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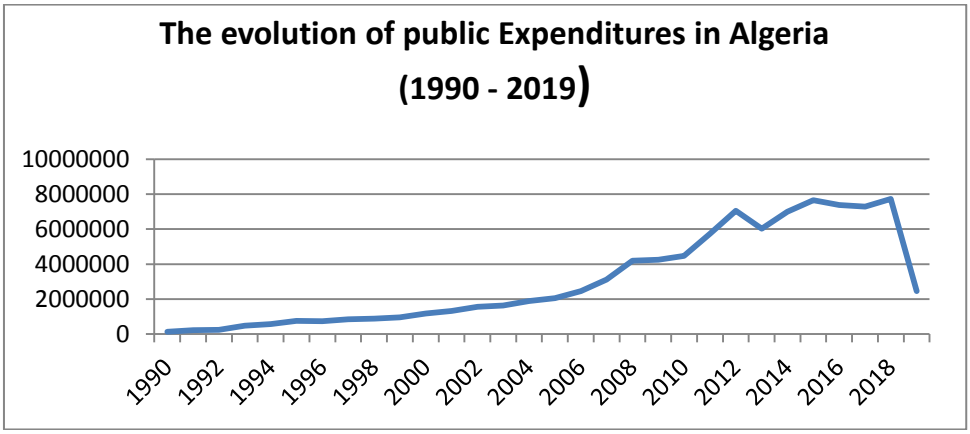
It is clear from the figure of the development of GDP in Algeria that it was characterized by weakness in the early 1990s due to the economic stagnation experienced in Algeria due to the deterioration of the security and political conditions as well as the worsening of external indebtedness, and with the beginning of the 2000s, Algeria's GDP began to rise due to the stability of the political situation as well as the high oil revenues for the rise in its prices in the world market. GDP reached its highest level in 2010-2014 in parallel with record highs in oil prices during the same period.

- **Public Expenditures (EX):**

Fig (2): growth of public expenditures in Algeria (million Algerian dinars)

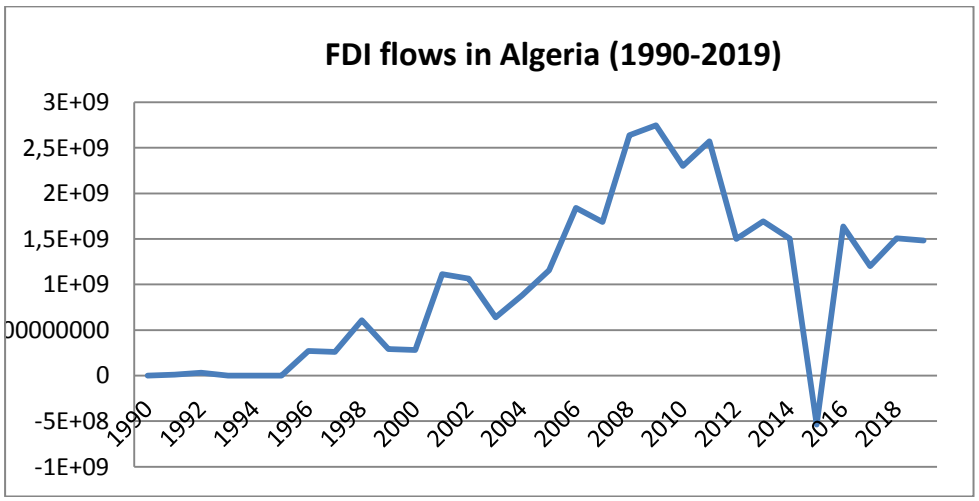


Source: Prepared by researchers based on Directorate General of Assessment and Policy

Through the form we distinguish that the spending policy in Algeria has experienced a high rate of growth of public expenditures due to several economic and social developments, and the development of public expenditures during this period can be divided into two phases, the initial phase from 1990 to 1999 and the most important feature of this stage is economic openness and Algeria's attempt to move towards a market economy, as public expenditures during this period increased from 136,500 million Algerian dinars in 1990 to 961,682 million dinars in 1999 and explained this high expenditure in 1999. The second phase is in the year 2000, when spending policy was marked by a significant increase in spending as described in the figure, mainly due to the launch of the economic recovery project and the economic growth support project, where a huge spending budget was allocated to support the two projects.

- **Foreign Direct Investment (FDI):**

Fig (3): development of foreign direct investment flows in Algeria (billion dollars)

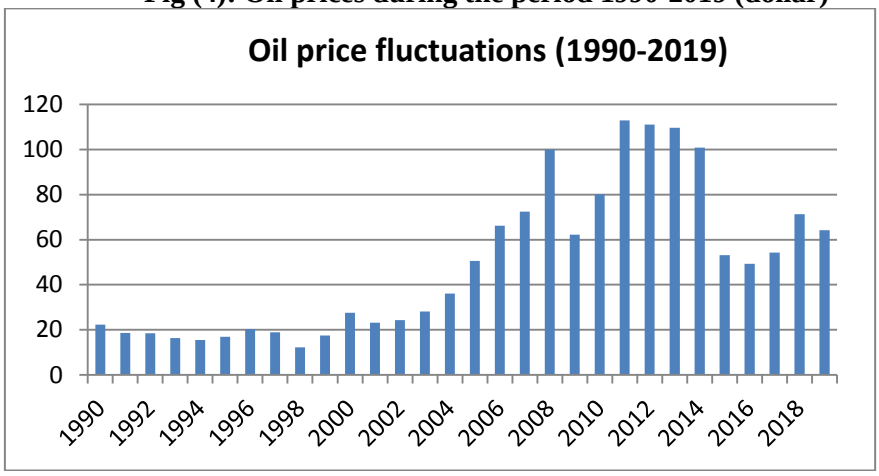


Source: Prepared by researchers based on World Bank data

According to the figure shown for the development of foreign direct investment flows in Algeria, it appears that the period 1990-1998 was characterized by very weak investment flows, and this is mainly due to the security situation in the country and political instability, and the figure also notes the beginning of improvement in foreign investment flows starting from the year 2001 The volume of flows amounted to 1.11 billion dollars, and this is caused by the beginning of security stability and also the issuance of Order No. 01-03 related to the development of investment, after which the flow of investments took high levels that exceeded one billion dollars, reaching a value of 2.3 billion dollars in 2010, and what is also noted in the figure, a sharp decline was recorded in 2015 due to the collapse in oil prices, as most foreign investments in Algeria are related to the hydrocarbons sector, and after 2016 the flows returned to normal.

- **Oil Prices (OP):**

Fig (4): Oil prices during the period 1990-2019 (dollar)



Source: Prepared by researchers based on National Office of Statistics

From the figure, we note that the years from 1990 to 2000 witnessed stability in oil prices. The average price of a barrel in this period reached 17.69 dollars, and beginning in the year 2000 it began to rise, moving from 27 dollars to reach 80 dollars in 2010, which is its highest level during The first twenty years of the study period, and this is due to the high demand for oil in the world significantly, especially in the three active countries, the United States of America, China and the European Union, and in the period from 2010 to 2014, the price of oil recorded record levels, rising from 80 dollars in 2010 to 112 dollars In 2011, it recorded $100 in 2014, but in the following year, 2015 witnessed an unprecedented decline, as its price reached half of what it had recorded in 2014 and reached $49 in 2016. After 2017, oil prices rose to around $70 a barrel, after the Oil producers countries agreed to cut production.

3-2 Time series stability test (unit root test) for study variables

The (ADF) test and the (PP) test. These are two of the most important unit root tests that are widely used in macroeconomic and financial experimental studies. These two tests are sufficient to test the stationary of the time series under study and to determine their order of integration. Both the ADF and PP tests test the null hypotheses of unit root (no stationary)

against the alternative hypothesis of non-existence of unit root (stationary). (Hadji, 2020, p. 419).

Using of Eviews 10, we have tested (ADF) and (PP) on all time series, and results in table 1

Table (1): ADF and PP test results on time series

	ADF		**PP**		**Time series**	
	At First Difference	At level 5%	At First Difference	At level 5%		
I(1)	-4.9245 ***0.0005***	-0.6026 ***0.8552***	-4.9197 ***0.0005***	-0.6307 ***0.8486***	t-statistic **prob**	**GDP**
I(1)	-2.2244 ***0.2038***	-7.4129 ***0.0000***	-2.8239 ***0.0678***	-1.3836 ***0.5763***	t-statistic **prob**	**EX**
I(1)	-8.3367 ***0.0000***	-2.2682 ***0.1884***	-8.5659 ***0.0000***	-2.1762 ***0.2186***	t-statistic **prob**	**FDI**
I(1)	-5.1472 ***0.0003***	-1.3612 ***0.5871***	-1.3612 ***0.5871***	-1.3612 ***0.5871***	t-statistic **prob**	**OP**

Source: Authors' computation using EViews 10 software.

It is clear from table 1 that the null hypothesis which indicates that the variables have a unit root cannot be rejected, but this hypothesis can be rejected for the first differences, which means that the variables are integrated at level 1, and therefore the common integration test can be conducted using the bounds test method and ARDL model which is considered the most appropriate model for the sample size used in this research (30 observations from 1990 to 2019).

3-3 ARDL bounds test

The bounds test aims to detect a long-term balance relationship, and in order to ensure that there is this relationship between the variables in question, the zero hypothesis of the lack of common integration between the variables of the model is tested: $H0{:}\beta1=\beta2=\beta3=0$, as opposed to the alternative assumption of a long-term common integration relationship between the level of model variables: $H1{:}\beta1 \neq \beta2 \neq \beta3 \neq 0$. (Abdelaziz, Nacer eddine, & Sarra, 2021, p. 116). And Table 2 shows the results of the border test.

Table (02): Bounds test results

F-Bounds Test		Null Hypothesis: No levels relationship		
Test Statistic	Value	Signif.	I(0)	I(1)
			Asymptotic: n=1000	
F-statistic	5.808281	10%	2.37	3.2
k	3	5%	2.79	3.67
		2.5%	3.15	4.08
		1%	3.65	4.66

Source: Authors' computation using EViews 10 software.

By comparing the value of the F statistic for testing the limits with the corresponding scheduling value calculated by Pesaran and al (2001) in the case of a fixed limit and without a general trend only, where K=3, we find that the calculated value of F is 5.80, which is greater than the critical values at the 1%, 5%, and 10% significance levels, indicating the acceptance of the alternative hypothesis of a long-term synchronous integration between the variables in question.

3-4 Error correction model, short-term relationship and long-term relationship shape of the model

Table 3 shows the estimation of the error correction model, the short-term relationship and the flexibility between the model variables; we note that the error correction coefficient is a disadvantage (-0.48) and significant because its probability is less than 5%, therefore the error correction is validated, which means that the behavior of the dependent variable takes two periods to reach a long-term balance; the results also show that 48% of the long-term balance level is corrected each year. It also shows a significant negative relationship between GDP and the lagged EX in a single period in the short term, and a significant expulsion between OP and GDP in the short term.

Table (3): ARDL Error Correction Regression

ECM Regression				
Case 2: Restricted Constant and No Trend				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(EX)	553.1711	687.4904	0.804624	0.4305
D(EX(-1))	-4705.827	1962.634	-2.397709	0.0264
D(OP)	1.02E+09	50114442	0.000000	0.0000
CointEq(-1)*	-0.482413	0.081718	-5.903362	0.0000
R-squared	0.950267	Mean dependent var		4.44E+09
Adjusted R-squared	0.944050	S.D. dependent var		1.71E+10
S.E. of regression	4.05E+09	Akaike info criterion		47.21101
Sum squared resid	3.93E+20	Schwarz criterion		47.40133
Log likelihood	-656.9542	Hannan-Quinn criter.		47.26919
Durbin-Watson stat	2.098646			
* p-value incompatible with t-Bounds distribution.				

Source: Authors' computation using EViews 10 software.

Table 4 shows the long-term relationship between GDP and the independent variables studied

Table (4): Long-run coefficients

Levels Equation				
Case 2: Restricted Constant and No Trend				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
EX	8721.784	1927.435	4.525072	0.0002
FDI	0.982291	3.360527	0.292303	0.7731
OP	1.40E+09	1.97E+08	7.116965	0.0000
C	1.94E+10	3.30E+09	5.896171	0.0000
EC = GDP - (8721.7836*EX + 0.9823*FDI + 1399068393.9912*OP + 19433808652.2626)				

Source: Authors' computation using EViews 10 software.

The table shows that there is a significant positive relationship at α =5 % between public expenditures EX and GDP; in other words, the increase of one unit in public expenditures leads to an increase of 8,721 units in GDP in the long term, and there is a significant positive relationship between oil prices and GDP at the level of significance α = 5%, where an increase of $1 in oil prices leads to an increase of 1.40 units in GDP in the long term, as shown by a non-significant relationship between FDI and long-term GDP.

3-5 Model Diagnostic Tests

A set of standard statistical tests have been relied upon to determine the suitability of the adopted model in measuring the estimated long-term elasticities. These tests are as follows:

- **Inconsistency test for error variance**

We relied on the ARCH test and the results are shown in the following table:

Table (5): Heteroskedasticity Test: ARCH

F-statistic	0.450468	Prob. F(1,25)	0.5083
Obs*R-squared	0.477894	Prob. Chi-Square(1)	0.4894

Source: Authors' computation using EViews 10 software.

Through Table No. (5), it appears that the calculated F value amounted to 0.45 with a probability of (0.50) which is greater than 5%. This result enables us to accept the null hypothesis for the stability of the variance of error term series; the Obs*R-squared probability is (0.48), which is greater than 5%, and thus we cannot reject the null hypothesis stating that the variances do not differ significantly from one another, and hence we conclude that the residuals do not suffer from heteroscedasticity.

- **Autocorrelation test between errors**

Table (6): Breusch-Godfrey Serial Correlation LM Test

F-statistic	1.208114	Prob. F(2,18)	0.3219
Obs*R-squared	3.313754	Prob. Chi-Square(2)	0.1907

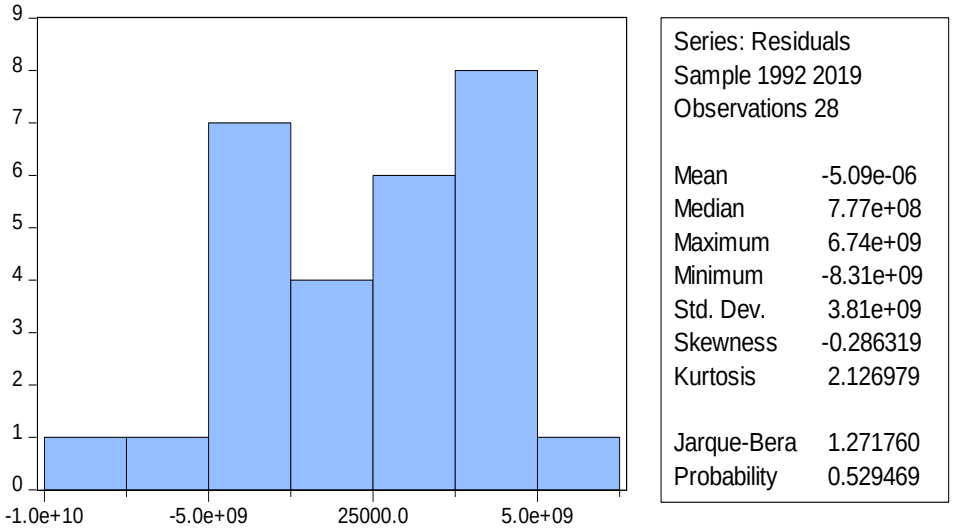
Source: Authors' computation using EViews 10 software.

The result of the Breusch-Godfrey Serial Correlation LM test shows that the calculated value of F (1.20) is less than the table value (0.32>0.05), reflecting that the calculated F is not significant. The calculated- Obs*R-squared is equal to (0.19) and greater than 5%, and thus we accept the null hypothesis stating that there is no sequential autocorrelation between errors, and the estimated model is free of the autocorrelation problem.

- **Normal distribution test for random errors**

Figure No.(5) shows the results of the normal distribution test for random errors, we find that the probability value associated with the Jarque-Bera statistic is 0.52, which is greater than 5%, and thus we cannot reject the null hypothesis, and it can be concluded that the residuals are normally distributed.

Fig (5): Normal distribution test for random errors

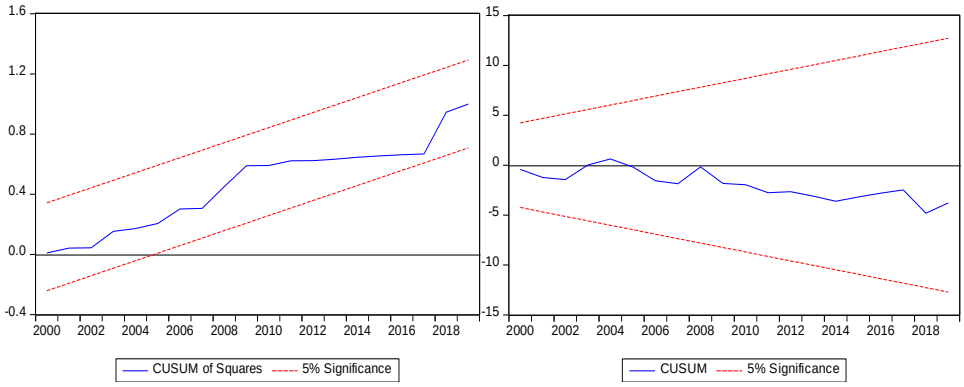


Source: Authors' computation using EViews 10 software.

3-6 stability test

The test of structural stability of the short- and long-term parameters is that the used data is free of any structural changes in the study, and the most appropriate tests are: the cumulative sum (CUSUM) and Cumulative Sum of Squares (CUSUM SQ) tests (BENTOUMI & GAIDI, 2020, pp. 68 - 69). The structural stability of the parameters is achieved if the graph of the two tests occur within the critical limits at a significance level of 5%, and the parameters are unstable if the graph of the two tests moves beyond the limits.

Fig (6): cusum and cusum of squares plots



Source: Authors' computation using EViews 10 software.

Figure 5 shows that the unrestricted error correction model is structurally stable over the study period, because the cusum and cusum of squares appear within the critical limits at a significance level of 5%; it is clear from these tests that there is stability and consistency in the model according to long-term and short-term results, and therefore there is no structural change in the used data over the study period.

Conclusion:

This research aims to conduct a standard analysis of the impact of public expenditures on GDP in Algeria during the period (1990-2019), using the ARDL approach; the main findings can be summarized as follows:

_ By analyzing the evolution of the variables, it was found that:

- ✓ Algeria's spending policy has seen high growth rates of public expenditures, reflecting Algeria's trend towards a Kenyan-style policy through adopting massive spending programmes aimed at reviving the national economy.
- ✓ An analysis of the evolution of the variables also showed the dependence of the Algerian economy on the hydrocarbon sector, which has become the most targeted sector in the national economy, because high expenditures and GDP rates are greatly linked to fuel price fluctuations, and it’s worthwhile to note that he hydrocarbons sector in Algeria continues to absorb the lion's share of foreign investments

_ After estimating the model using the ARDL approach, we observed that the model was statistically acceptable based on the following facts:

- ✓ Through the bounds test, it was found that there was a common integration relationship in the long term between the variables at unique level of integration.
- ✓ Based on the negative error correction coefficient (-0.48), it was found that the dependent variable takes two periods to reach a long-term balance; the results also show that 48% of the long-term balance is corrected each year.
- ✓ There is a significant negative relationship between GDP and EX in the short term, and a significant positive relation between OP and GDP in the short term.
- ✓ It has been confirmed that there is a long-term balanced relationship between PUBLIC EXPENDITURES and GDP, and thus the increase of one unit in public expenditures

leads to an increase of 8,721 units in GDP in the long term, and there is a significant posiive relationship between oil prices and GDP, and thus an increase of $1 in oil prices leads to an increase of 1.40 units in GDP in the long term, as shown by a non-significant relationship between FDI and long-term GDP.

- ✓ There is an insignificant relationship between FDI and long-term GDP.

_ Based on these findings, we can make the following recommendations:

- ✓ Maintaining the government's contribution through public expenditures by strengthening regulatory measures to avoid waste of funds, especially on investment in infrastructure, as well as by rethinking the priorities of spending on health, education and the fight against poverty because of their effective developmental outcomes.
- ✓ Oil shocks have demonstrated the budget's vulnerability to external because it relies heavily on hydrocarbon revenues, so it is necessary to move towards a policy of economic diversification by developing the non-oil sectors in order to reduce the contribution of the hydrocarbon sector to GDP and avoid the impact of oil shocks on the state budget.
- ✓ Providing an attractive business climate for FDI, especially in non-oil sectors, by simplifying tax structures and establishing appropriate policies to lure foreign investors to choose the other non-oil sectors.

Bibliography List:

1. - Abdelaziz, T., Nacer eddine, K., & Sarra, B. (2021). INFLUENCE OF INFLATION ON OUTPUT. The Cread Notebooks , 37 (02), p. 116.

2. - Abonaze, M. R., & Elnabawy, N. (2020). Using the ARDL bound testing approach to study the inflation. Economic consultant , 31 (03), p. 25.

3. - BENTOUMI, I., & GAIDI, K. (2020). Human capital and economic growth in Algeria: impact study (1990-2018). El-Bahith Review , 20 (01),pp. 68 - 69.

4. - GABOR, K., & ADAM, M. (2020). The long-term impact of public expenditures on GDP-growth. Society and Economy , 42 (4), pp. 403 -419.

5. - Hadji, Y. (2020). The Effect of Changes in Exchange Rates, Oil Prices and Interest Rates on. Journal of Economic Integration , 08 (03), p.419.

6. - Merim, M., & Djaber, B. (2019). Public Expenditure and Economic Growth in Algeria: An Analytical Study according toWanger's Law of Increasing Public Expenditure. Journal of Financial, Accounting and Managerial Studies , 06 (02), p. 226.

7. - Mubanga, M., Jane, M., Mutinta, C., & Notulu, S. (2019). Effects of Public Expenditure on Gross Domestic Product in Zambia from 1980 - 2017: An ARDL Methodology Approach. Journal of Economics and Behavioral Studies , 11 (02), pp. 103 - 111.

8. - Omar Mahmoud, A. –E. (2015). Causality Between Public Expenditure and GDP Growth In Palestine: An Econometric Analysis Of Wagner's Law. Journal of Economics and Sustainable Development , 06 (02), pp. 189 - 199.

9. - Seddiki, H., & Boucha, M. (2021). The Impact of the public spending structure's development on the growth of the individual domestic product in Algeria, an econometric

study. Journal of Financial, Accounting and Managerial studies(JFAMS) , 08 (01), pp. 485 - 503. (In Arabic).

10. - Sharaf El-Din, G. (2017). The relationship between government spending and GDP in Libya, an applied study using joint integration and causation during the period (1970-2012). This thesis was submitted as a completion of a master's degree . Faculty of Economics, Benghazi University,Libya. (In Arabic).

11. - Sheilla, N., & Nicholas M, O. (2019). THE IMPACT OF PUBLIC EXPENDITURE ON ECONOMIC GROWTH: A REVIEW OF INTERNATIONAL LITERATURE. Folia Oeconomica Stetinensia , 19 (02), pp.83-84.

12. - Younes, Z., Jon, J., Nora, L., Mohamed, T. (2021). Public Expenditure and Inclusive Growth . A Survey, IMF Working Paper Institute for Capacity and Development, WP/21/83 , p. 06.