The Impact of Economic Recovery Programs on Indicators of Economic Welfare in Algeria

-An econometric study using the ARDL model for the period 2000-2020

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Abstract:

   In light of the financial surpluses that it achieved as a result of the high oil prices, Algeria proceeded to generalize a long-run strategy through the application of an expansionary policy aimed at reviving investment dynamism in a way that would ensure the revival of macroeconomic indicators and work to raise the absorptive efficiency of the Algerian economy. Therefore, This Study aims to determine the short and long-run relationship between public expenditures and per capita gross domestic product (welfare index), during the period 2000-2020, using the ARDL model. The econometric study concluded that public expenditures have a positive impact on the per capita GDP only in the long run by 55%. In addition to, The estimated model has no econometric problems.

Keywords: public expenditures; Economic welfare; The per capita GDP; ARDL model.

JEL classification codes : F31, F21, C51.

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أثر برامج الانعاش الاقتصادي على مؤشرات الرفاهية الاقتصادية في الجزائر- دراسة قياسية باستخدام نموذج ARDL للفترة 2000-2020

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الملخص:

عمدت الجزائر في ظل البحبوحة المالية التي حققتها نتيجة ارتفاع أسعار النفط الى تعميم إستراتيجية بعيدة المدى من خلال تقصي سياسة توسعية تهدف الي بعث ديناميكية الاستثمار على النحو الكفيل بإنعاش المؤشرات الاقتصادية الكلية والعمل على رفع الكفاءة الاستيعابية للاقتصاد الجزائري. لذا، تهدف هذه الدراسة إلى تحديد العلاقة قصيرة وطويلة المدى بين الانفاق الحكومي ونصيب الفرد من الناتج الداخلي الخام (مؤشر الرفاهية) خلال الفترة 2000-2020، باستخدام نموذج ARDL، وخلصت الدراسة القياسية إلى أن الإنفاق العام له تأثير إيجابي على نصيب الفرد من الناتج المحلي الإجمالي فقط على المدى الطويل بنسبة 55%، والنموذج المقدر ليس به مشاكل في الاقتصاد القياسي.

الكلمات المفتاحية: إنفاق عام؛ رفاه اقتصادي؛ نصيب الفرد من GDP؛ نموذج ARDL.

رموز تصنيف JEL: F31, F21, C51.

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Introduction

Development programs, especially investment spending on equipment, are considered one of the most important spending tools, that contribute to achieving economic growth, which is the most important goal for countries to achieve economic balance and raise the level of welfare among members of society. Economic welfare is the abundance of goods and services that people are accustomed to exchanging for money, that is, the optimal use of available resources in order to achieve the maximum possible satisfaction of all goods and services for all members of society.

Therefore, Algeria adopted the Keynesian thought to improve the standard of living of individuals at all levels, whether economic or social, from the health and education sector to the entertainment and services sector, which was achieved compared to the years of the nineties. After following the various economic and social variables, promising changes were found, despite their weakness compared to the size of Expenditures and balances set by Algeria within the economic recovery plans since the year 2000.

Through this research paper, we will try to explain the relationship between government spending and per capita GDP, as an indicator of economic welfare in Algeria, through answering the following question:

♣ To what extent did government expenditures contribute to raising the per capita GDP in Algeria during the period 2000/2020?

Study hypothesis:

In order to answer the research problem, the following hypothesis was formulated**:**

"There is a response in GDP per capita to changes in government spending"

The Objectives and Importance of The Study:

Based on the importance of the goals that were entrusted to the economic recovery programs in Algeria over a period of 20 years, it has become necessary to assess the results achieved, especially with regard to economic and social welfare.

Study Methodology:

We will rely on the quantitative approach in order to measure the impact of government spending on the per capita GDP in Algeria in the long and short runs according to the ARDL model and using the **Eviews12**.

Literature Review:

Over the years different scholars have researched different areas that relate this study, some domestic and some foreign. In an attempt to establish whether the effect of public expenditures in per capita GDP has resulted in better outcomes. (Al-Sayegh, 2019)studied whether tax reforms are viable in Kuwait to create more government income from sources other than oil through examined the relationship between the changes in tax revenues, changes in oil revenue and changes in GDP in Kuwait using time series data from 1998 to 2015. The results of the tests find that the impact of changes in tax revenues on changes in the GDP of Kuwait is insignificant. Therefore, Kuwait's government could rationally implement tax reforms to have incremental sources of income other than oil revenue. Moreover, it is argued that the government might

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consider implementing broad-based consumption taxes and value-added taxes into the tax structure Kuwait, and to invest the revenues from those taxes in productive policies, to induce long run economic growth. In a comparative analysis, (Ibrahim, 2019)studied empirically the relationship between government spending and non-oil economic growth in the UAE for the last four decades by using the vector auto-regression (VAR) approach. The findings of the study suggest that the implementation of expansionary policy, through the intensification of current and development public expenditures, induces an increase in the non-oil economic growth during the subsequent periods of the government spending shock. Thus, the implementation of expansionary government spending stimulates the UAE economy, especially during recession periods. The study suggests that policymakers should concentrate their spending on the right projects, as well as on research and development. Moreover, they should channel their transfers and subsidies to the productive sectors, and they should ensure that higher productivity in public institutions is in conjunction with the rise in wages and salaries to achieve sustainable economic growth. (Al-Masaeed & Tsaregorodtsev, 2018) examined the impact of fiscal policy measured by (Government expenditure, Government revenues, internal public debt, external public debt) in addition to exports and inflation factors on the Jordanian GDP growth for the period 1990-2010. The study used multiple linear regression and least squares method (OLS) to test the study hypotheses. The study found that government expenditure, exports and government revenues have a positive and significant impact on the Jordanian GDP growth, and negative and significant impact on the Jordanian GDP growth.

Proving further empirical evidence on the impact of public revenues on economic growth, (Ali, Ali, & Dalmar, 2018) examined the effect of tax revenue and the economic growth of Kenya, from 1980 to 2007 by using the ordinary least square method. The results display that tax revenue has a positive significant effect on economic growth. And also, tax revenues can only appear its full potential on the economy if government can come up with fiscal laws and legislations and support the existing ones in line with macroeconomic objectives, which will check-mate tax offenders in order to minimize evasion, corruption, and tax avoidance. But as argued by (Symoom, 2018) that both government expenditure and tax revenue have no significant impact on real GDP growth in South Asian countries - Bangladesh, India, Pakistan, and Sri Lanka -, he examined the impact of fiscal policy on economic growth in four countries of South Asia. For reasons of data availability four of those countries during the period 1980 to 2016 by using the Error Correction Model (ECM) and Autoregressive Distributed Lag (ARDL) model on pooled cross-section time-series data, and on panel data that can be handled by employing fixed-effects and random-effects estimators. In conformity with existing studies.

In a study that examined the impact of government revenues and government expenditures on the economic growth in Romania over the period 1998q1 - 2014q1, (Rosoiu, 2015)used Granger causality test through cointegrated vector autoregression (VAR) methods to determine whether government revenues have or not a more influential role than government expenditures on controlling the economy. This is an important aspect to analyze because the state uses as a controlling economy instrument the fiscal policy. The result suggests that the shock into government revenue show strong volatility in the evolution of GDP and government expenditures. In the same vein. (Chibi, Benbouziane ,& Chekouri, 2014) This paper estimates the effects of fiscal policy on Algerian economic activity using a Markov Switching Vector Autoregressive (MSVAR) model, the results show small positive government spending and revenue multipliers in the short run in both regimes. In addition, fiscal policy shocks have a stronger impact in times of economic stress than in times of expansion, However, the impact of government spending is stronger than the impact of public revenue in recession periods

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Mechanisms of state intervention to achieve economic welfare

Many economists, with their different points of view, believe that government intervention is necessary, albeit at a minimum level, to achieve the economic and social welfare of the individual, and this is either through fiscal or monetary policy or other tools, all of this to satisfy the endless needs of society.

Providing basic goods and services:

It means goods and services that it is difficult for an individual to live without. Perhaps the most important of them are: defense, security, justice, education, health, infrastructure, environmental protection, and others. It requires the state to work hard to provide these basic goods and services, either directly through its efficient government institutions, or indirectly through the private sector, which provides goods and services in full or with government competition. For example, the state allows the establishment of private schools, private hospitals, etc.

The government should improve oversight by setting strict laws to protect individuals by providing these goods and services, whether through the government or the private sector, in order to provide social stability in society, which in turn calls for political stability and this would provide the appropriate ground for economic stability as a whole (Qadari, 2012, p. 14).

Redistribution of income and wealth:

The distribution of income is based on the contribution of each individual to the production process through his support for one or all of the elements of production, the differences in the incomes of individuals are the result of differences in the ownership of the elements of production, and this leads to the planting of conflicts and gaps, which calls for the inevitable intervention of the government in order to decide on the process of distributing incomes equitably in society, and the state relies on the process of distributing incomes equitably in society, which ensures the growth of the real average individual and the level of commodity and service consumption.

The government's efforts to promote justice are seen as being justified on the basis that the equitable distribution of income is viewed as a public good that brings many positives to a number of individuals, and through this, the redistribution of income can contribute to improving economic efficiency, which in turn reduces poverty and unemployment. Redistribution of incomes can take many ways through transfer payments such as pensions, unemployment benefit, social security, housing and free education (Al-Bandary, 2007, p. 95).

Directing economic resources towards the best use:

Purchasing power plays an important role in directing decisions to produce goods, which in turn is considered the main determinant of how economic resources are allocated, as if the bulk of aggregate demand is directed in favor of luxury goods, this indicates that the allocation of resources is for the benefit of the rich class only, and thus deprives the limited class Income from utilizing the aforementioned commodities.

This leads to a number of social, economic and political problems, and this does not preclude state intervention by reallocating resources in favor of goods that benefit the low-income and who represent the largest share of society, especially in developing and Arab countries, by providing aid to consumer goods makers by low-income people, or by reducing taxes on factory

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owners who produce consumer goods, or for the state to produce goods on its own, and other methods that allow the state to intervene to ensure the development of the industrial sectors (Qadari, 2012, p. 15), as was done by Southeast Asian countries, where they intervened in industrial policy in four ways (Al-Bandary, 2007, p. 95):

– protection of some industries in some sectors;

– Working to provide the knowledge side for all economic institutions by providing information related to the market, technology, education and training;

– reduce restrictions and bureaucracy;

– Reducing the volume of foreign direct investment.

Achieving economic stability:

After the global economic crisis of 1929, liberals see that the market economy is subject to a wave of fluctuations, especially the failed ones. Therefore, the state must intervene through fiscal and monetary policy to achieve satisfactory rates of economic stability.

Economic stability is intended to prevent the emergence of economic fluctuations, by achieving full employment in light of an economy suffering from inflation and deflation, in order to increase growth rates now and in the future, and in order for the state to achieve economic stability, the following objectives must be achieved (Jamea, 1987, p. 420):

1. Full Employment:

Full employment means; the operation of all the production elements available to the economy in the production process, which is the level of employment that verifies the optimal and efficient use of the labor force while allowing a normal rate of unemployment in the range of 05%, according to the agreement of economists.

According to the practical circumstances, it has become unreasonable to achieve full employment due to the economic cycles that it is going through. During periods of recession, output growth rates decline, and this leads to the layoff of a number of workers and thus unemployment rises. Thus, state intervention becomes necessary to provide job opportunities for the unemployed, or to increase government spending. To stimulate aggregate demand in order to raise output growth rates and thus increase the demand for the labor component or work to reduce tax rates or through monetary policy tools or the establishment of some bodies that contribute to reducing unemployment and achieving economic stability.

2. Price Stability:

Price stability means that; the economy does not suffer from inflation or deflation, as there is no significant change in the general level of prices for goods, services and economic resources. Therefore, the government can intervene through the methods available to it, such as fiscal and monetary policy tools, as it can restore the economy to its stability through the efficiency of the central bank, whether the economy is in a state of inflation or economic stagnation.

For example, with regard to fiscal policy tools, the government, through tax policy, restricts aggregate demand to reduce inflation rates, or through spending policy that contributes to encouraging aggregate demand and supporting the wheel of the economy in cases of deflation.

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3. Balance of Payments Equilibrium:

Which is one of the most important goals that all countries seek to achieve. The balance of payments balance means that; the side of the creditor is equal with the debtor in the account of current transactions, transfers and capital account within the interest of the national economy, and that exports exceed imports, and that capital entry into the country increases, and the exit of capital is reduced. Capital from the country, and if the opposite happened and imports increased and capital fled abroad, here the state must intervene, because if it does not intervene, there will be a decrease in the country's currency compared to foreign currencies, and thus prices rise at home as a result of the rise in imports, and thus the emergence of imported inflation Investment rates are declining at home as a result of intense competition from abroad.

Thus, state intervention is necessary and inevitable by encouraging exports through monetary and fiscal policy tools, by providing subsidies to exporters, restricting imports by raising taxes on imports or taking strict measures in order to prevent capital flight abroad, or by activating the stock market. Finance, and all this in order to achieve a balance in the balance of payments that ensures economic stability.

Economic development programs in Algeria 2000-2019

Algeria has adopted a new policy through which it has developed an economic recovery program that works to strengthen monetary stability and stimulate the growth and investment process.

Program economic recovery (2001-2004)

In conjunction with the change in laws, Algeria adopted in this period a program of economic recovery, so that the tasks of the state became to ensure a suitable environment for investment, and in implementation of the government's program, it promotes economic activities throughout the national territory, especially in the most disadvantaged areas. The program aimed to achieve well-studied goals, the most important of which are growth rates ranging between 5% and 6%, supporting commercial and agricultural institutions and activities, strengthening public facilities in the field of potable water, transportation and basic facilities, improving living conditions, local development and developing human resources, a financial envelope of 07 billion$, equivalent to 525 billion dinars, was allocated to this program (Ben El-Din, 2010, p. 141). The objectives of the program are as follows (Shaibi & chekouri, 2008, p. 18):

– conclusion Operations in progress;

– Activating aggregate demand by supporting value-added activities;

– Creating jobs;

– Creating and implementing the basic structures by reviving economic activities and covering the necessary needs of the population.

Supplementary Program to Support Growth (2005-2009)

After the economic improvement resulting from the application of the economic recovery program, those in charge of the economic policy in Algeria were deeply convinced of the need to continue using the various tools of the economic recovery policy, Thus, the growth support program is considered a complement to the economic recovery support program. The growth support program aims to enhance and sustain the growth rates that the economy has known at

these levels, as well as to avoid many of the negatives that characterized its predecessor. As well as being a medium-term program that would give more stability to the Algerian economy. The program has clear objectives as follows (The report of the Ministry of Finance, 2005, p. 15):

− Work to raise growth rates to limits that exceed what was achieved in the previous period;

− Working on adopting the most effective ways to eradicate poverty, this is done by reducing the unemployment rate and improving the standard of living of individuals and their living conditions;

− Work to achieve regional balance between the various regions of the country, especially the rural ones affected by terrorism.

Despite the positive impact of the economic growth support program on employment and employment levels Except The industrial sector, which is the main sector capable of providing real and permanent job opportunities, did not sufficiently contribute to raising the levels of employment in view of the structural and financing problems that the sector suffers from.

Five-year program (2010-2014)

A cabinet meeting was held under the chairmanship of the President of the Republic, Abdelaziz Bouteflika, and issued Effect This is the statement of the five-year program (2010-2014). This program falls within the dynamic of national reconstruction that was launched ten years ago with the Economic Recovery Support Program that was launched in 2001 according to the resources that were available, and this dynamic continued with the Growth Support Program (2005-2009). Which is also supported by special programs that have been monitored for the benefit of the states of the high plateaus and states of the south.

The public investment program that was established for the period between 2010 and 2014 requires expenditures of 286 billion dollars, which is equivalent to 21.214 billion dinars, and it includes two parts:

− Completion of the major projects being implemented, especially in the railway and road sectors. Water is estimated at 9700 billion DA, which is equivalent to 130 billion dollars;

− Launching new projects worth 11534 billion DA, equivalent to 156 billion dollars.

We also note that this program devotes more than 40% of its resources to improving human development, and the public investment program allocates nearly 40% of its resources to continue developing basic grass-roots enterprises and improving public service. As for encouraging job creation, it benefits from 350 billion DA from the five-programmed.

Growth Consolidation Program (2015-2019)

An amount of 22,100 billion dinars, equivalent to 280 billion dollars, was allocated to finance various development projects for the growth consolidation program, while the government stipulated the necessity of reflecting this on the purchasing power of the citizen, It called on the ministers of all sectors to purify their programs, in parallel with the preparation of the Ministry of Finance a report that includes an assessment of the impact of loans on imports and employment. When presenting this program, a set of goals were outlined, the most important of which are (the interests of the prime minister, 2015):

– Giving priority to improving the living conditions of the population in the sectors of housing, education, training, health, and connecting homes to water, electricity and gas networks...etc.;
– Diversifying the national economy, developing exports outside hydrocarbons, and creating jobs.

METHODS AND MATERIALS:

Model Specification and Description of the Data

The estimable model could be expressed as follows in equation 1; for examining the impact of government spending on the per capita GDP in Algeria.

$$LPerGDP_t = f(LEXP_t) \ldots\ldots\ldots\ldots\ (1)$$

$LPerGDP_t$ is Logarithm of per capita GDP; https://www.mfdgi.gov.dz/index.php/ar/com-smartslider3/2014-03-24-14-21-50/lois-de-finances/1781-2011-2015

$LEXP_t$ is Logarithm of public expenditures;
https://www.bank-of-algeria.dz/html/bulletin_statistique_AR.htm

ARDL Model Estimation

The ARDL modeling approach was originally introduced by Pesaran and Shin (1999) and later extended Pesaran et al. (2001). The ARDL co-integration approach has numerous advantages in comparison with other co-integration methods. Unlike other co-integration techniques, the ARDL does not impose a restrictive assumption that all the variables under study must be integrated of the same order. In other words, the ARDL approach can be applied regardless of whether the underlying regressors are integrated of order one [I(1)], order zero [I(0)] or fractionally integrated. Secondly, while other co-integration techniques are sensitive to the size of the sample, the ARDL test is suitable even if the sample size is small. Thirdly, the ARDL technique generally provides unbiased estimates of the long-run model and valid t-statistics even when some of the regressors are endogenous (Odhiambo, 2009, p. 219). Assumption of ARDL model:

– All variables are stationary at level;

– All variables are stationary at first difference;

– All variables are stationary at level while few stationary at first difference;

– Data must be normally distributed;

– Data must be free from HSK;

– Data must be free from autocorrelation;

The ARDL model used in this study can be expressed as follows in equation 2:

$$\Delta LPerGDP_t = \beta_0 + \sum_{i=1}^{p} \beta_1 \Delta LPerGDP_{t-i} + \sum_{t=0}^{q} \beta_2 \Delta LEXP_{t-i} + \alpha_1 LPerGDP_{t-1} + \alpha_2 LEXP_{t-1} + \varepsilon_t$$

Δ: is the first difference operator;

p, q, z: are the lagged values of the dependent and independent variables to control for higher-order correlation;

$\beta_0, \beta_1, \beta_2$ ....: are coefficients correspond to the long-run dynamic relationship.re coefficients of short-run dynamics;

$\alpha_1, \alpha_2, \alpha_3$ ....: are coefficients correspond to the long-run dynamic relationship;

RESULTS AND DISCUSSION:

Unit Root Test

To test the stationarity on differenced variables, we use the Phillips-Perron test, which is presented in table 1. The result shows that after differencing in variables once, all variables were integrated on the first difference. That means all variables were confirmed to be stationary.

Table N°1
Phillips-Perron Unit Root Test

UNIT ROOT TEST RESULTS TABLE (PP)
Null Hypothesis: the variable has a unit root

At Level		LPERGDP	LEXP
With Constant	t-Statistic	-2.0568	-2.7359
	Prob.	*0.2625*	*0.0856*
		n0	*
With Constant & Trend	t-Statistic	-0.5540	1.5092
	Prob.	*0.9707*	*0.9999*
		n0	n0
Without Constant & Trend	t-Statistic	2.9851	3.2634
	Prob.	*0.9983*	*0.9991*
		n0	n0
At First Difference		d(LPERG)	d(LEXP)
With Constant	t-Statistic	-3.5594	-3.4307
	Prob.	*0.0175*	*0.0227*
		**	**
With Constant & Trend	t-Statistic	-5.9764	-5.7540
	Prob.	*0.0006*	*0.0010*
		***	***
Without Constant & Trend	t-Statistic	-2.4391	-2.5896
	Prob.	*0.0178*	*0.0127*
		**	**

Notes:
a: (*)Significant at the 10%; (**)Significant at the 5%; (***) Significant at the 1% and (no) Not Significant
b: Lag Length based on SIC
c: Probability based on MacKinnon (1996) one-sided p-values.

This Result is The Out-Put of Program Has Developed By:
Dr. Imadeddin AlMosabbeh
College of Business and Economics
Qassim University-KSA

Source: EViews 12

Optimum Lag Selection

To select the number of lags required in the co-integration test, we use the Akaike Information Criterion (AIC) as shown in the following Figure 1. The results of AIC showed that the model (1,0) was the optimal lag lengths.

Figure N° 2
Results of Akaike Information Criteria
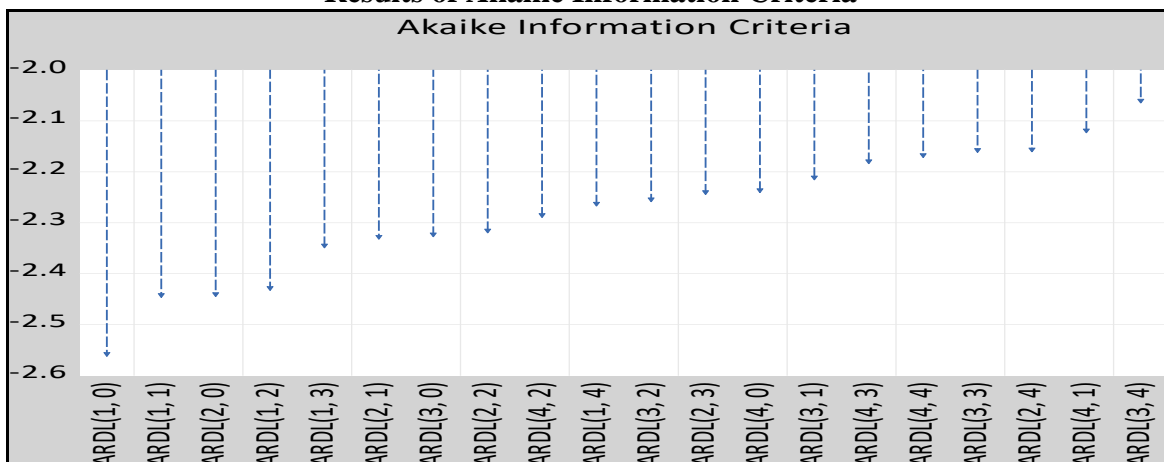
Source: EViews 12

F-Bound Tests

The results reported in Table 2 show that the F-statistic is greater than the upper critical bound at all level of significance and K =2, which means that the null hypothesis is rejected and confirms the existence of a long-run relationship between variables.

Table N°2
The F-bound tests

| F-Bounds Test		Null Hypothesis: No levels relationship		
Test Statistic	Value	Signif.	I(0)	I(1)
		Asymptotic: n=1000		
F-statistic	6.342989	10%	3.02	3.51
k	1	5%	3.62	4.16
		2.5%	4.18	4.79
		1%	4.94	5.58
Actual Sample Size	20	Finite Sample: n=30		
		10%	3.303	3.797
		5%	4.09	4.663
		1%	6.027	6.76

Source: EViews 12

Residual Diagnostics:

We should check the robustness of the optimal model by using the Residual Diagnostics and Stability Diagnostics Before estimating the ARDL model (1.0) in Long-run Coefficients and Error Correction Regression test.

1.The actual, fitted and residuals Graph

Through The results of Figure 2, we observing the approximation of the fitted values of the actual values for variables, this result indicates the quality of the estimated model, for that it is reliable to interpret and analyze the results.

Figure N° 2
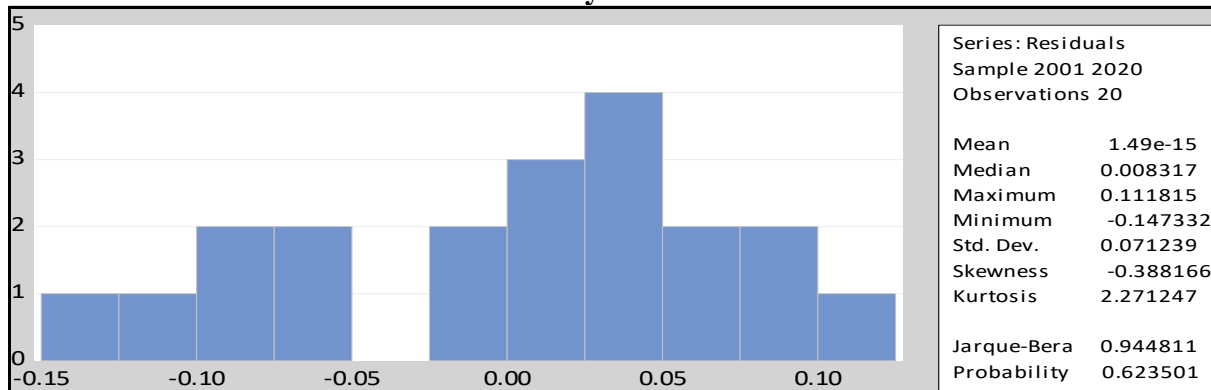**The actual, fitted and residuals Graph**
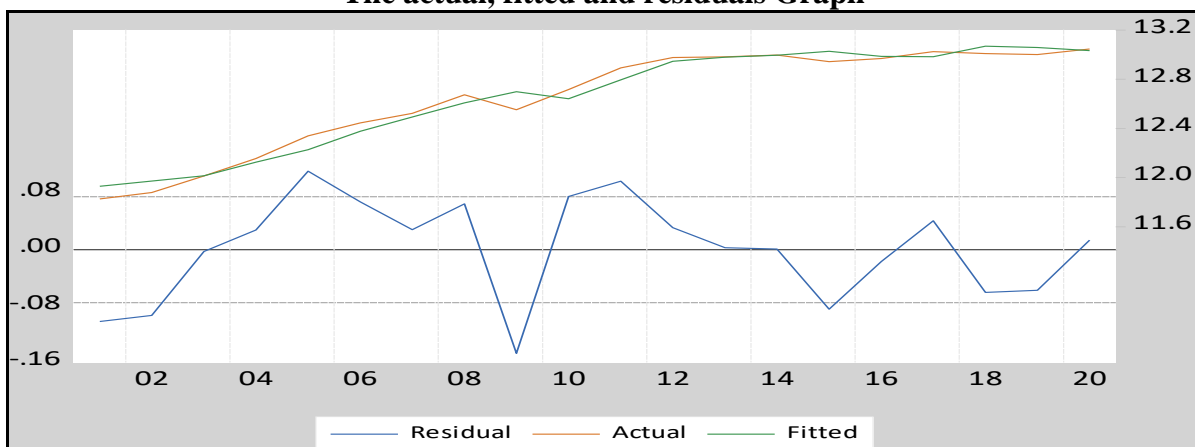
Source: EViews 12

2.Histogram and Normality Test

The result of the test was insignificant ($\alpha > 0.05$) and the value of J-B = 0.94 was less than $x^2 = 5.99$. This means accepting the null hypothesis, and residuals are subject to normally distributed residuals. As shown in the following Figure 3.

Figure N° 3
Normality Test Result

Series: Residuals	
Sample 2001 2020	
Observations 20	
Mean	1.49e-15
Median	0.008317
Maximum	0.111815
Minimum	-0.147332
Std. Dev.	0.071239
Skewness	-0.388166
Kurtosis	2.271247
Jarque-Bera	0.944811
Probability	0.623501

Source: EViews 12

3.Serial Correlation LM Test

For testing serial correlation, we use Autocorrelation, Breusch-Godfrey correlation LM test as shown in the following Table 3. According to the LM test, the Prob chi-square is greater than 0.05 and therefore we accept the null hypothesis there is no autocorrelation.

Table N°3
Serial correlation LM test

Breusch-Godfrey Serial Correlation LM Test:			
Null hypothesis: No serial correlation at up to 2 lags			
F-statistic	0.355445	Prob. F(2,15)	0.7066
Obs*R-squared	0.904965	Prob. Chi-Square(2)	0.6360
Test Equation:			
Dependent Variable: RESID			
Method: ARDL			
Date: 01/26/22 Time: 12:19			
Sample: 2001 2020			
Included observations: 20			
Presample missing value lagged residuals set to zero.			

Source: EViews 12

4.Heteroskedasticity Test

Through The results of Table 4, the f-statistic is insignificant, prob F is greater than 0.05, therefore accepting the null hypothesis (the variance of error terms is constant).

Table N°4
Table 4. Heteroskedasticity test

Heteroskedasticity Test: Breusch-Pagan-Godfrey			
Null hypothesis: Homoskedasticity			
F-statistic	0.911655	Prob. F(2,17)	0.4206
Obs*R-squared	1.937290	Prob. Chi-Square(2)	0.3796
Scaled explained SS	0.889677	Prob. Chi-Square(2)	0.6409
Test Equation:			
Dependent Variable: RESID^2			
Method: Least Squares			
Date: 01/26/22 Time: 12:19			
Sample: 2001 2020			
Included observations: 20			

Source: EViews 12

5.Stability Diagnostics:

Through The results of Figure 4, we note all the plots of statistics CUSUM and CUSUMSQ are inside the critical bounds at 5% level of significance, which means that all the coefficients in the error correction model are constant, indicate that our ARDL model is stable.

Figure N° 4
Cusum Test and Cusum of Square Test
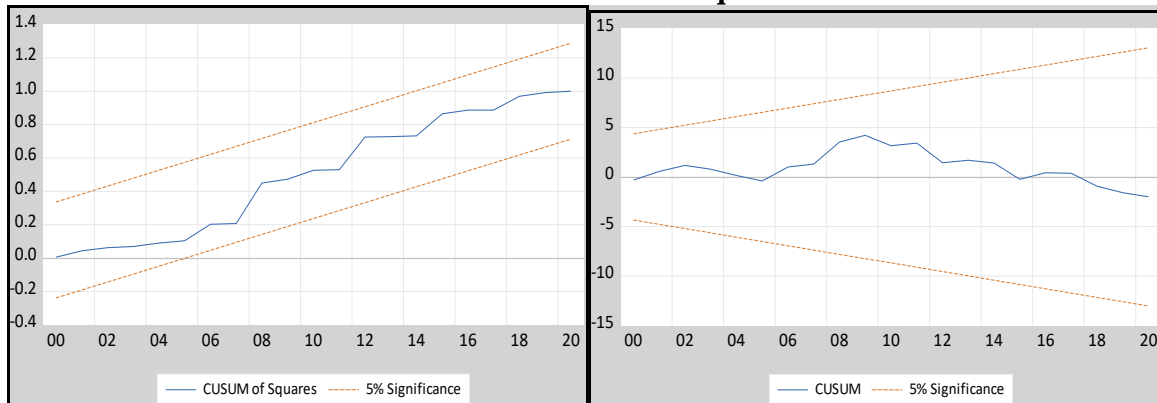
Source: EViews 12

ARDL Error Correction Regression Test

appendix 01 explains that There is no effect of government spending on the per capita GDP, which is confirmed by some previous studies that confirmed that the impact of public expenditures on economic variables is in the long run. Because it depends on the implementation of macroeconomic policies with long-run goals.

The results also showed; a dynamic relationship between government spending and per capita GDP in Algeria, and this is due to; This is due to the estimated error of the negative sign and the statistical significance and its value was (CointEq(-1)=-0.4232), which measures the proportion of imbalance in the dependent variable that can be corrected From one time period to another at a rate of 42.32%, and the negative sign supports the existence of a long-run equilibrium relationship between the variables.

Estimated Long Run Coefficients

appendix 02 explains the presence of a positive and statistically significant effect of government spending on the per capita **GDP** in the long run at a level of significance of 5%. As government spending increases by 1%, the per capita **GDP** will increase by 0.55%. Which confirms the importance of spending policy in raising the rates of economic welfare of the individual through the equitable distribution of wealth among members of society, and raising the purchasing power that allows the individual to meet his endless needs. which is what the Algerian government tried to achieve through development programs that began since the year 2000, but due to the irrational management of wealth, and in light of fluctuations in oil prices, the purchasing power of the Algerian citizen is still very weak compared to the available resources.

Conclusion:

Although Algeria adopted Great efforts for the economic and social development of the country Achieving economic and social welfare for members of society; However, this collides with the achieved results and the effectiveness of expenditures, especially in light of the deterioration in oil prices globally, which has had a significant impact on public expenditures, investments and projects underway. Achievement, Algeria embarked on deep reforms through fiscal policy tools such as increasing taxes and some fees, reducing some social transfers, reducing government spending and rationalizing it towards productive investments and other tools and solutions, which contributed to the increase in the gross domestic product, which reflected positively on its per capita share.

This was confirmed by the econometric study, where we found that the per capita gross domestic product responded weakly to changes in government spending in the long-run only, but in the short-run there is no response due to the policy approach.

References

Jamea, A. (1987). *Economic Theory.* egypt: Dar Al-Nahda Al-Arabiya.

Al-Bandary, K. (2007). *The Economic and Total Effects of Fiscal Policy in Egypt, PhD thesis in Economics.* egypt: Faculty of Commerce, Helwan University.

Ali, A., Ali, A., & Dalmar, M. (2018). THE IMPACT OF TAX REVENUES ON ECONOMIC GROWTH: A TIME SERIES EVIDENCE FROM KENYA. *Academic Research International*, pp. 163-170.

Al-Masaeed, A., & Tsaregorodtsev, E. (2018). The Impact of Fiscal Policy on the Economic Growth of Jordan. *International Journal of Economics and Finance*, pp. 145-161.

Ben El-Din, M. (2010). *The Role of Monetary Policy in Achieving Economic Stability The Case of Algeria, 1990-2009, Master's thesis.* algeria: Faculty of Economics and Management, University of Algiers 03.

Ibrahim, C. (2019). GOVERNMENT SPENDING AND NON-OIL ECONOMIC GROWTH IN THE UAE. *Economics and Business*, pp. 82-93.

Odhiambo, N. M. (2009). Energy consumption and economic growth nexus in Tanzania: An ARDL bound testing approach. *Energy Policy, 37*.

Qadari, A. (2012). *Effectiveness of Public Expenditures in Achieving Social Welfare, Master's thesis.* algeria: Faculty of Economics and Management, University of Tiaret.

Rosoiu, I. (2015). The impact of the government revenues and expenditures on the economic growth. *Procedia Economics and Finance*, pp. 526-533.

Shaibi, A.-R., & chekouri, M. (2008). Unemployment in Algeria, . *The First International Conference on the Unemployment Crisis in the Arab Countries, 17-18 March 2008*, (p. 18). Egypt.

Symoom, T. (2018). *The Impact of Fiscal Policy on Economic Growth: Empirical Evidence from Four South Asian Countries.* United States: Masters Theses, Eastern Illinois University.

the interests of the prime minister. (2015). *The report of the Prime Minister before the National Assembly on the 2015 Finance Law and the Five-Year Program 2015-2019.* algeria.

The report of the Ministry of Finance. (2005). *the growth support program 2005-2009.* algeria.

Appendices:

Appendix N°1
Error Correction Regression test

ARDL Error Correction Regression
Dependent Variable: D(LPERGDP)
Selected Model: ARDL(1, 0)
Case 2: Restricted Constant and No Trend
Date: 01/26/22   Time: 12:19
Sample: 2000 2020
Included observations: 20

ECM Regression
Case 2: Restricted Constant and No Trend

Variable	Coefficient	Std. Error	t-Statistic	Prob.
CointEq(-1)*	-0.423266	0.091781	-4.611688	0.0002

R-squared	0.251878	Mean dependent var	0.061429
Adjusted R-squared	0.251878	S.D. dependent var	0.082363
S.E. of regression	0.071239	Akaike info criterion	-2.396834
Sum squared resid	0.096426	Schwarz criterion	-2.347047
Log likelihood	24.96834	Hannan-Quinn criter.	-2.387115
Durbin-Watson stat	1.581039		

Source: EViews 12

Appendix N°2
Long Run Coefficients Test

ARDL Long Run Form and Bounds Test
Dependent Variable: D(LPERGDP)
Selected Model: ARDL(1, 0)
Case 2: Restricted Constant and No Trend
Date: 01/26/22   Time: 12:18
Sample: 2000 2020
Included observations: 20

Conditional Error Correction Regression

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	3.413735	1.914020	1.783541	0.0924
LPERGDP(-1)*	-0.423266	0.273170	-1.549458	0.1397
LEXP**	0.236552	0.186054	1.271411	0.2207

 * p-value incompatible with t-Bounds distribution.
** Variable interpreted as Z = Z(-1) + D(Z).

Levels Equation
Case 2: Restricted Constant and No Trend

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LEXP	0.558873	0.097537	5.729836	0.0000
C	8.065229	0.888770	9.074592	0.0000

EC = LPERGDP - (0.5589*LEXP + 8.0652)

Source: EViews 12