
Impact of Public Spending on Employment Rate in Algeria during the Period 1991-2022

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Abstract:

This study aims to investigate the relationship between public spending and employment in Algeria during the period 1991-2022. Using the Autoregressive Distributed Lag (ARDL) method, the study estimates the dynamic relationship between public spending, population growth, economic growth, and employment in the short and long run. Our empirical results found a significant negative relationship between population growth and employment in the short run and a significant positive relationship between population growth and employment in the long run. The study found also no significant effect of either public spending or economic growth on employment rates. This result suggests that public spending is not effective in employment policy.

Keywords: Public Spending; Employment Rates; ARDL Model

Jel Classification Codes: G31, E24, H50, C22

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1. Introduction :

Economic development is a major goal for every country. To achieve this goal, countries adopt a number of economic and financial policies. Achieving balance in the labor market is one of the main pillars of economic development. Therefore, these policies must include achieving this balance. One of the primary financial policies through which the government can influence the country's economic variables, including the equilibrium in the labor market, is public spending. This is accomplished by allocating funds from the government to projects that result in genuine job opportunities.

In Algeria, the economy is considered a rentier economy, with public spending linked to oil and gas revenues. The economy has gone through crises caused by the decline in global oil prices. In times of high oil prices, Algeria has adopted an expansionary fiscal policy, particularly in terms of fighting unemployment and creating jobs through the Economic Recovery Support Program and the Complementary Program to Support Economic Growth.

Based on the above, the research problem can be stated in the following main question:

What is the impact of public spending on employment in Algeria for the period from 1991 to 2022 in the short and long term?

The research problem requires the following sub-question to be addressed and analyzed:

- Is there a statistically significant relationship between public spending and employment in Algeria during the period (1991-2022) in the short and long term?

1.1. Hypotheses: To answer the sub-question, the following sub-hypotheses are proposed:

- There is a statistically significant relationship between public spending and employment in Algeria during the period (1991-2022) in the short and long term.
- There is a statistically significant relationship between economic growth and employment in Algeria during the period (1991-2022) in the short and long term.
- There is a statistically significant relationship between population growth and employment in Algeria during the period (1991-2022) in the short and long term.

1.2. Study Objectives: The study aims to achieve a number of objectives, including:

- Exploring the theoretical concepts related to public spending and employment;
- Understanding the role of public spending in employment;
- Attempting to model the relationship between public spending and employment.

1.4. Literature Review

- ❖ **Nawal Ben Khaledi and Latifa Ben Youb (2023):** "The Impact of Public Spending on Employment Rates in Algeria: An Empirical Study over the Period 1990-2019," *Journal of Economic Studies*, Vol. 23, No. 01. This study aims to measure the impact of public spending on employment rates in Algeria. To achieve this goal, the authors analyzed the relationship between the employment variable as a dependent variable and public spending as an independent variable. The authors also used the common integration and vector autoregression (VAR) model. The results of the study showed that there is a positive and significant relationship between public spending and employment rates in the short term. This means that an increase in public spending is associated with an increase in employment rates. However, the study also found that this relationship is not statistically significant in the long term. This means that the impact of public spending on employment rates is temporary.
- ❖ **Bilal Boutbila, Mohamed Amine Boumediene (2021):** "Impact of Government Spending on Employment in the Maghreb Countries for the Period 1999-2018." *Journal of Notebooks*, Vol. 23, No. 01. This study aimed to investigate the relationship between government spending and employment rates in the five Maghreb countries for the period 1990-2018. Employment rates are the dependent variable, while government spending, population size, and gross domestic product are the explanatory variables. The study is based on a panel data set. The study found that there is a positive correlation between government spending and employment rates in the Maghreb countries. This means that as government spending increases, employment rates also increase. The study found that the explanatory power of government spending on employment rates is high, at 98.75%. This means that government spending is a significant factor in explaining employment rates, which is consistent with economic theory.
- ❖ **Zakaria Jerfi, et al. (2019):** "The impact of public spending on employment in Maghreb countries for the period 1999-2018," *Journal of Financial, Accounting and Administrative Studies*, Vol. 06, No. 04. This study aimed to identify the short- and long-term relationship between public spending as an independent variable, and the labor market as a dependent variable during the period 1990-2019 using the autoregressive distributed lag model (ARDL), to detect the existence of a long-term equilibrium relationship between total employment and public spending. The results of the study showed that there is a positive and statistically significant relationship between public spending and employment in both the short and long term. This means that an increase in public spending is associated with an increase in employment. The study also found that the relationship between public spending and employment is stronger in the long term than in the short term.

2. Theoretical framework

2.1 Public spending in Algeria during the period 1991-2022

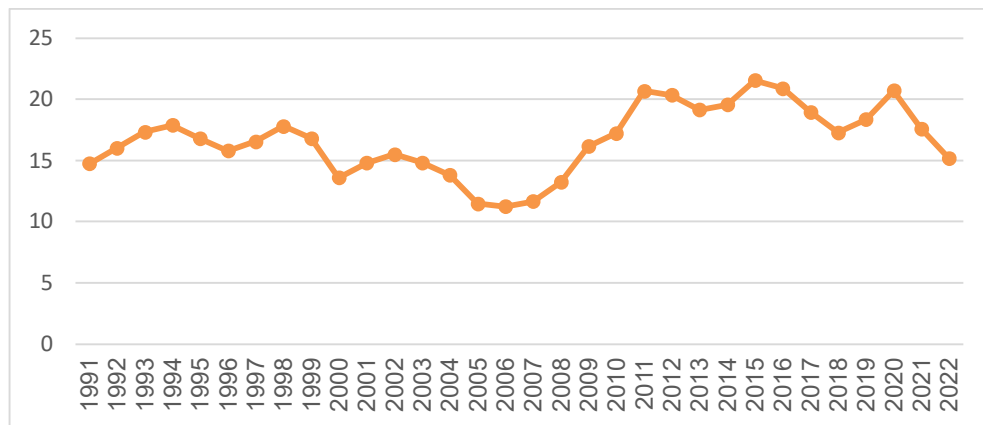
The debate over public spending is still ongoing due to the great diversity in the concept of public needs and how to meet them, which is affected by many factors, including the political, economic, social, and financial systems. Public needs are characterized by their comprehensiveness as they aim to achieve social justice by meeting the needs of all individuals with a certain amount of public spending to purchase or produce goods and services. Or distribute income. The following defines public spending as:

A sum of money spent by a public entity for the purpose of satisfying a public need. This definition identified three basic pillars of public spending (Becharef & Kandouci, 2020):

- Expenses are a sum of money to obtain the goods and services needed by the state to manage its facilities;
- Public spending is issued by the state or one of its public bodies and institutions in the general economy;
- The purpose of the expenses is to meet the general needs.

The reality of public spending in Algeria will be analyzed as follows.

Fig N°1: The evolution of public spending in Algeria during the period 1991-2022



Unit: Final consumption expenditure of the general government (% of GDP)

Source: Based on World Bank data

The increase in public spending since the beginning of the third millennium is due to the expansionary policy that Algeria adopted following the return of high oil prices. Algeria exploited this financial abundance to stimulate the national economy by adopting a Keynesian economic policy that aims primarily to modernize and expand public services, improve the living standards of society, and develop human resources and infrastructure. As a result, the rate of public spending rose from 13.85% in 2000 to 19.13% in 2012. Public spending during the period (2013-2019) witnessed fluctuations in its value, as it decreased in 2014 due to the decline in oil prices, only to rise again in 2020 (Lseba & Eddoub, 2022). The decline in the rate of spending during the period 2020-2022 is due to the COVID-19 health crisis, which led to a decline in oil prices and a recession in various economic sectors.

This shift in the composition of public spending reflects the government's commitment to improving the welfare of its citizens and promoting economic development.

2.2 The evolution of employment rates in Algeria during the period 1991-2022

Employment is the organization of full employment and the optimal use of human resources. The International Labor Organization Convention No. 112 of 1964 defined employment in a broad perspective based on the concept of economic development and the optimal exploitation of the human element in economic growth and on guaranteeing work for everyone who wants it, that it is productive, that he chooses this work freely and the possibility of acquiring the necessary qualifications to practice work to use these qualifications. (Karmine S. B., 2018)

Fig N° 2: Evolution of employment rates in Algeria during the period 1991-2022



The figure above shows the evolution of employment rates in Algeria during the period 1991-2022. It shows that the employment rate in Algeria has fluctuated between periods of decline and periods of growth, with periods of stability and stagnation in other years. The transition from the socialist system to a market economy in Algeria in the early 1990s led to a number of reforms that resulted in a decline in employment rates. This was due to the privatization of many state-owned enterprises, which led to layoffs of employees and workers. The reforms also coincided with a period of political instability, known as the Black Decade, which led to a decline in investment, both foreign and domestic. The impact of the oil crisis, which plunged Algeria into an economic crisis and forced the government to borrow money, also contributed to the decline in employment rates during this period.

In 2000, the employment rate began to rise again following a change in political leadership. The government adopted an expansionary policy, which was supported by high oil prices. The employment rate reached its peak in 2013. However, it declined again in 2014 due to the decline in oil prices, which affected the government's spending policy. The situation continued until 2019 (Ben Khaldi & Ben Youb, 2023). After the change in political leadership in 2019, the new president enacted laws to support job creation, including

programs to promote integration or reintegration into the labor market.

2.3. The impact of public spending on employment

The country's spending on public goods and services requires the hiring of employees and workers, or the payment of cash to suppliers in exchange for the purchase of goods or equipment, or to contractors for the execution of public works. These suppliers and contractors then employ a number of employees to complete the contracts they have signed with the state.

Public spending does not stop at facing unemployment but has a multiplier effect in this field. The distribution of new income to some citizens as a direct result of public spending leads to an increase in consumption, which leads to the employment of new employees in businesses that produce consumer goods. This is due to the increase in the production of these goods to meet the increase in demand for them. In addition, the increase in the production of these goods leads to an increase in the demand for capital goods, such as machinery and equipment, which opens up new areas for the employment of the unemployed (Murad, 2009).

4. Results and discussion

Put the results obtained here, first by summary and analyzed data and results obtained in relation In the applied aspect of this study, the impact of public spending on employment in Algeria during the period 1991-2022 is measured using the Eviews 10 program.

Based on economic theory and previous studies on the topic of the impact of public spending on employment, the following variables were selected:

- **Dependent variable:** Total employment rate;
- **Explanatory variables:** Public spending, Total population, Economic growth.

The data were obtained from the World Bank database. To measure the impact of public spending on employment in Algeria during the period 1991-2022, the model is structured as follows:

$$EMP = f(G, POP, GDP)$$

Where:

- EMP is the total employment rate to population, 15 years and over (%);
- G is the public spending expressed as the final consumption expenditure of the general government (% of GDP);
- POP is the population in the age group 15-64 (% of total);
- GDP is the economic growth in the age group 15-64 (% of total).

❖ **Stationary of Time Series:** Before specifying the study model, we first determine the stationary of the time series through a graph and unit root tests, as is customary, which allow us to determine the degree of

integration of the series and whether it is stationary or not. For this purpose, we use the augmented Dickey-Fuller test.

- Unit root test:

Table N°1: Dickey-Fuller test results

UNIT ROOT TEST TABLE (ADF)					
<u>At Level</u>					
With Con...	t-Statistic	EMP -1.2580	G -1.7411	POP -4.4640	PIB -4.1365
	Prob.	0.6360	0.4015	0.0014	0.0030
		n0	n0	***	***
With Con...	t-Statistic	-2.1574	-2.2755	-3.9491	-4.1070
	Prob.	0.4954	0.4336	0.0255	0.0151
		n0	n0	**	**
Without C...	t-Statistic	0.0662	-0.2324	1.4709	-1.2508
	Prob.	0.6965	0.5944	0.9616	0.1892
		n0	n0	n0	n0
<u>At First Difference</u>					
With Con...	t-Statistic	d(EMP) -5.7581	d(G) -3.9506	d(POP) -3.3537	d(PIB) -8.9050
	Prob.	0.0000	0.0050	0.0214	0.0000
		***	***	**	***
With Con...	t-Statistic	-5.6554	-3.9016	-4.6422	-8.7507
	Prob.	0.0004	0.0245	0.0046	0.0000
		***	**	***	***
Without C...	t-Statistic	-5.8382	-4.0352	-2.8786	-9.0526
	Prob.	0.0000	0.0002	0.0056	0.0000
		***	***	***	***

Notes: (*) Significant at the 10%; (**) Significant at the 5%; (***) Significant at the 1%. and (no) Not Significant
*Mackinnon (1996) one-sided p-values.

This Result is The Out-Put of Program Has Developed By:
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Source: Based on Eviews10 output

The results of the Dickey-Fuller test showed that all the variables in the model are not stationary at level $I(0)$ at the 5% significance level. When taking the first differences, these series become stationary of the first order $I(1)$ at the 5% significance level. Therefore, the ARDL method can be applied. The ARDL methodology is a statistical technique that can be used to estimate a model for a set of non-stationary time series.

❖ **Autoregressive Distributed Lag (ARDL) model:** To measure the impact of public spending on employment in Algeria during the period 1991-2022, the autoregressive distributed lag (ARDL) method developed by Pesaran et al. (2001) was used. The ARDL model has estimated if the series is stationary at the level, stationary at the first difference, or a mixture of both (Persaran, Shin, & Smith, 2001), and the series should not be stationary at the second difference. This methodology aims to identify the dynamic relationship between the study variables in the short and long runs (Lamzihri, 2021). According to the following equation (Menegaki, 2019):

$$\Delta Y_t = a_0 + a_{1t} + \sum_{i=1}^p a_{2i} \Delta Y_{t-i} + \sum_{i=0}^{q_1} a_{3i} \Delta X_{1t-i} + a_4 \Delta X_{2t-i} + a_5 X_{t-1} + \varepsilon_{1t} \dots \dots (1)$$

$$\Delta X_t = \beta_0 + \beta_{1t} + \sum_{i=1}^p \beta_{2i} \Delta X_{t-i} + \sum_{i=0}^{q_1} a_{3i} \Delta X_{1t-i} + a_4 \Delta Y_{t-i} + a_5 X_{t-1} + \varepsilon_{2t} \dots \dots (2)$$

Where:

- C: Constant term, which is the value of the dependent variable when all the explanatory variables are zero;

- Δ : First-order differences operator, which takes the difference between two consecutive observations of a variable;
- $q_1, q_2, \dots, q_k$: Lag lengths of the explanatory variables $x_1, x_2, \dots, x_k$, respectively;
- P : Lag of the dependent variable Y ;
- a_{2i}, a_{3i} : Short-run coefficients, which measure the impact of the explanatory variables on the dependent variable in the short run;
- a_{4i}, a_{5i} : Long-run coefficients, which measure the impact of the explanatory variables on the dependent variable in the long run;
- ε_t : Random error term, which represents the unobserved factors that affect the dependent variable.

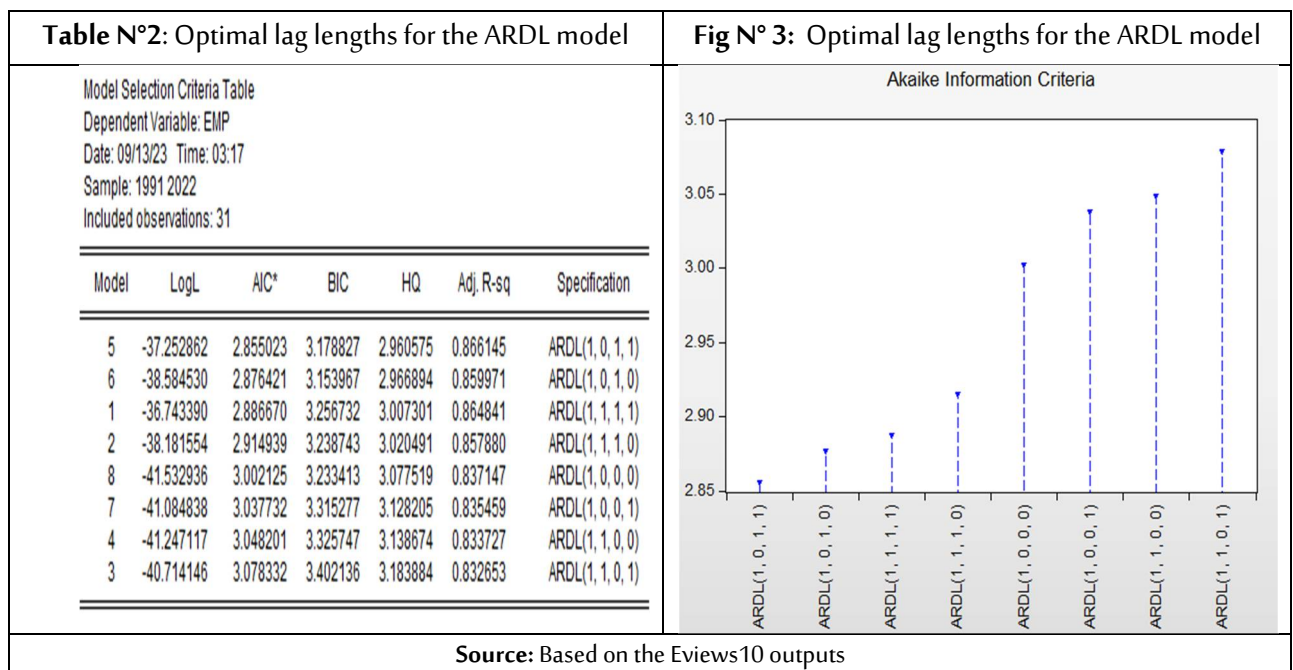
The results of the ARDL estimation will show the impact of public spending on employment in the short and long run. The short-run coefficients will show how public spending affects employment in the current period and the next few periods. The long-run coefficients will show the equilibrium relationship between public spending and employment.

Therefore, the relationship between public spending and employment in the short and long run can be explained by the following equation:

$$\text{Emp} = c + \sum_{i=1}^p \beta_{1i} \text{Emp}_{t-i} + \sum_{i=1}^{q_1} \beta_{2i} G_{t-i} + \sum_{i=1}^{q_2} \beta_{3i} \text{POP}_{t-i} + \sum_{i=1}^{q_3} \beta_{4i} \text{Pib}_{t-i} + \alpha_1 G_{t-1} + \alpha_2 \text{POP}_{t-1} + \alpha_3 \text{Pib}_{t-1} + \varepsilon_t$$

2-1 Determining lag lengths:

To determine the optimal lag length, the Akaike information criterion (AIC) was used, which gives the lowest statistical value (Sebahi & Gana, 2022). Therefore, ARDL(1,0,1) is the optimal model, with a value of AIC of 2.907, as shown in the following results:



2-2 Estimating the ARDL model:

Tab N°3: ARDL model estimation results

Dependent Variable: EMP				
Method: ARDL				
Date: 09/13/23 Time: 03:19				
Sample (adjusted): 1992 2022				
Included observations: 31 after adjustments				
Maximum dependent lags: 1 (Automatic selection)				
Model selection method: Akaike info criterion (AIC)				
Dynamic regressors (1 lag, automatic): G POP PIB				
Fixed regressors: C				
Number of models evaluated: 8				
Selected Model: ARDL(1, 0, 1, 1)				
Variable	Coefficient	Std. Error	t-Statistic	Prob.*
EMP(-1)	0.464187	0.170064	2.729482	0.0117
G	-0.138066	0.085309	-1.618424	0.1186
POP	-1.758853	0.740683	-2.374636	0.0259
POP(-1)	1.882182	0.725464	2.594454	0.0159
PIB	0.037288	0.090156	0.413594	0.6828
PIB(-1)	0.126787	0.086405	1.467346	0.1553
C	13.36710	6.419430	2.082287	0.0481
R-squared	0.892916	Mean dependent var		35.01884
Adjusted R-squared	0.866145	S.D. dependent var		2.499852
S.E. of regression	0.914602	Akaike info criterion		2.855023
Sum squared resid	20.07591	Schwarz criterion		3.178827
Log likelihood	-37.25286	Hannan-Quinn criter.		2.960575
F-statistic	33.35379	Durbin-Watson stat		2.149900
Prob(F-statistic)	0.000000			
*Note: p-values and any subsequent tests do not account for model selection.				

Source: Based on the Eviews10 outputs

The results of Table 3 show the following:

- **Student's t-test:** The results of the Student's t-test show that the population growth rate and the constant term are significant at the 5% level (because the probability value Prob is less than 0.05). The rest of the variables are not significant, with the note that the significant variable does not affect employment immediately, but after a one-time delay, meaning that its effect does not appear until one year later.
- **Explanatory power:** The value of the coefficient of determination is estimated at $R^2=0.8828$, which means that all the public expenditure G, the population growth rate, and economic growth explain 88.28% of the changes in the employment rate. The remaining percentage is variables and other factors that are not included in the model.
- **Overall significance:** The calculated Fisher value F-statistic=48.98660 is significant ($P=0.000$ is less than 5%).

2-3 Results of the bounds test approach to co-integration:

In this equation, the co-integration relationship is tested by two hypotheses (Taiba, Karaachira, & Bouguesri, 2021):

- **Null hypothesis:** No co-integration relationship

$$H_0: \beta_1 + \beta_2 + \beta_3 + \beta_4 = 0$$

- **Alternative hypothesis:** Co-integration relationship exists

$$H_1: \beta_1 \neq \beta_2 \neq \beta_3 \neq \beta_4 \neq 0$$

This test is performed by comparing the Fisher statistic with the critical values proposed by Pesaran and Al 2001. If:

- Fupper critical < Fcal, then the null hypothesis is rejected and the alternative hypothesis is accepted, i.e., a co-integration relationship exists.
- Fupper critical > Fcal, then the null hypothesis is accepted, i.e., the co-integration relationship does not exist.
- Fupper value > Fcal > Flower critical, then the test result is inconclusive (uncertainty region);

Tab N°4: Results of the bounds test (The Bound Test)

F-Bounds Test		Null Hypothesis: No levels relationship		
Test Statistic	Value	Signif.	I(0)	I(1)
F-statistic	4.604107	10%	2.37	3.2
k	3	5%	2.79	3.67
		2.5%	3.15	4.08
		1%	3.65	4.66

Source: Based on the Eviews10 outputs

The results of Table (3) show that the calculated Fisher statistic of 5.205634 F= is greater than the upper bound I(1) of the critical values at statistical significance levels of 2.5%, 5%, and 10%. Therefore, the null hypothesis is rejected, i.e., there is a long-run equilibrium relationship between public spending, population growth, economic growth, and employment.

2-4 Diagnostic tests for the model:

To ensure that the estimated model is free from any economic problems, the following tests were performed:

- Autocorrelation test

Tab N°5: Results of autocorrelation tests

Breusch-Godfrey Serial Correlation LM Test:			
F-statistic	0.266110	Prob. F(2,22)	0.7688
Obs*R-squared	0.732232	Prob. Chi-Square(2)	0.6934

Source: Based on the Eviews10 outputs

The results of Table (5) of the Breusch-Godfrey Serial Correlation LM Test, which reveals the autocorrelation problem, show that the p-value of the calculated Fisher statistic (F-statistic) is greater than the significance level of 5%. Therefore, we accept the null hypothesis, and the estimated model does not have a problem with autocorrelation between the residuals.

- Test of heteroscedasticity:

Tab N° 6: Results of heteroscedasticity tests

Heteroskedasticity Test: ARCH			
F-statistic	0.002349	Prob. F(1,28)	0.9617
Obs*R-squared	0.002517	Prob. Chi-Square(1)	0.9600

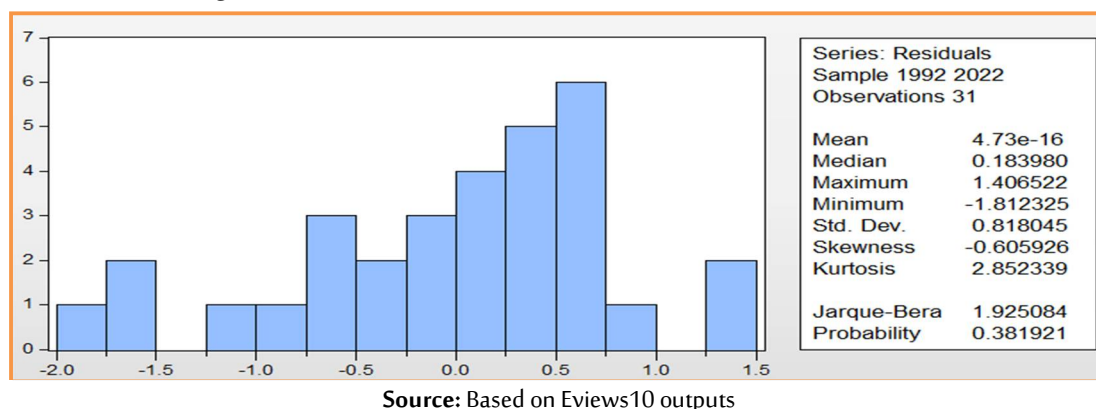
Source: Based on the Eviews10 outputs

The results of Table (6) of the ARCH: Heteroskedasticity Test, which examines the stability of error variances, show that the p-value of the Fisher F-statistic is greater than the significance level of 5%. Therefore, we

accept the null hypothesis, which confirms that the estimated model does not have a problem with the instability of error variances.

- Test of the distribution of the residuals

Fig N° 3: Results of the normal distribution test for residuals



Source: Based on Eviews10 outputs

The results of Figure (3) of the residuals distribution test show that the Jarque-Bera statistical probabilities are greater than the significance level of 5%, and therefore the residuals follow the normal distribution.

3- Estimation of the error correction model and the short and long-term relationship according to the ARDL model:

After ensuring that there is a long-term relationship between public expenditure, population and employment through the bounds test, the error correction model and the short and long-term relationship can be estimated.

3-1 Error correction coefficient and short-term relationship

Tab N°7: Estimation of the error correction model and the short-term relationship

ARDL Error Correction Regression
Dependent Variable: D(EMP)
Selected Model: ARDL(1, 0, 1, 1)
Case 2: Restricted Constant and No Trend
Date: 09/13/23 Time: 03:28
Sample: 1991 2022
Included observations: 31

ECM Regression Case 2: Restricted Constant and No Trend				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(POP)	-1.758853	0.452551	-3.886530	0.0007
D(PIB)	0.037288	0.056467	0.660342	0.5153
CointEq(-1)*	-0.535813	0.103391	-5.182402	0.0000
R-squared	0.500616	Mean dependent var	0.031968	
Adjusted R-squared	0.464946	S.D. dependent var	1.157603	
S.E. of regression	0.846757	Akaike info criterion	2.596959	
Sum squared resid	20.07591	Schwarz criterion	2.735732	
Log likelihood	-37.25286	Hannan-Quinn criter.	2.642195	
Durbin-Watson stat	2.149900			
* p-value incompatible with t-Bounds distribution.				

Source: Based on Eviews10 outputs

- **Error correction coefficient:** The value of this coefficient is $\text{CointEq}(-1) = (0.5358)$, which is statistically significant ($P = 0.00000$) at the 5% level and with a negative sign (-), which confirms the existence of a cointegration relationship between the variables in the model. The value of the error correction limit

parameter (-0.5358) indicates that the employment rate is normalized towards its equilibrium value by 0.5358%, i.e., when the employment rate deviates or imbalances from the equilibrium value in period (t-1), this deviation will be corrected in period (t) by 0.5358%.

- **Short-term relationship:** The results of estimating the short-term relationship show that:
 - The p-value for population is 0.0007, which is less than 5%, so it is statistically significant. The negative sign indicates that there is an inverse relationship between population and employment in the short run. A one-unit increase in population leads to a decrease in employment by 1.75;
 - There is no statistically significant relationship between economic growth and employment.

3-2 The long-term relationship

Tab N° 8: Estimation of a long-term relationship

Levels Equation Case 2: Restricted Constant and No Trend				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
G	-0.257676	0.167507	-1.538306	0.1371
POP	0.230172	0.132516	1.736933	0.0952
PIB	0.306216	0.285596	1.072201	0.2943
C	24.94731	9.645003	2.586553	0.0162
EC = EMP - (-0.2577*G + 0.2302*POP + 0.3062*PIB + 24.9473)				

Source: Based on Eviews10 outputs

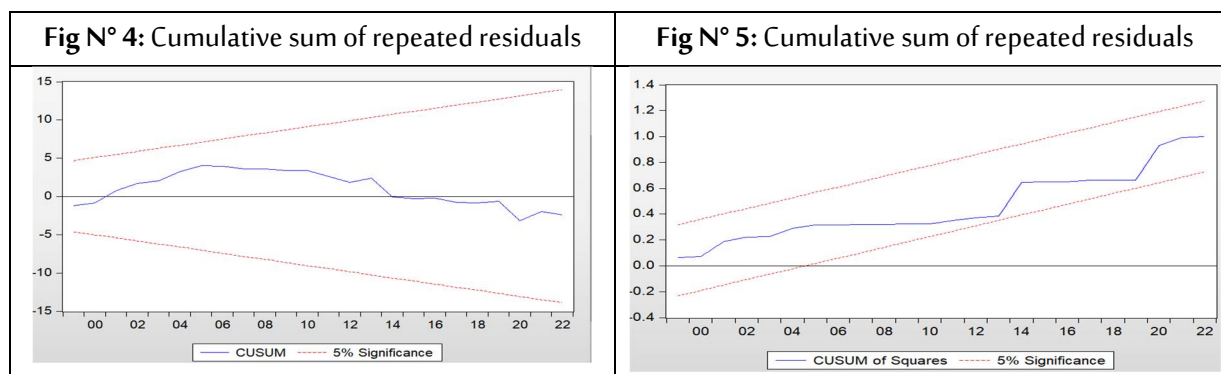
The long-term relationship can be expressed by the following formula extracted from the table:

$$EC = emp - (-0.25 * G + 0.23 * pop + 0.30 * PIB + 24.94)$$

- There is no statistically significant relationship between public expenditure and employment;
- There is no statistically significant relationship between economic growth and employment;
- The p-value for the population is 0.003, which is less than the significance level of 0.05, so it is statistically significant. The negative sign indicates that there is a positive relationship between population and employment in the long run. An increase in population by one unit leads to an increase in employment by 0.33.

4- Stationary of the model:

To test the stationary of the model, a test for the cumulative sum of repeated residuals (CUSUM) and a test for the cumulative sum of repeated squares of residuals (CUSUM of Squares) was conducted. These tests were proposed by Dublin Brown and Evans, and are considered two of the most important tests in this field. They show two important things: whether there is any structural change in the data and the degree of stability and consistency of the long-term parameters with the short-term parameters. Structural stationary of the estimated parameters for the error correction formula of the distributed lag autoregressive model is achieved if the graphical representation of these tests falls within the critical boundaries at the 5% significance level (Hassaine & Sahed, 2020).



Source: Based on the Eviews10 outputs

The two lines in the figure are the CUSUM and CUSUM of Squares statistics. The two lines stay within the confidence interval at the 5% significance level, which indicates that there is no evidence of structural breaks. Concluding that the model is structurally stable during the study period. This means that the model is reliable and can be used to make predictions about the future.

5. Conclusion :

This study aimed to measure the impact of public expenditure on employment in Algeria during the period 1991-2022 using the autoregressive distributed lag model. As a first step, the stationarity of the study variables was examined, and then the hypotheses of the existence of a long-term equilibrium relationship between public expenditure, population growth, economic growth, and employment were tested. The error correction model was estimated, and the relationship in the short term between the study variables was estimated. The results of the study can be summarized as follows:

- All the study variables are stable at the first difference;
- The results of estimating the short-term relationship indicate that the p-value for the population is less than 5%, and therefore it is statistically significant. The negative sign indicates that there is an inverse relationship between population and employment in the short term. An increase of one unit in population leads to a decrease in the employment rate by 1.75 in the short term. This is because the working-age group (15-60 years old) does not change in this period.
- The results of the long-term equilibrium relationship also indicate that:
- Contrary to economic theory, public expenditure and economic expansion have no effect on employment. Despite the efforts made by the Algerian government to create jobs, it faces structural imbalances. This is due to several reasons, including the fact that the Algerian economy depends basically on oil revenues. When the share of oil revenue increases, public expenditure increases, which leads to the import of needs without planning, wage increases, and economic instability due to sudden fluctuations in oil prices in the global markets. Any decline in oil prices leads to a decline in public expenditure, which in turn disrupts the implementation of development programs and the creation of real added value in sectors outside the oil

sector. In addition, there are huge financial resources that are not linked to production, i.e., the dominance of the public sector and the marginalization of the private sector. All these factors contribute to increasing unemployment.

- The results of estimating the short-term relationship indicate that the p-value for the population is less than 5%, and therefore it is statistically significant. The positive sign indicates that there is a positive relationship between population and employment in the long term. An increase of one unit in population leads to an increase in the employment rate by 0.33. This is because the working-age group (15-60 years old) changes in this period.
- The results of the error correction coefficient show that if employment deviates from the equilibrium value in period (t-1), it will be corrected by 0.53% in period (t).

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