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THE IMPACT OF CURRENCY RATE VOLATILITY ON ALGERIA'S POVERTY RATES (2004 AND 2022)

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Abstract:

The influence of exchange rates on poverty levels is significant. We will improve Algeria's production system by implementing an economic strategy that aims to keep the local currency exchange rate stable relative to the dollar. This will assist in preventing hyperinflation and bring about economic stability. As a result, it will boost local exports to the global market, which will boost domestic output and lower unemployment rates. It will also target poverty by hiring as many unemployed people as possible in organizations, businesses, and manufacturing facilities across a range of specialties. The study sought to determine how exchange rates affected Algeria's poverty levels. It came to several conclusions, the most notable of which is that economic policy had succeeded in stabilizing the exchange rate relative to other currencies, particularly the dollar, and generating economic growth that helped lower Algeria's poverty levels. In order to reduce the phenomenon of poverty in Algeria, the research suggests that economic policies aimed at increasing production capacities and protecting the value of the local currency from deterioration be put in place. The government agencies in charge of putting these policies into effect must also set and specify a time frame for implementation, find a way to ensure that the implementation and follow-up of implementation are effective, and work to create a database of people who are below the poverty line in order to create job opportunities for the unemployed workforce.

Keywords: Exchange rate, Poverty, volatility, poverty rates

Note: This article extracted from a master's thesis

INTRODUCTION:

Exchange rates are one of the important monetary variables that have a major role in their impact on poverty levels in Algeria, whether this impact is direct or indirect through other economic variables, because they represent the value at which international currencies are exchanged, any imbalances that occur in national exchange rates against the US dollar quickly reflect this imbalance on the standard of living of individuals. Poverty represents the low standard of living in society, which has taken up a large space in successive economic policies in order to find effective solutions to control poverty levels, which are considered a global problem as a result of successive global economic shocks. Algeria worked to coordinate between the Central Bank of Algeria and the Ministry of Finance to address the financial problems that appeared to have affected the decline in the value of the local currency against the dollar, as well as the significant increase in poverty levels, which led to the development of economic policies in order to get out of the poverty cycle and control government exchange rates from collapsing. These policies were implemented during the study period and achieved normal results, but global economic shocks hindered the implementation of government programs in some years because they affected the Algerian economy, which represents a reactionary economy that relies heavily on oil, and thus the general level of prices and poverty levels increased.

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RESEARCH PROBLEM:

The research problem revolves around the following fundamental question: Do exchange rate changes have effective roles on poverty levels in Algeria, and what is the role of exchange rate changes on poverty levels in Algeria during the study period.

RESEARCH HYPOTHESIS:

The research was based on the hypothesis that exchange rate changes have a positive and negative role on poverty levels in Algeria.

IMPORTANCE OF THE RESEARCH: -

The importance of this research is evident in reaching knowledge of the extent of the impact of exchange rates on poverty levels and setting policies and objectives by the state in order to maintain the stability of local currency prices in the future and activate them in a way that leads to reducing the phenomenon of poverty.

RESEARCH OBJECTIVES:

- Highlighting the theoretical aspect of exchange rate changes on poverty levels.
- Analyzing exchange rate developments on poverty levels in Algeria.
- Measuring the path of the role of the exchange rate on poverty levels in Algeria during the study period.

CONCEPT OF EXCHANGE RATE AND POVERTY:

Concept of exchange rate:

These two operations symbolize a commodity, and we consider the other operation to be the price of the commodity. It is evident that exchanging one currency for another necessitates the existence of a currency ratio to each other. The exchange rate is the quantity of one currency that must be paid for in order to obtain units of another currency (Osama Mohamed Al-Ghulin and Magdy Mohamed Shehab, 1997). is the quantity of units of a nation's local currency that may be traded for units of another nation's currency. The foreign exchange rate, or the point where the supply and demand curves for foreign currencies intersect, is established when the quantity demanded equals the units of the local currency (Mahmoud Younis and Abdel Moneim Mubarak, Introduction to Money, Banking, and Financial Prices, 2003). The influence of exchange rates on poverty levels is significant. We will improve Algeria's production system by implementing an economic strategy that aims to keep the local currency exchange rate stable relative to the dollar. This will assist in preventing hyperinflation and bring about economic stability. As a result, it will boost local exports to the global market, which will boost domestic output and lower unemployment rates. It will also target poverty by hiring as many unemployed people as possible in organizations, businesses, and manufacturing facilities across a range of specialties. The study sought to determine how exchange rates affected Algeria's poverty levels. It came to several conclusions, the most notable of which is that economic policy had succeeded in stabilizing the exchange rate relative to other currencies, particularly the dollar, and generating economic growth that helped lower Algeria's poverty levels. In order to reduce the phenomenon of poverty in Algeria, the research suggests that economic policies aimed at increasing production capacities and protecting the value of the local currency from deterioration be put in place. The government agencies in charge of putting these policies into effect must also set and specify a time frame for implementation, find a way to ensure that the implementation and follow-up of implementation are effective, and work to create a database of people who are below the poverty line in order to create job opportunities for the unemployed workforce.

Importance of the exchange rate

The importance of the exchange rate is represented in the following:

- Its use as a measure of the competitive strength of the country's currency at the international level.
- The exchange rate is a tool that links an open economy with the rest of the world's economies through knowledge of international prices and costs.
- It can be used to obtain foreign currencies by exchanging currencies.
- It has great importance in various international transactions in terms of marketing methods and facilitating the procedures necessary to complete these various international economic transactions.
- The exchange rate plays a special importance in the local economy through its impact on prices and wages.

Concept of poverty

Poverty is defined as the poverty living without enjoying the freedom of work and choice that the rich take for granted, and often need sufficient health care, food, shelter, nutrition and education, which prevents them from enjoying the life that every human being desires, and they are exposed to diseases, natural disasters and economic disturbances, and are often subjected to mistreatment by state and societal institutions, and do not have the ability and power to influence important decisions that affect their lives) (The World Bank, Development Report Launching the Attack on the Poverty , 2000).

Poverty indicators: -

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Poverty indicators refer to the collection of information about poverty and its impact on the social classes. The most important of these indicators are (Nabil Jaafar Abdel Reda and Nadwa Hilal Joda , 2016):

Income indicators

The external indicators that are used at the individual or family level or at the level of the total value expressed by the gross domestic product as one of the indicators expressing its ability to obtain consumer goods and services through which we can determine the position of the individual or family below or above the poverty line, in addition to that, they are considered illustrative indicators of the level of relative welfare in the economy and the variation in welfare levels between them and other economies, but there are some problems or difficulties when using these indicators, the most important of which is assuming income fairly or the result in the economy, while this distribution differs at the level of individuals to give different levels of welfare between individuals, but at the level of the family, it faces theoretical and scientific difficulties due to the difference in families in their size and composition in terms of gender and age, and this affects the level of spending positively or negatively (Salem Tawfiq Al-Najafi and Ahmed Fathi Abdul Majeed , 2008).

Poverty Rate Index

This index can be used to measure the relative importance of the poverty in society. It is measured for families as equal to the percentage of poverty families or for individuals as equal to the percentage of poverty individuals. The percentage of poverty families is usually less than that of poverty individuals because poverty families are larger on average than non-poverty families. We find that:

Percentage of poverty individuals = (Number of individuals below the poverty line / Total population) * 100

Percentage of poverty families = (Number of families below the poverty line / Total number of families) * 100

Poverty Gap Index

We use it to quantify the overall disparity between the poverty line and the poverty level's income. Since it represents the total amounts required to bring the consumption levels of the poor up to the poverty line, it is computed in monetary units. We compute this index as a percentage of the total value of a population's consumption when it reaches the poverty line. Assuming their consumption level is (y1, y2), we can use the following mathematical formula to determine the poverty gap. These two operations symbolize a commodity, and we consider the other operation to be the price of that commodity. It is evident that exchanging one currency for another necessitates the existence of a currency ratio to each other. The exchange rate is the quantity of one currency that must be paid for in order to obtain units of another currency (Osama Mohamed Al-Ghulin and Magdy Mohamed Shehab, 1997). It is the quantity of units of a nation's local currency that may be traded for units of another nation's currency. The foreign exchange rate, or the point where the supply and demand curves for foreign currencies intersect, is established when the quantity demanded equals the units of the local currency (Mahmoud Younis and Abdel Moneim Mubarak, Introduction to Money, Banking, and Financial Prices, 2003). The influence of exchange rates on poverty levels is significant. We will improve Algeria's production system by implementing an economic strategy that aims to keep the local currency exchange rate stable relative to the dollar. This will assist in preventing hyperinflation and bring about economic stability. As a result, it will boost local exports to the global market, which will boost domestic output and lower unemployment rates. It will also target poverty by hiring as many unemployed people as possible in organizations, businesses, and manufacturing facilities across a range of specialties. The study sought to determine how exchange rates affected Algeria's poverty levels. It came to several conclusions, the most notable of which is that economic policy had succeeded in stabilizing the exchange rate relative to other currencies, particularly the dollar, and generating economic growth that helped lower Algeria's poverty levels. In order to reduce the phenomenon of poverty in Algeria, the research suggests that economic policies aimed at increasing production capacities and protecting the value of the local currency from deterioration be put in place. The government agencies in charge of putting these policies into effect must also set and specify a time frame for implementation, find a way to ensure that the implementation and follow-up of implementation are effective, and work to create a database of people who are below the poverty line in order to create job opportunities for the unemployed workforce:

$$\mathrm{PG} = 1 \div n \sum (\mathrm{z} - \mathrm{yi} \div \mathrm{z}) \times 100$$

Where:
n: Population size
PG: Poverty gap
: Yi Income/consumption level of poverty groups
Z: Poverty line

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One of the key metrics for determining the income level of the poor and quantifying the poverty phenomena is the poverty gap index. Additionally, it illustrates the disparity between the poverty line and individual incomes; a small gap can be addressed more readily than a large one, which calls for strict policies and sensible plans because the poverty level in this group is below extreme poverty, though some people live in extreme poverty and deprivation (Qusay Abdul Fattah Raouf 2011).

Poverty Severity Index

It is an important indicator through which the percentage of inequality between the poverty themselves is measured. It represents the arithmetic mean of the sum of the squares of the relative poverty gaps for all the poverty. For this reason, it can be calculated. The mathematical formula for calculating the poverty severity index is:

$$\mathrm{Ps} = 1 \div n \sum (Z - Yi)^2 \times 100$$

Where
Yi : Income of the poverty whose income is below the poverty line
Ps : Severity of poverty
n : Number of population
Z : Poverty line

The need for the poverty severity index has increased because the poverty gap index does not take into account the changes that occur in the distribution of the income of the poverty, through the policy of transferring money from a person below the poverty line to a povertyer person. Here, this index will take into account this change that occurred in the distribution, unlike the poverty gap index, which does not include these changes (Shaima Osama Muhammad Salih , 2014).

The analytical framework for exchange rate changes on poverty levels in Algeria

Analysis of exchange rate changes in Algeria for the period (2004-2022)

Because it affects every facet of Algeria's economy, the exchange rate is one of the government's top priorities. The table that follows illustrates the evolution of the Algerian dinar's exchange rate change in relation to the US dollar throughout the 2004–2022 timeframe.

According to Table 1, the Algerian dinar's exchange rate versus the US dollar increased from 72.06 in 2004 to 72.64 in 2006, with a negative growth rate of -0.8%. The Algerian dinar's exchange rate versus the US dollar fell in 2008, reaching 64.58, however it grew at a negative pace of -6.7 percent. The increase in oil prices and foreign currency reserves contributed to the improvement in the Algerian dinar's exchange rate, strengthening Algeria's external financial situation and enhancing the dinar's exchange rate stability. 2010 saw a decrease in the Algerian dinar's exchange rate, which reached 74.39 dinars to the US dollar, with a 12.4% expansion rate. In addition to the euro zone crisis, which contributed to the oil industry's recession and the drop in oil prices on international markets, the global financial crisis had the biggest impact on the fluctuations in the Algerian dinar's exchange rate during the study period. In later years, the exchange rate declined once again, and this time it was because of the subprime mortgage crisis that struck the United States at the end of 2007 and had global ramifications. The Algerian dinar's value started to decline in 2015, and at a growth rate of 24.7%, the exchange rate reached 100.50 Algerian dinars to the US dollar. The Algerian dinar's exchange rate deteriorated further in 2022, reaching 135.57 versus the US dollar at a growth rate of 0.3%. The global crisis, the Covid pandemic, which emerged at the end of 2019, was the cause of this decline in the value of the Algerian dinar. Its effects were mirrored in the world economy, which led to a further decline in the value of the Algerian dinar's exchange rate against the US dollar.

Table (1) the exchange rate of the Algerian dinar against the US dollar during the period (2004_2022)
Unit: Million dinars

year	official exchange rate	% growth rate
2004	72.06	-
2005	73.27	1.6
2006	72.64	- 0.8
2007	69.29	- 4.6
2008	64.58	- 6.7

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2009	72.64	12.4
2010	74.39	2.4
2011	72.93	- 1.9
2012	77.53	6.3
2013	78.65	1.4
2014	80.56	2.4
2015	100.50	24.7
2016	109.50	8.9
2017	111.00	1.3
2018	110.97	- 0.02
2019	116.59	5.0
2020	126.75	8.7
2021	135.06	6.5
2022	135.57	0.3

Implications of Exchange Rate Changes on Poverty Levels in Algeria for the Period (2004-2022)

Exchange rate changes play a major role in their impact on poverty levels through their rise and fall against the dollar, as the Algerian dinar is linked to the US dollar. This can be illustrated through the following table, which shows exchange rate changes and poverty rates.

The Algerian economic authorities worked to improve and develop the value of the Algerian dinar against the dollar during the study period (2004-2022), but they were faced with many shocks and crises that prevented the development of the growth and value of the Algerian dinar, the impact of which was indirectly reflected on poverty rates through the decline in the purchasing power of the Algerian citizen.

We note from Table (2), which shows the changes in the Algerian dinar exchange rate and its impact on poverty rates in 2004, where the Algerian dinar exchange rate recorded (72.0653) against the dollar and the poverty rate was (6.8%), while in (2008) the Algerian dinar exchange rate witnessed a sharp decline to reach (64.5684) dinars, which was accompanied by a significant increase in poverty rates to reach (11.1%), and the Algerian dinar exchange rate witnessed a significant increase in (2015) where it reached (100.4641) dinars and poverty rates witnessed a significant decrease in this year where it recorded (5.7%). As for (2020), the exchange rates recorded a significant increase where it reached (125.8288) dinars and poverty rates recorded a significant increase (15.5%) due to the Corona pandemic and the accompanying difficult economic conditions that affected the standard of living of citizens, especially the poverty classes with limited income. In the year (2022), the exchange rate of the Algerian dinar rose against the dollar to record (142,0032) dinars, accompanied by a gradual decrease in poverty rates to reach (11.3%). This is what Algerian economic policies seek to achieve by controlling poverty rates and trying to reduce them to acceptable levels.

Table (2) Algerian dinar exchange rate and poverty levels

Year	Algerian dinar exchange rate against the us dollar	% Poverty rate in Algeria
	1	2
2004	72,0653	6.8
2005	73,3627	5.7
2006	72,6464	5.6
2007	69,3656	5.6
2008	64,5684	11.1
2009	72,6462	9.8
2010	74,4041	6.2
2011	72,8537	5.5

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2012	77,5519	5.5
2013	79,3809	5.03
2014	80,5606	5.3
2015	100,4641	5.7
2016	100,4654	6.3
2017	110,9610	7
2018	116,6169	6.2
2019	119,3606	5.5
2020	125,8288	15.5
2021	135,1064	11.2
2022	142,0032	11.3

Reference: Column No. (1) The researcher worked based on the exchange rate data in Table No. (1). Column No. (2) The researcher worked based on the poverty rates data in Algeria.

Presentation and analysis of the results of the standard model

The program (EViews 12) will be used to display and analyze the impact of exchange rate changes on poverty levels through the following tests: -

ARDL model test

This test shows according to this model the results of the ARDL model, and as we have previously shown that this test shows the number of optimal degrees for the time lag of the variables, and a test of the explanatory power of the weighted coefficient of determination and the calculated F value and its significance, and then the Durbin Watson statistic.

model: Estimating the function of the relationship between the official exchange rate and the poverty level in the Algerian economy

ARDL model test

This test shows the results of the ARDL model in terms of the number of optimal degrees for the time lag of the variables, and a test of the explanatory power of the weighted coefficient of determination and the calculated F value and its significance, and then the Durbin Watson statistic.

Table (3): ARDL model test results
Selected Model: ARDL (**2**, **0**)

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
A (-1)	1.179028	0.143890	8.193931	0.0000
A (-2)	-0.592763	0.143672	-4.125809	0.0002
NER	0.023046	0.011866	1.942169	0.0610
C	0.469224	0.528679	0.887540	0.3814

R-squared	0.768658	Mean dependent var	3.723056
Adjusted R-squared	**0.746970**	S.D. dependent var	1.504032
S.E. of regression	0.756560	Akaike info criterion	2.384368
Sum squared reside	18.31623	Schwarz criterion	2.560315
Log likelihood	-38.91863	Hannan-Quinn critter.	2.445778
F-statistic	35.44120	**Durbin-Watson stat**	**1.386396**
Prob(F-statistic)	**0.000000**		

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Since the dependent variable, poverty level A, had a degree of time lag of two, and the official exchange rate variable, NERG, had a degree of time lag of zero, the ideal number of degrees of time lag for both variables was two. The statistical results, on the other hand, showed that the independent variable was interpreted as the weighted coefficient of determination (AR-S) reached about 0.74% in the change in the dependent variable A due to the change in the independent variable. The remaining 0.26% came from the random error limit, which is made up of variables that were not part of the equation or model. The model's statistical significance is explained by the fact that the value of Prob is less than 5%, reaching 0.00000, making the F-statistic statistically significant. Additionally, we should highlight the findings in this table that the Durbin-Watson statistics (D-W) show. Its result reached 1.386396, which indicates that the model is not affected by spurious regression.

Bounds Test

To see if there is joint integration between the independent variable (official exchange rate NERG) and the dependent variable (poverty level A), a bounds test for joint integration needs to be done. The calculated value of (F) is compared with the values of the upper limit I (1) and the lower limit I (0). If the calculated value of (F) is greater than the upper limit I (1), then the alternative hypothesis must be accepted. This hypothesis says that there is joint integration and a long-term equilibrium connection between the variables. The null hypothesis is thus rejected. The alternative hypothesis, on the other hand, says that the variables are not integrated together. This hypothesis must be thrown out, and the null hypothesis must be accepted if (F) is less than the minimal value I. However, the outcome is unclear and inconclusive when making a judgment if the value of (F) is between the upper and lower boundaries. Table (24) below explains the previously mentioned points.

Table (4): Bounds test results

F-Bounds Test		Null Hypothesis: No levels relationship		
Test Statistic	Value	Signify.	I (0)	I (1)
F-statistic	**5.259343**	10%	3.02	3.51
k	1	5%	3.62	4.16
		2.5%	4.18	4.79
		1%	4.94	5.58

Testing the unconstrained error correction coefficient (UECM) and the calculated parameters in the near term

In order to ascertain the kind of short-term connection (direct or inverse) and the extent to which the independent variable influences the dependent variable, this test estimates the parameters in the short term. Furthermore, this test displays the unconstrained error correction coefficient (UECM), which quantifies the rate at which the independent variable (NERG) and the dependent variable (A) in the model return to equilibrium over the long run in the event of short-term divergence and deviation. The fact that UECM is negative and substantial is one of its criteria. The model gets closer to the equilibrium state over time if this condition is satisfied and away from the equilibrium state if it is not.

The results of short-term estimation of the dependent variable parameter for the time lag are shown in table (5) below. Below is a statistical and economic explanation of this.

Table (5): Results of estimating the short-term parameters

ECM Regression Case 2: Restricted Constant and No Trend				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
D (A (-1))	**0.592763**	0.138037	4.294218	**0.0002**
Conte (-1) *	**-0.413735**	0.101049	-4.094406	**0.0003**

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Table (5) shows the direct effect of the official exchange rate NERG on the poverty level A at the time lag D (A (-1)), which means that increasing the official exchange rate by one unit will lead to an increase in the poverty level by (0.59%) at a significant level of (0.0002). The reason for this direct relationship in the Algerian economy can be attributed to a number of reasons, namely: -

- Decrease in purchasing power: When the official exchange rate increases, the Algerian dinar becomes weaker against foreign currency, which leads to an increase in the prices of imported goods and services, which constitute a large percentage of the goods traded in the Algerian market, and with income remaining constant, the purchasing power of citizens decreases, making them more vulnerable to poverty.
- Increase in production costs: Many Algerian companies rely on imported raw materials and machinery, so when the exchange rate increases, this leads to an increase in production costs, which may prompt companies to reduce production or lay off workers, which may then lead to an exacerbation of unemployment, which is the main factor in the increase in poverty.
- High inflation: The high cost of imports may lead to high inflation, which exacerbates the problem of poverty.
- Social disparities: The high exchange rate often benefits large investors and exporting companies, while the poverty bear the burden of high prices and low purchasing power, which may exacerbate social disparities in the Algerian economy.
- Low foreign investment: The high exchange rate may discourage foreign investors from investing in the Algerian economy, as they become more vulnerable to losses due to currency fluctuations, which affects job opportunities and economic growth, and may thus increase poverty levels.
- Low confidence in the economic system: The high exchange rate may lead to a decrease in citizens' confidence in the economic system in Algeria, as they may see that the government is unable to control prices and improve the standard of living, which may affect investment and economic growth, and may increase poverty levels.
- Weak infrastructure: Algeria lacks the necessary infrastructure to achieve comprehensive economic development.
- Corruption: Corruption leads to the waste of resources and undermines economic development efforts.

According to the aforementioned Table (3), on the other hand, the unconstrained error correction coefficient, or UECM, has significantly and negatively decreased to a value of -0.413735 at a probability value of (Prob=0.0003). This indicates that there is a short-term equilibrium relationship between the independent variable, the official exchange rate (NERG), and the dependent variable, poverty level A, with a long-term equilibrium relationship. This indicates that when a shock or other change in the independent variable occurs, the value of (-0.41%) of the short-term errors in A for the prior period (t-1) can be corrected in the current period (t) in order to return to equilibrium in the long run, according to the unconstrained error correction coefficient (UECM).

Long-run Estimated Parameters Test

This test shows the estimation of long-run parameters in order to reveal the degree of influence of the independent variable on the dependent variable, as well as to determine the type of long-run relationship. Table (4) illustrates this.

Table (6): Results of Estimating Long-run Parameters

Levels Equation Case 2: Restricted Constant and No Trend				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
NER	**0.055703**	0.025716	2.166036	**0.0379**
C	1.134118	1.237222	0.916665	0.3662

The results of estimating the independent variable parameter over the long term are displayed in Table 6. The table indicates that the official exchange rate has a direct impact on the poverty level of the Algerian economy over the long term, meaning that a one-unit increase in the official exchange rate will result in a 0.05 percent increase in the poverty level at a significant level of 0.0379. As we have previously demonstrated, the long-term direct effect of NERG on A is the same as the short-term effect. This is because of many factors, including the high cost of imports, the decline in purchasing power, the decline in real wages, the negative impact on the productive sectors, corruption and

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inadequate infrastructure, fluctuations in oil prices, a lack of job opportunities, reliance on the energy sector, resource waste, and other factors.

Fifth: Relative diagnostic tests
We will carry out the following diagnostic tests to confirm the reliability and correctness of the findings from the earlier testing:

Autocorrelation problem test

This test is used to verify the extent to which the estimated model is free from the autocorrelation problem of residuals. Table (7) illustrates this.

Table (7): Results of the LM autocorrelation problem test

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	2.223197	Prob. F (20,12)	**0.0786**
Orbs*R-squared	28.34910	Prob. Chi-Square (20)	0.1014

According to the results of the autocorrelation problem test, which are displayed in Table 7, the null hypothesis—that there is no autocorrelation issue between the random residuals—must be accepted and the alternative hypothesis must be rejected because the calculated (F-statistic) probability value reached (Prob=0.0786), which is higher than the level (5%). As a consequence, this test improves the model's accuracy for ARDL outcomes.

Test of the problem of difference of variance

This test is used to verify the extent to which the estimated model is free from the problem of difference of variance for the residuals, and the table below shows this.

Table (8): Results of the test of the problem of difference of variance for (ARCH)

Levels Equation Case 2: Restricted Constant and No Trend				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
NER	**0.055703**	0.025716	2.166036	**0.0379**
C	1.134118	1.237222	0.916665	0.3662

The results of estimating the independent variable parameter over the long term are displayed in Table (8). The table indicates that the official exchange rate has a direct impact on the poverty level of the Algerian economy over the long term, meaning that a one-unit increase in the official exchange rate will result in a 0.05 percent increase in the poverty level at a significant level of 0.0379. As we have previously demonstrated, the long-term direct effect of NERG on A is the same as the short-term effect. This is because of many factors, including the high cost of imports, the decline in purchasing power, the decline in real wages, the negative impact on the productive sectors, corruption and inadequate infrastructure, fluctuations in oil prices, a lack of job opportunities, reliance on the energy sector, resource waste, and other factors.

Relative diagnostic tests

We will carry out the following diagnostic tests to confirm the reliability and correctness of the findings from the earlier testing: Test for autocorrelation issues
The purpose of this test is to confirm how free the estimated model is from the residual autocorrelation issue. This is seen in Table (27).

Table (9): Results of the LM autocorrelation problem test

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	2.223197	Prob. F (20,12)	**0.0786**
Orbs*R-squared	28.34910	Prob. Chi-Square (20)	0.1014

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According to the results of the autocorrelation problem test, which are displayed in Table 9, the null hypothesis—that there is no autocorrelation issue between the random residuals—must be accepted and the alternative hypothesis must be rejected because the calculated (F-statistic) probability value reached (Prob=0.0786), which is higher than the level (5%). As a consequence, this test improves the model's accuracy for ARDL outcomes.

Test of the problem of difference of variance

This test is used to verify the extent to which the estimated model is free from the problem of difference of variance for the residuals, and the table below shows this.

Table (10): Results of the test of the problem of difference of variance for (ARCH)

Heteroskedasticity Test: ARCH

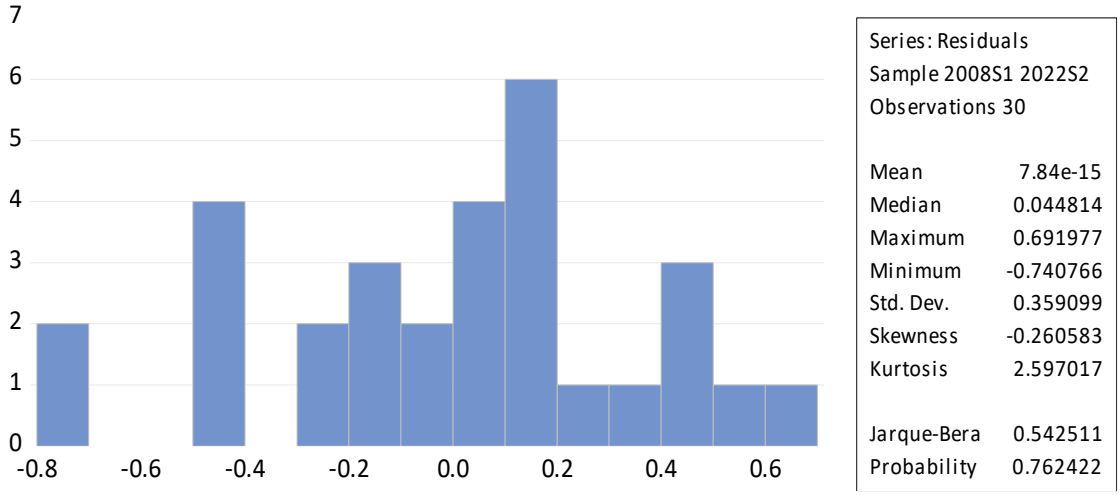
F-statistic	0.288569	Prob. F (1,33)	**0.5947**
Orbs*R-squared	0.303405	Prob. Chi-Square (1)	0.5818

The results of the test of the problem of variance difference for (ARCH) are displayed in Table (10) as we can see that the probability value of the F-statistic reached (Prob=0.5947), which is higher than the level (5%). This indicates that the model is free from the problem of variance difference, and as a result, the alternative hypothesis must be rejected and the null hypothesis, which states that there is no problem of variance difference between the random residuals, must be accepted. As a consequence, this test improves the model's accuracy for ARDL.

Histogram-Normality Test

The purpose of this test is to confirm how free the estimated model is from the residuals' normal distribution issue. This is seen in Figure (1).

Figure (1): Results of the test of the problem of normal distribution



The results of the normal distribution problem test for (Jerque-Bera) are displayed in Figure (1). We can see that the probability value has reached (Prob=0.542511), which is higher than the level (5%), indicating that the normal distribution is not problematic. Therefore, we must accept the null hypothesis, which states that the residuals' normal distribution is not problematic, and reject the alternative hypothesis, which states that the normal distribution is problematic. As a result, this test improves the accuracy of the model's ARDL results.

Structural stability test for the ARDL model

This test is used to verify the stability of the ARDL model by using the cumulative sum of the residuals for (CUSUM), and the structural stability of the model parameters is achieved if the blue (zigzag) line falls within the critical red dotted limits at the level (5%). Conversely, if the blue line falls outside the critical limits, the structural stability of the model is not achieved. The figure below illustrates this.

Figure (2): Results of the structural stability test for (CUSUM)

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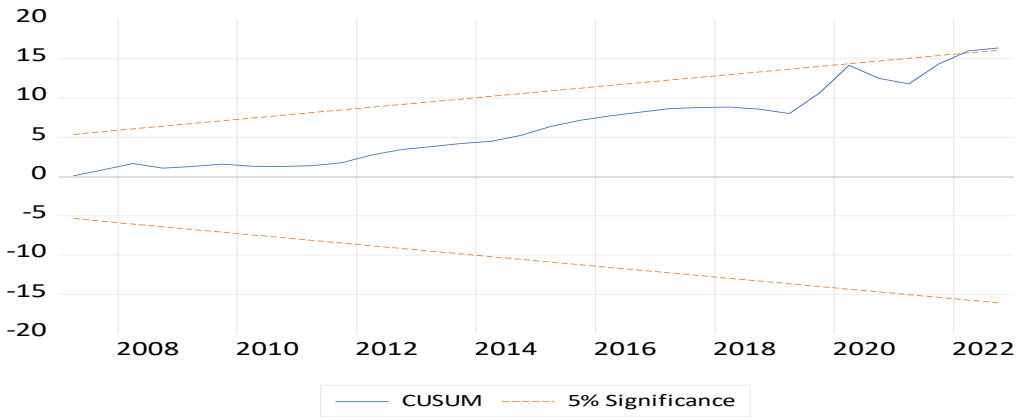

The structural stability test results for (CUSUM) are shown in Figure (2). The blue line falls within the key red dotted boundaries, indicating that the model's estimated parameters are stable. As a consequence, this test improves the accuracy of the model's findings for (ARDL).

Findings: - Poverty and the exchange rate are directly correlated, meaning that changes in the exchange rate affect the degree of poverty.

-Exchange rates have a direct impact on poverty levels because changes in the exchange rate are likely to affect poverty levels because a decline in the local currency's value relative to the dollar causes the phenomenon of poverty to spread, and an increase in the local currency's value relative to the dollar causes the phenomenon of poverty to decline.

-One of the most complicated issues facing decision-makers is poverty. Although successive governments in Algeria have adopted development strategies and programs to combat poverty, the implementation of these programs is always hampered by political and economic factors. For example, while the poverty rate has decreased over the study period for a number of years, there have been years when it has increased due to economic shocks. This necessitates the creation of new economic plans to address the issue of poverty or a return to the implementation of previously developed policies and programs, but it is impossible to ensure that future economic shocks won't occur.

-In addition to crises that impacted people's standard of living and, consequently, the ongoing rise in the poverty rate, Algeria's exchange rates tended to rise against the dollar, which caused the value of the Algerian dinar to decline and necessitated the creation of programs that raised inflation rates.

-Our examination of the effects of exchange rate fluctuations on Algeria's poverty levels leads us to the conclusion that these changes affected not only the country's average per capita share, trade balance, and gross domestic product, but also poverty.

-According to the standard results, the increase in inflation was caused by the exchange rate's rise, which raised production costs and, in turn, raised the prices of goods and services on the local market. This, in turn, caused the real income of families living in poverty to decline, further increasing Algeria's poverty level.

RECOMMENDATIONS:

- Maintaining the stability of the Algerian currency exchange rates against the dollar by setting economic policies that work to increase the confidence of the local currency against the dollar.
- Coordination between monetary policy represented by the Central Bank as the body responsible for implementing this policy and government agencies responsible for implementing financial policy and trade policy within the framework of the general economic policy of the state, in order to achieve economic goals, the most important of which are currency stability, improving the growth rate, controlling inflation rates, increasing the gross domestic product, and setting a time frame for implementing these goals.
- Working to create a database for individuals within the poverty circle in order to reduce the poverty circle by redistributing income among individuals in a fair manner, conducting international surveys on the living conditions of individuals, and building and organizing a broad database and information on individuals below the poverty line in order to include them in cash and in-kind subsidies.
- Working to increase the value of local currencies against the dollar and strengthening the production system in order to increase the exports of this country, which in turn works to increase growth rates by creating job opportunities for the unemployed workforce to reduce the phenomenon of poverty. 5- Providing economic plans that support social protection networks and increasing financial allocations for them in order to provide job

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opportunities for large numbers of citizens with limited income and provide material and moral assistance to citizens unable to work in order to reduce unemployment rates and thus reduce poverty levels in Algeria.

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