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Analize Exchange Rate Changes effect on Poverty in Iraq for the Period (2004-2022)

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Abstract:

Purpose: Analysis of the Impact of Exchange Rate Changes on the Poverty Index in Iraq and a Study of the Resulting Effects for the period (2004-2022).

Theoretical framework: The research studied the relationship between the change in the (EX) and its role in reducing the phenomenon of poverty in Iraq for the period (2004-2022). The exchange rate is considered one of the most important tools of monetary policy in the Iraqi economy due to its sensitivity to any change taken by the monetary authority and its direct and indirect effects on all economic variables, including its impact on the poverty rate.

Design/methodology/approach: The researcher relied on the deductive (inductive) approach and the inductive approach based on theoretical foundations by employing the descriptive analysis method and using all data, parameters, and the measurement tool (E-views 13) to measure changes in exchange rates and its role in reducing the phenomenon of poverty in Iraq, and the data extended for the period from 2004-2022.

Findings: It became evident that there is a long-term equilibrium relationship between the dependent variable, poverty rate, and the independent variables represented by the official exchange rate and imported inflation.

Research, Practical & Social Implications: This research examines how exchange rate fluctuations impacted poverty in Iraq from 2004 to 2022, highlighting the practical challenges and social consequences for vulnerable populations and economic stability in Iraq.

Originality/value: This study provides the correlation between exchange rate fluctuations and poverty in Iraq from 2004-2022, offering new perspectives on economic vulnerability and policy responses.

Keywords: Foreign Exchange, Exchange Rate, Poverty.

JEL Classification : F3, F31, F6, F63.

Authors' individual contribution : Authors' individual contribution: Conceptualization — A.T.H ; Methodology — A.T.H.; Formal Analysis — A.T.H. & A.H.A.; Investigation — A.H.A. ; Data Curation — A.T.H. & A.H.A ; Writing — Original Draft — A.T.H. ; Writing —

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1. Introduction:

The exchange rate is important for firms in an open economy (Wong, 2022). The value of foreign currency relative to local currency is essential for comprehending the economic growth of all countries (Ramat et al., 2022); (Nopiana et al., 2022). Many central banks around the world manage and set their exchange rates, and in today's world of financial integration, exchange rate paths are set alongside interest rates (Amador et al., 2020). Exchange rates are one of the most important tools at the macroeconomic level (Demir & Razmi, 2022). The local currency exchange rate is quoted as directly proportional to the foreign currency exchange rate (Bernoth & Herwartz, 2021). The exchange rate also represents a mirror that reflects the country's commercial position with the outside world through the relationship between exports and imports (Al-Bayati et al., 2022). Exchange rates are an important tool for any country that enhances competitiveness (Karakostas, 2021). The exchange rate also contributes to strengthening and adjusting the macroeconomy of any country. It plays a role in strengthening the country's monetary policy, and in addition, it helps the local economy to confront external shocks and crises (Edwards & Cabezas, 2022). Exchange rate policy is important in linking the national economy to the global economy (Babubudjnauth & Seetanah, 2021).

The exchange rate between countries is determined by assessing the value of their respective product and service markets (Gabaix & Maggiori, 2015). Using foreign currency complicates exchange rate risk in international investments (Nopiana et al., 2022). Foreign exchange is important in most economic relationships between countries (Ramat et al., 2022). The initial efforts to examine (EX) behavior were undertaken by Dornbusch (1976) and Rogoff (1983) (RAKSONG & SOMBATTHIRA, 2021). The (EX) is one-factor affecting exports and imports (Ewubare & Ushie, 2022). The exchange rate can be defined as the fixing, recording, and quotation of currency prices in the local market for foreign currency, i.e., the level and value of the price of the local operation against the foreign currency (Sitompul et al., 2021). Exchange rates are a useful tool for strengthening the domestic macro economy, especially as they play a role in limiting economic collapses of the local currency (Kohler & Stockhammer, 2023).

Studies show that managing exchange rates is an important process for reducing poverty levels in any country, especially since poverty greatly affects the dynamics of the exchange rate of any country globally, especially in developing countries (GNANGNON, 2020). The change in the exchange rate also has economic, social, and even political effects and repercussions (Al-Daghir et al., 2020). The real appreciation of the exchange rate can lead to raising economic growth, thus stimulating workers, increasing working capital, and reducing unemployment and poverty (Farhani et al., 2023). The research problem can be expressed by stating the role played by analyzing changes and fluctuations in exchange rates and their effects on poverty levels in Iraq for the period (2004-2022). Changes in the value of the national currency have affected living standards, especially among the poor population. This study aims to understand the relationship between exchange rate fluctuations and increasing poverty rates considering the country's economic and political challenges. The importance of this research stems from the urgent need to understand how exchange rate fluctuations affect poverty levels in Iraq, especially as the country faces increasing economic difficulties due to fluctuating oil prices and ongoing political instability. The study aims to provide valuable insights into the challenges affecting low-income populations by studying the relationship between exchange rates and poverty. The results will contribute to formulating more effective economic policies to enhance living standards and reduce poverty in Iraq's unique social and economic environment.

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1. Literature Review and Hypothesis Development

The study conducted by (Apergis & Cooray, 2018) evaluated the exchange rate and the reflection of the fluctuations in the exchange rate on the poverty level. The study was conducted in 99 countries around the world. The results showed that the decline in the value of the local currency has a negative and strong effect compared to the increase in the value of the currency on the level of poverty and that attention to the cash flow resulting from changes in exchange rates can alleviate and limit the level of poverty. Also, the study indicated a relationship between the change in the exchange rate and inflation levels, as the exchange rate plays a pivotal role in reducing inflation resulting from monetary expansion due to increased government spending. In a study conducted by (Gnangnon, 2021), the results showed that exchange rates have positive effects on poverty levels in developing countries, that the size of this effect is the same for countries with the lowest level of development, and that the redistribution of money has positive effects in developing and least developed countries. The study's results (Karimi & Heshmati Dayari, 2021) show that exchange rates affect poverty in Iran in the long run. However, in the short run, over time, exchange rate fluctuations lead to an increase in poverty in Iran, and real exchange rate depreciations do not affect poverty reduction. A study conducted by (Alhakimi and Shama, 2022) discussed that the shocks reflected by the change in the exchange rate have positive effects on the level of foreign investment in the short and long term. The stability of the model was taken linearly for testing, and it turned out to be sufficiently stable. A study (Khudair & Hassan, 2022) indicated that the (EX) is a tool linking local economies to international economies. It is also a tool linking commodity prices in the local economy to their prices in the global market. A study (Jamil et al., 2023) indicated that the exchange rate has a positive impact on economic growth, and the (EX) and inflation have a significant negative impact on economic growth, and a decrease in GDP will lead to an increase in inflation, as the GDP decreases when the (EX) rises. A study (Abdullah, 2024) indicated that exchange rates hurt individuals because of the decline in the value of the Iraqi dinar for the years 2020-2023. These fluctuations affected individuals' living standards, increased inflation, unemployment, and poverty levels, and increased the general price level. The study (Febriyanti et al., 2024) concluded that the high exchange rate for developing countries facilitates the process of individuals' access to basic resources such as food, education, and health care and that there is a positive and significant relationship between the variable of the open unemployment rate and poverty. The study (Kadhum, 2024) indicated that fluctuations in the dollar exchange rate have a direct impact on the prices of goods and services that individuals trade... which affects their standard of living and purchasing power, leading to a widening of the poverty gap in a very rich country like Iraq with its human resources and diverse natural capabilities. The study concluded that Iraq has been fighting poverty since 2014 by the United Nations Sustainable Development Goals to eradicate poverty. However, we note that the poverty rate in Iraq for the year 2022 reached 25.6%, which is the highest rate in about 20 years, except for the exceptional period of the outbreak of the Coronavirus.

From this, we propose the following hypothesis:

The research is based on the hypothesis that changes in the exchange rate led to a widening poverty gap in Iraq.

2. Methodology:

To achieve the research objectives and prove the validity of his hypothesis, the researcher relied on the deductive approach that depends on analysis to reach the results by moving from the general principle to the specific principle in addition to the inductive approach based on theoretical foundations by employing the descriptive analysis approach and using all data, parameters and the measurement tool (E-views 13) to measure changes in the exchange rate and poverty levels in Iraq. A set of indicators, statistical methods, and financial and statistical indicators will be used to analyze the data, test the hypotheses, and measure them

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through the statistical program (E-views 13). The data covers the period from 2004-2022. The relationship between banking liquidity and investment in the banks under study was studied. The nature of the relationship between the research variables is explained in Figure (1):

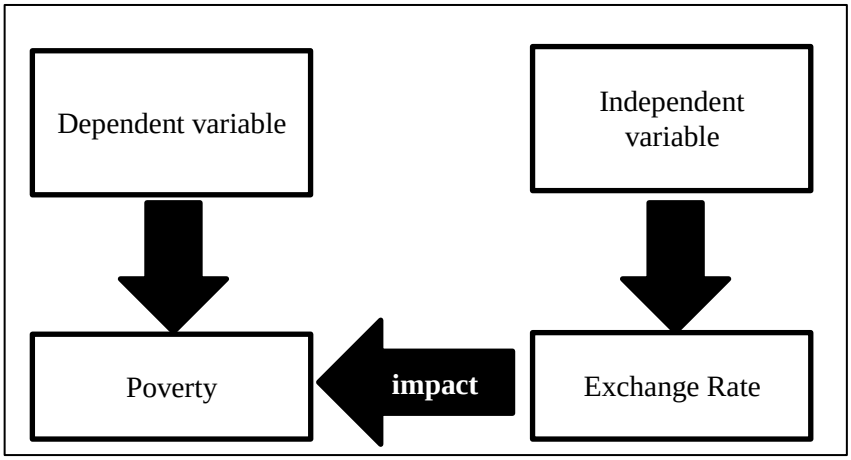

Figure 1: Hypothetical diagram of research **by Author**.

In this model, we assume that the poverty rate index (PR) is the dependent variable representing economic development, while the official exchange rate (EX) is the independent or explanatory variable, along with imported inflation (IM) as another independent variable. The model can be formulated as follows:

PR = f (EX, IM)

In the regression model, it can be written as:

$PR_t = \beta_0 + \beta_1 EX_t + \beta_2 IM_t + \mu_t$

Where β0 is the constant, and β1, β2 are the parameters to be estimated. μt represents the random error term. All these variables will be tested using stationarity tests. The result of this test will determine whether the ARDL model can be applied. If one of the variables is stationary at the second difference, the ARDL model will be excluded.

3. Results:

The current section of the research presents empirical results, and the results of the unit root tests conducted using techniques such as the Phillips-Perron (PP) test. It also presents the results of the cointegration model between the dependent and independent variables. The first step in constructing the econometric model according to the modern methodology is to conduct a stationarity test to verify the stationarity of the variables included in the model. This is done by performing unit root tests and applying the Phillips-Perron (PP) test.

Table 1: Results of the Phelps-Perron test for the poverty rate model

Variable name	At 5% level of critical value (p-value)			At first 5% difference critical value (p-value)		
	Constant limit only	Constant limit and trend	No constant limit and trend	Constant limit only	No constant limit and trend	No constant limit and trend
EX	0.1858	0.0762	0.4493	0.0452	0.0644	0.0034
Im	0.2957	0.1865	0.0227	0.0000	0.0001	0.0000
Pr	0.0029	0.0000	0.4212	0.0000	0.0001	0.0001

Source: Researcher's work based on EVIEWS 13.

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It is observed that the p-values for all variables are greater than 5% at level I (0), meaning that all variables are non-stationary at this level. However, after taking the first difference, which is necessary to avoid spurious regression, the p-values for all variables became less than 5%. This confirms that the variables have become stationary at first difference, indicating that these variables are integrated of order one, I (1). After confirming that all variables are stationary at the first difference, I (1), we proceed with the cointegration analysis to explore the long-term relationship between the variables. The results of the bounds test at lag intervals (1, 3, 0) for the independent and dependent variables can be presented in the following table:

Table 2: Results of the boundary test estimation for the poverty rate model

Null Hypothesis: No levels relationship			F-Bounds Test	
I (1)	I (0)	Sig.	Value	Test Statistic
3.35	2.63	10%	5.564898	F-statistic
3.87	3.1	5%	2	K
4.38	3.55	2.5%		
5	4.13	1%		

Source: Researcher's work based on EVIEWS 13.

The result shows that the F-statistic value is higher than the critical values for both the lower and upper bounds, confirming the existence of a long-term relationship between the economic development index and the exchange rate. In the bounds test, the F-statistic is 5.5, which is higher than the critical values for both the lower and upper bounds, indicating the existence of cointegration. This suggests a long-term equilibrium relationship between the dependent variable, the poverty rate (PR), and the independent variables, namely the official exchange rate (EX) and imported inflation (IM). In other words, changes in economic development, exchange rate, and imported inflation move towards long-term equilibrium. To determine whether this relationship is positive or negative, we will interpret the long-term parameters.

After the results of the bounds test confirmed the existence of a long-term cointegration relationship between the independent and dependent variables, the following table presents the long-term ARDL model parameters.

Table 3: Estimation of long-run coefficients for the poverty rate model

Levels Equation				
Case 2: Restricted Constant and No Trend				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
IM	-0.789960	2.421407	-0.326240	0.7517
EX	0.022504	0.014080	1.598256	0.1445
C	-2.644188	18.37529	-0.143899	0.8888
EC = PR - (-0.7900*IM + 0.0225*EX -2.6442)				

Source: Researcher's work based on EVIEWS 13.

Table (3) shows the estimation of long-term coefficients using the ARDL model. The results indicated that the signs of the coefficients of the independent variables were significant, which may indicate the existence of a long-term effect between them. The short-term dynamic coefficients from the estimated ARDL model were shown in Table (4), where the error correction term indicates the speed of return to long-term equilibrium. The results can be shown in the following table:

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Table 4: Results of estimating the short-term parameters of the poverty rate model

ARDL Error Correction Regression				
Dependent Variable: D(PR)				
Selected Model: ARDL (1، 3، 0)				
Case 2: Restricted Constant and No Trend				
Date: 08/07/24 Time: 13:24				
Sample: 2004 2022				
Included observations: 16				
ECM Regression				
Case 2: Restricted Constant and No Trend				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(IM)	1.879909	2.455255	0.765668	0.4635
D (IM (-1))	1.870133	2.760342	0.677500	0.5151
D (IM (-2))	-7.185212	2.522828	-2.848078	0.0191
Coint Eq (-1) *	-1.079705	0.198188	-5.447885	0.0004

Source: Researcher's work based on EVIEWS 13.

Table (4) presents the results of the short-term dynamic coefficients associated with the long-term relationships obtained from the ECM equation. Error correction terms in cointegration models are of great importance because they indicate the adjustment of long-term equilibrium in the dynamic model. The error correction term was (-1.079705), which means that deviations from the exchange rate and imported inflation to the poverty rate in the short term adjust rapidly, with a speed of approximately 107% towards long-term equilibrium.

Additionally, it is noted from the table above that the short-term coefficient for the imported inflation index (IM) is significant and negative, indicating that an increase in imported inflation leads to a decrease in the poverty rate in the short term.

The potential economic reason behind the impact of imported inflation on reducing the poverty rate in the short term can be explained through several aspects. When the rate of imported inflation rises, local prices for some imported goods may decrease, especially if the local currency is strong or if production or transportation costs for exporting countries decline. This price decrease may lead to an increase in the purchasing power of poor households, which temporarily reduces the poverty rate.

Moreover, imported inflation may stimulate local economic activities related to imports and distribution, creating temporary job opportunities or increasing the income of individuals working in these sectors. This improvement in income can reduce poverty in the short term, even if there are larger economic challenges in the long term.

However, it should be noted that these effects may be temporary and largely depend on the country's economic factors and financial and monetary policies.

In the final step, we use diagnostic tests to assess the strength of our ARDL model. The results of the diagnostic tests are presented in Table (5) and Figure (2), confirming that the error terms or residuals of the ARDL model are free from heteroscedasticity and do not exhibit autocorrelation, as the p-values for all tests exceed 5%. This enhances the accuracy and credibility of the model's estimates. However, it is observed that the regression residuals are not normally distributed, as their p-values are less than 5%.

Table 5: Results of statistical tests

Tests	Probability
Serial correlation test	0.6812
Heteroskedasticity test	0.7806

Source: Researcher's work based on EVIEWS 13.

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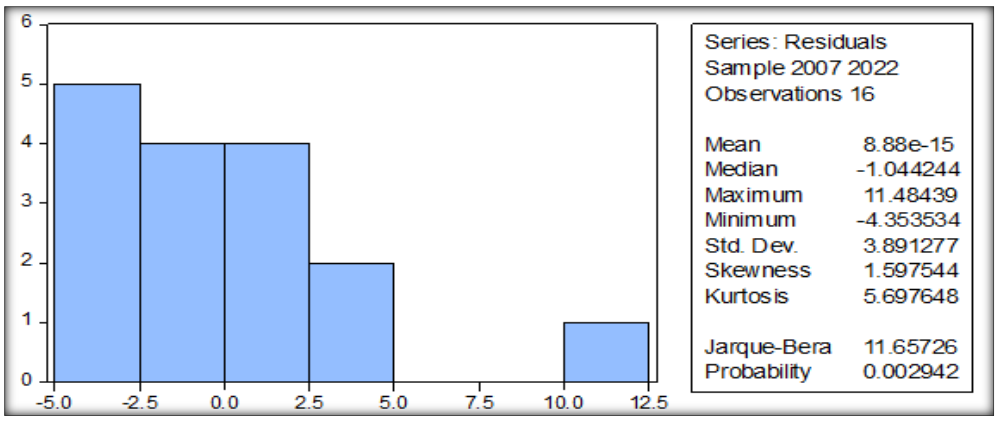

Figure 2: Results of the normal distribution test for residuals
Source: Researcher's work based on EVIEWS 13.

To verify the stability of the model in the long term, CUSUM and CUSUMQ tests were applied to determine whether our model is stable. The results of the CUSUM and CUSUMQ tests in Figures (3) and (4) show that our model is stable because the blue line in both figures does not cross the red line, indicating the stability of the model.

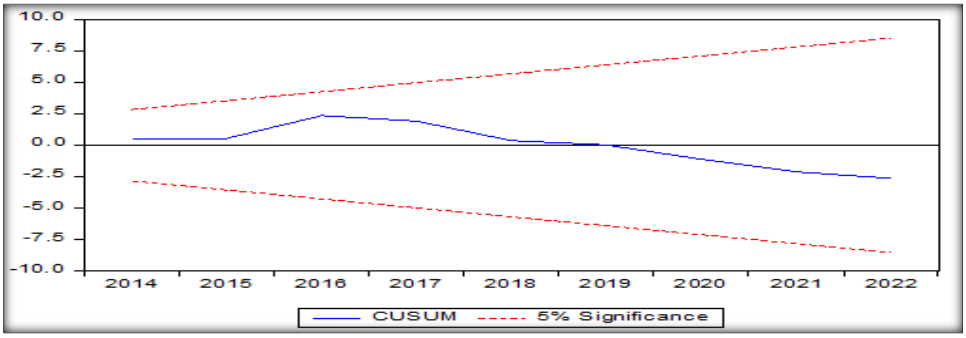

Figure 3: Results of the stability test of the poverty rate model according to the CUSUM formula
Source: Researcher's work based on EVIEWS 13.

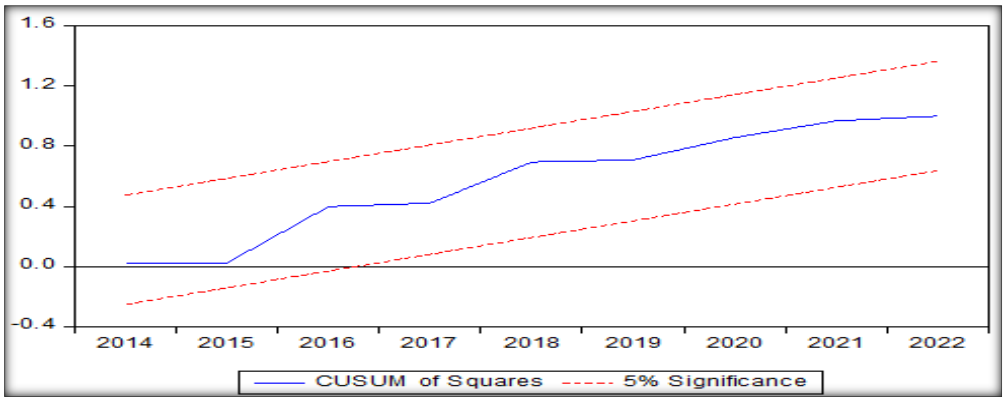

Figure 4: Results of the stability test of the poverty rate model according to the CUSUMSQ formula
Source: Researcher's work based on EVIEWS 13.

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After confirming the existence of a long-term equilibrium relationship between the variables in the study, a causality test between the exchange rate, imported inflation, and the poverty rate is conducted using the Granger causality test.
Next, we estimate the optimal lag period, and our results indicate that the optimal lag period, based on the AIC information criteria, is 3, i.e., k = 3.

Table 6: Determining the optimal lag period for the poverty rate model

VAR Lag Order Selection Criteria						
Endogenous variables: PR IM EX						
Exogenous variables: C						
Date: 08/07/24 Time: 13:34						
Sample: 2004 2022						
Included observations: 16						
HQ	SC	AIC	FPE	LR	LogL	Lag
20.38996	20.52740*	20.38254	142828.0	NA*	-160.0603	0
20.32361	20.87338	20.29394	134967.4	14.56314	-150.3515	1
20.44687	21.40896	20.39494	174751.4	9.216008	-142.1595	2
19.44439*	20.81881	19.37021*	99269.17*	12.89839	-124.9617	3
* indicates lag order selected by the criterion						
LR: sequential modified LR test statistics (each test at 5% level)						
FPE: Final prediction error						
AIC: Akaike information criterion						
SC: Schwarz information criterion						
HQ: Hannan-Quinn information criterion						

Source: Researcher's work based on EVIEWS 13.

After estimating the causality test, the results from the table below show that there is no unidirectional causal relationship from imported inflation to the poverty rate. This means that changes in imported inflation cause changes in the poverty rate in the short term, which is quite logical and aligns with economic theory.

When the exchange rate of the local currency falls against foreign currencies, the prices of imported goods rise. This can lead to an increase in the cost of living and higher rates of imported inflation, which adds pressure on low-income households and exacerbates the issue of poverty. On the other hand, if the exchange rate of the local currency rises, the prices of imported goods may decrease, increasing purchasing power and alleviating poverty in the short term.

Table 7: Results of Granger causality test for poverty rate model

Pairwise Granger Causality Tests			
Date: 08/07/24 Time: 13:34			
Sample: 2004 2022			
Lags: 3			
Prob.	F-Statistic	Obs	Null Hypothesis:
0.0592	3.59186	16	IM does not Granger Cause PR
0.3058	1.39715		PR does not Granger Cause IM
0.7353	0.43192	16	EX does not Granger Cause PR
0.8719	0.23195		PR does not Granger Cause EX
0.2028	1.88368	16	EX does not Granger Cause IM
0.8399	0.27812		IM does not Granger Cause EX

Source: Researcher's work based on EVIEWS 13.

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5. Conclusion:

The exchange rate policy did not aim to develop the real economic sectors, boost production, absorb unemployment, and raise the average per capita income to reduce poverty rates. Instead, the policy followed oil prices and their cyclical trends. It became evident that there is a long-term equilibrium relationship between the dependent variable, the poverty rate, and the independent variables represented by the official exchange rate and imported inflation (i). This means that changes in economic development, exchange rate, and imported inflation move towards long-term equilibrium. It also became clear that there is no unidirectional causal relationship between imported inflation and the poverty rate, which explains that changes in imported inflation cause the poverty rate in the short term. This result is logical and aligns with economic theory.

The F-statistics of 5.5 confirm a long-run relationship between poverty rate, exchange rate, and imported inflation. Cointegration is also found, indicating long-run equilibrium and the interpretation of long-run parameters follows. The results indicate that the signs of the coefficients of the independent variables are insignificant, which may indicate the absence of a long-run effect between them. The error correction term of -1.079705 indicates a rapid adjustment towards long-run equilibrium, with deviations being corrected at 107%. Diagnostic tests confirm the absence of heteroscedasticity or autocorrelation, although the residuals are not normally distributed.

Authors Declaration:

Conflicts of Interest: None

-We Hereby Confirm That All The Figures and Tables In The Manuscript Are Mine and Ours. Besides, The Figures and Images, which are Not Mine, Have Been Permitted Republication and Attached to The Manuscript.

- Ethical Clearance: The Research Was Approved by The Local Ethical Committee in The University.

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