Exchange Rate Fluctuations and Inflation on Economic Development in Nigeria: The Economic, HEART of a Nation

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Abstract

The peculiarities of these crucial factors, exchange rate fluctuations, inflation, and economic growth in developing economies/nations, particularly Nigeria, keep the relationship between these variables at the forefront of economic discussion. There is little to no literature on Nigeria's exchange rates, inflation, and economic growth. Because of the current exchange rate instability and Nigeria's frighteningly high inflation rate, a study of this nature is essential to ascertain the influence of exchange rate fluctuations and inflation on economic growth in Nigeria. This article examined the impact of exchange rate fluctuation on the country's inflation–growth nexus from 1990 to 2022. Based on the outcome of the bond test, the short-run ARDL model was applied to test all two hypotheses. The study's results demonstrated that inflation and exchange rate fluctuation harm the nation's economic growth. The higher the volatility in the exchange rate, the worse the inflationary-growth relationship of the country. The real exchange rate coefficient demonstrates, on the other hand, established a positive relationship between the exchange rate and employment growth rate. Theoretically, while maintaining the influence of all other significant variables constant, a 1% increase in Nigeria's exchange rate will lead to a 4.77% increase in the employment growth rate. The result supports the menu cost theory of price setting, which states that the exchange rate pass-through effect occurs more quickly with a higher inflation rate. Therefore, to fulfill their commitments under Nigeria's monetary policy, the monetary authorities should ensure that the adverse effects of exchange rate imbalances on economic growth are handled by suitable measures and with the necessary political will.

1. Introduction

Globally, some economic issues exist, and governments are constantly attempting to address these issues. Employment, inflation, and the exchange rate are some of these issues. The administration of exchange rates, in particular, as well as general economic policy, has been severely hampered by the global financial crisis. There is no question about the significance of currency rates or their stability (Odoko, 2009). The exchange rate and inflation are crucial macroeconomic indicators that reveal every nation's currency competitiveness level.

The best exchange rate policy for developing nations has been a subject of ongoing discussion (Magda, 2004). This is one of Nigeria's most frequently discussed topics because of its ongoing developments (Ewubare & Ushang 2022). The discussion focuses on the degree to which the exchange rate fluctuates, and inflation are in response to internal and external shocks. Changes in exchange rates and inflation will probably impact economic development. Since the country's independence in October 1960, the Nigerian government and its monetary institutions have vigorously pursued goals for the internal and external balance. According to Odoh, Ugwoke, and Onyeanu (2023), these objectives include attaining and maintaining price stability, reaching and maintaining a balance of payments equilibrium, full employment, equitable income distribution, and economic development.

According to Odili (2014), the exchange rate is the value at which one currency can be exchanged for another. The cost of production, inflation, investment flows, and the standard of living of individuals are all impacted by an unstable exchange rate. Extensive economic hardship and output decline might result from improper exchange rate management. Additionally, there is convincing evidence that the growth rate of per-capital output in low-income countries is significantly influenced by the alignment of exchange rates (Isard, 2007). The aforementioned highlights the importance of foreign exchange in international transactions, particularly in developing nations like Nigeria.

According to evidence from the Economic Community of West African States, exchange rate policy is essential for any country's economic progress (Eke, Magaji, Obalemo, and Ezeigwe 2020). The exchange rate, interest rate, inflation, and prices of products and services influence economic development. These price structures interact with one another, affect one another's levels, and affect macroeconomic stability. In the age of globalization generally and in a developing economy that is heavily dependent on imports and has substantial import demand elasticities, this connection and mutual reliance become more crucial. As a result, the relationship between these prices sheds light on how the exchange rate, inflation, and economic development are related in a developing market economy (Nwafor, 2018). According to their proponents, the floating and fixed exchange rates eliminate the risks and uncertainties that come with high rate instability, thereby encouraging trade openness and increasing capital flows as well as fiscal restraint because of the nominal anchor it provides (Magaji & Eke 2015). However, proponents of flexible exchange rates contend that it is more advantageous because it allows for automatic adjustment of the external sector in case of any external sector disequilibrium and improves fiscal discipline by immediately exposing unsound monetary and fiscal policies, reflecting adverse price movements. Contrarily, systemic hedging soon makes the risks and uncertainties associated with international trade under a flexible exchange rate framework harmless (Velasco, 2000).

The long-running theoretical and policy debate on the effects of frequent exchange rate fluctuations and inflation on the economy, in general, is due to their impact on both developed and emerging economies' overall economic (the heartbeat) growth as well as their effects on exports, employment growth, trade, investment, and available economic activity. Therefore, an investigation of the impact of exchange rate policy on economic growth and the overall performance of the macroeconomy has remained a topic of ongoing theoretical and empirical investigations, given the crucial role that the exchange rate plays in determining the success of all other macroeconomic policies, particularly in developing economies during business cycle shocks (Alagidede and Ibrahim, 2016).

Ewubare & Ushang (2022) investigated the connection between the exchange rate and economic growth in Nigeria. The goals are to ascertain how the exchange rate, inflation, and interest rates impact the GDP. The results showed that inflation and exchange rates had a negative effect on economic growth. This conclusion suggests that rising prices and the exchange rate affect the Nigerian economy's growth. This discovery explains the reality in Nigeria, where businesses and families frequently borrow despite rising interest rates. Still, they also often compromise on the quality of their goods and services or raise prices to cover the higher borrowing costs. Because the exchange rate of an economy plays a crucial role, it directly affects all macroeconomic variables, such as domestic price indicators, the profitability of traded goods and services, resource allocation, and investment decisions (Ajakaiye, 2001). For this reason, monetary authorities and the private sector work to maintain stability in these variables. It is a critical macroeconomic factor in building general economic policies and specific economic reform programs that help accelerate macroeconomic goals. These objectives in Nigeria include full employment, equal income distribution, economic growth, and development. They also include achieving and maintaining price stability and balance of payments equilibrium.

Additionally, the works of literature have contrasting opinions about inflation, economic growth, and exchange rate fluctuation. There hasn't been a consensus on the findings on the link between GDP, inflation, and exchange rate fluctuation. The triangle formed by GDP, inflation, and exchange rate fluctuation is the most important geographically. In the opinion of Mahawiya, Abraham, and Oteng-Abayie (2020), the issue of regional integration is a significant strength of the developing community. While having this kind of power can help countries with business, economic stability, infrastructure development, and a general rise in living standards, it can also have certain negative effects. Among these costs, the repercussions of exchange rate fluctuation and spillover effects on GDP via inflation stand out. In order to study the precise impact of these variables on the economic development of countries over time, economists have attempted to do so without taking into account the regional effects of exchange rate fluctuation or inflation pass-through (Barguellil, Ousama & Mourad., 2018; Lean and Ehigiamusoe, 2019).

The relationship between GDP, exchange rate changes, and inflation is a severe issue for developing and growing economies. While some studies discovered a statistically significant link between the exchange rate and economic growth, others found a non-significant link. Oyovwi (2012), Korkmaz (2013), and Jibrin, Jelilov, and Gayypov (2017) found that the exchange rate has a considerable influence on economic growth. On the other hand, studies by Adeniran,. Yusuf and

Adeyemi (2014) and Akpan and Atan (2012) found no statistically significant relationship between the exchange rate and Nigeria's economic development. On the contrary, literature on the effects of exchange rate fluctuation and inflation on economic development is lacking in Nigeria, where exchange rates and prices of goods and services are unstable. This calls for concern as the happenings in the country, exchange rate fluctuation, and high inflation rate are increasing.

In Nigeria, there is hardly much literature on this subject. The literature on Nigeria's exchange rate fluctuation, inflation, and economic growth is scanty or nonexistent. Therefore, a study of this kind is essential to determine the impact of Nigeria's exchange rate fluctuation and inflation on economic development, especially now that there is exchange rate instability and an alarmingly high inflation rate in the country. Nigeria is vulnerable to high levels of foreign exchange transactions and the dangers that come with them since its economy is both export- and import-dependent in terms of daily needs and the structure of the public revenue system (Kalu, Ugwu, Ndubuaku, & Ifeanyi, 2019). An investigation that could help with better policy development and implementation is needed, given these exposures to the global market and the economic shocks they have caused in Nigeria. Therefore, this study ascertained how exchange rate fluctuation and inflation affect Nigeria's economy, the heartbeat of nature. The study also developed a conceptual model explaining the possible relationship among the study variables for a better understanding. This might provide better guidance for developing, choosing, and maintaining the exchange rate policy. The originality of our estimating method is another clear benefit of this study. Pre-estimation tests are shown in the paper, emphasizing data description and the fundamental statistical characteristics of the data. This is important because the properties of the data affect the estimation technique that should be used.

Examining the effects of exchange rate fluctuations and inflation on economic growth in Nigeria from 1990 to 2022 is the primary goal of this study. The specific objectives are as follows: To empirically examine whether there is any significant impact of real exchange rate fluctuations and inflation on economic growth proxy by GDP in Nigeria; to ascertain the correlation between exchange rate fluctuation, inflation, and economic growth proxy by the employment growth rate in Nigeria. The following are the null forms of the hypotheses that this study will examine in light of the objectives mentioned above:

HO₁: Real exchange rate fluctuations and inflation do not positively and significantly impact the gross domestic product (GDP) in Nigeria

HO₂: Real exchange rate fluctuations and inflation do not positively and significantly correlate with Nigeria's employment growth rate (EGR).

2. Review of Related Literature
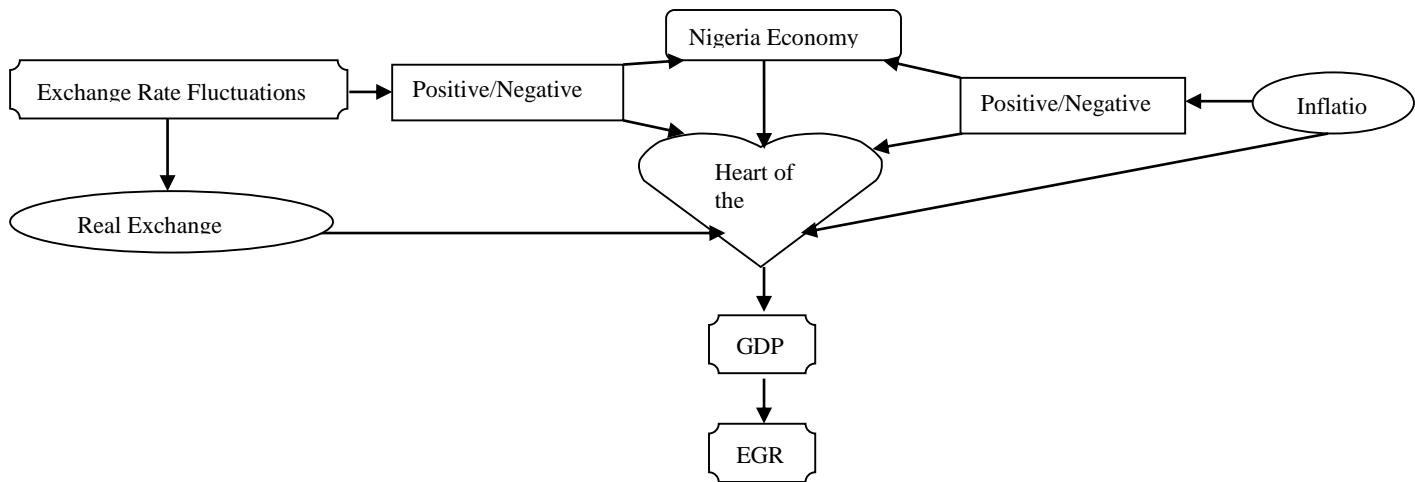
2.1 Conceptual Framework

Figure 2.1: Conceptual Framework showing the proxies for economic development, exchange rate, and the possible relationship between the exchange rate, inflation, and economic growth.

The economy is a country's heartbeat. The state of the economy significantly determines whether the heartbeat will survive. The Nigerian economy has experienced difficulties because of excessive prices and exchange rate fluctuations since the COVID-19 outbreak. This has been troublesome as the country's economy, or its "heartbeat," continues deteriorating. The framework in Figure 2.1 demonstrates how inflation and exchange rates can positively and negatively affect a country's economy.

Exchange rates, which indicate how much a nation's currency is worth relative to other currencies, fluctuate according to the world market conditions. These variations may impact domestic inflation rates. A nation's heartbeat can be impacted by its inflation rate, which can also significantly affect its currency's value and exchange rates with other countries' currencies. However, this may have an impact on the GDP and employment rate of the country. The growth of a currency and the foreign exchange rate are more likely to be significantly impacted negatively by inflation than a significant positive effect. A nation's exchange rate may not be advantageous even if its inflation rate is extremely low. Still, a very high inflation rate will probably harm the nation's exchange rates with other countries. The relationship between inflation and exchange rates can destabilize the country and disrupt daily operations. Generally speaking, a currency loses purchasing power when inflation is high. The increased cost of goods deters investors from investing in new ventures. This can devastate the economy and have a negative impact on the heartbeat of the nation. When the opposite occurs, that is, when inflation is low, more money enters the nation, increasing the value of the currency as its purchasing power rises and enhancing the exchange rate. The implication is a boost in the economy as every activity goes smoothly and the heartbeat is restored.

2.2   Conceptual Review

The exchange rate represents the price of one currency with another. It displays the conversion rate at which a foreign currency unit can be converted into a local or national currency (Kalu et al., 2019). The recent relationship between exchange rates and economic growth has been the subject of much research (Morina, Eglantina, Ugur, Mirela & Marian, 2020). Morina et al. (2020) looked at the impact of real exchange rate instability and found that growth requires less exchange rate volatility. The study also validated trade openness and fixed capital development as additional factors encouraging consistent economic growth. Gatawa and Mahmud (2017) analysed the short and long-run impacts of exchange rate fluctuations on agricultural export volume in Nigeria. The results revealed that the official exchange rate significantly impacted agricultural export volumes. Kalu, Ugwu, Ndubuaku, & Ifeanyi (2019) examined how exchange rates and foreign reserves interact. Focusing on the Nigerian economy, they gauge how responsive foreign reserves are to exchange rate factors. All the variables relating to exchange rates were employed as independent variables, and the foreign reserve was used as the dependent variable. Real exchange rates and reserves were shown to be positively significant, while nominal exchange rates and reserves were found to have a positive but non-significant relationship with foreign reserves. This supports the need for appropriate policy direction in regulating exchange rates to achieve the best economic outcomes for the Nigerian economy.

Economic literature has demonstrated the exchange rate to be a crucial factor in setting both short- and long-run macroeconomic growth and development goals (Ehikioya, 2019). According to Paul and Muazu (2017), the consequences on economic activity have made exchange rate volatility, or a continuous fluctuation in the exchange rate, one of the current topical topics. Additionally, it has been suggested that inflation, another economic issue many rising nations face, has a positive or negative association with economic growth (Baharumshah, Ly & Mark 2016). This suggests that the cumulative effects of these difficulties might hurt an economy and have cross-border consequences. Divergent viewpoints exist about the relationship between exchange rate fluctuation and how it affects economic performance. Accordingly, Ozcelebi 2018 stipulates that exchange rate instability promotes economic growth, but others, like Barguellil et al. (2018), state that exchange rate inhibits growth. According to Phiri (2018), data usage, methodology, the study's time frame, and country-specific characteristics may all have contributed to the variations in the researchers' conclusions. For instance, in analyzing the relationship between exchange rate and export output for South Africa, Chamunorwa and Choga (2015) and Ngondo and Khobai (2018) used various approaches. The former used GARCH and the latter ARDL. They concluded that output is negatively impacted by exchange rate instability. However, Katusiime, Frank, and Abul (2016) used the ARDL model for Uganda and claimed that shocks to the exchange rate positively impacted GDP.

Jibrin, Jelilov, and Gayypov (2017) investigated how changes in exchange rates affected the ECOWAS region's GDP and other macroeconomic parameters. The ten (10) West African countries that made up the study sample were examined from 1990 to 2014. For analysis, the Ordinary Least Square (OLS) method was used. The findings indicated that exchange rates significantly impacted the GDP of Benin, Guinea-Bissau, Liberia, and Nigeria. Munthali, Kisu &

Macdonald (2010) acknowledged the contribution of real effective exchange rate shocks to Malawi's GDP and discovered a weak and statistically significant negative correlation between these variables. Mahonye and Zengeni (2019) hypothesized that real exchange rate devaluation for the country could be inflationary and that the move tends to encourage exports and, as a result, boost economic performance in the country. They made this claim in a study on the influence of variations in the exchange rate on inflation and its attendant implications on economic growth for Zimbabwe. This argument is irrelevant to the connection between the nation's GDP and its exchange rate devaluation.

About the inflation-growth nexus, various arguments have permeated the empirical literature, arguing that depending on the methodology, data, and country-specific characteristics, the impact of inflation on economic growth could be either positive or negative (Baharumshah et al. 2016; Akinsola and Odhiambo 2017; Phiri, Nomahlubi, & Simba 2018). Fischer (1993), Bruno and Easterly (1995), and Huybens and Smith (1999), among others, established in earlier empirical investigations that inflation influences economic growth positively, with the qualification that only excessive inflation lowers productivity and economic activity in an economy. Ha, Marc & Hakan (2019) accepted the regional effects of exchange rate instability on inflation and GDP in their investigations without much opposition. Olamide, Kanayo, and Andrew (2022) looked into the impact of fluctuating exchange rates on the inflation-growth nexus from 2000 to 2018. In order to accomplish the study's objective, three main analytical techniques—Pooled Mean Group (PMG), Generalized Moments (G.M.), and Dynamic Fixed Effect (DFE)—were used. The study's results demonstrated that inflation and exchange rate instability have a detrimental effect on economic growth. In another survey of interest rate reforms, inflation, and investment channels to economic activity within the Southern African Development Community (SADC) regional bloc, Moyo and Roux (2019) confirmed a negative association between inflation and economic growth. Further findings indicate that the resulting impact of exchange rate instability on inflation has a negative effect on economic growth: the more volatile the exchange rate, the poorer the relationship between inflation and growth is. This supports the menu cost theory of price setting, which states that the exchange rate pass-through effect occurs more quickly with a higher inflation rate.

The adverse effects of failing to control inflation, particularly in emerging countries, have also been recognised (Baharumshah et al. 2016). Inflation has been shown to have a positive impact on GDP. According to the Mundell-Tobin theory, an economy can tolerate a certain amount of inflation because it encourages people to invest in financial assets rather than cling to their cash. This is because improved capital accumulation improves economic activity and lowers the interest rate. In their respective investigations, Thanh (2015) and Mahawiya, Abraham, & Oteng-Abayie. (2020) used a panel smooth transition regression model and came up with differing conclusions regarding the inflation threshold required for economic growth. Any degree of inflation above this could undermine regional financial and economic development. This demonstrates that the inflation-growth concept is still relevant for developing nations.

3.   Data, Variables, and Research Methodology

This study investigates the effects of exchange rate fluctuations and inflation on economic growth in Nigeria using quarterly data from 1990 to 2022. Secondary annualised time series data were employed in the study. The data set was compiled using information from the World Bank and the Central Bank of Nigeria (CBN) between 1990 and 2022.

Variables/ Research Methodology

The estimation processes follow a number of pre-estimation tests, ARDL estimating, and diagnostic tests. The study uses an ex-post facto research design. To compare the findings of this study with those of past empirical investigations, the data used in this study were primarily taken from the body of already published literature. GDP and employment growth (E.G.), which measures economic growth, are the endogenous variable, whereas real exchange rate and inflation are the exogenous or causative variables.

Model specification

The ARDL Framework is used to structure the model for this study. The benefits include the ability to handle various integration orders, robustness in the face of small samples, and even the potential to solve diagnostic issues like autocorrelation. Based on the outcome of the bond test, the shor-run ARDL model was applied to test all two hypotheses. The model is specified as follows:

$$\Delta GDP_t = a_{oi} + \sum_{i=1}^{p} a_{1i}\Delta GDPt\text{-}i + \sum_{i=1}^{p} a_{2i}\Delta RER_{t\text{-}i} + \sum_{i=1}^{p} a_{3i}\Delta INFR_{t\text{-}i} + \text{Кclb} + e_{it}$$

$$\Delta EGR_t = a_{oi} + \sum_{i=1}^{p} a_{1i}\Delta EG\ t\text{-}i + \sum_{i=1}^{p} a_{2i}\Delta RER_{t\text{-}i} + \sum_{i=1}^{p} a_{3i}\Delta INFR_{t\text{-}i} + \text{Кclb} + e_{it}$$

Where: clb represents the residual generated
Δ signifies change
GDP = gross domestic product
EGR = employment growth rate
RER = real exchange rate
INFR = inflation rate
e = error term

4. Data, Preliminary Test and Interpretation of Results

Table 1 displays the results of the correlation matrix and the descriptive statistics for the period under study. The table shows the basic descriptive statistics for all the data, including mean, maximum, and minimum values. The Jacque Bera Statistics, which are tests for the normality of the distributions, the kurtosis, the skewness, and the standard deviation, a measure of dispersion, are also included. Since all of the variables' kurtosis, except for the inflation rate, are lesser than three, it was found that the variables are primarily playtykurtic.

Table 1: Descriptive/Correlation Analysis

	Descriptive Analysis			
	GDP	EGR	RER	INFR
Mean	246.2807	11.49612	151.7622	18.20159
Maximum	574.1800	12.78000	445.4700	72.84000
Minimum	27.75000	10.15000	7.390000	5.390000
Std. Dev.	182.9082	0.613322	126.4848	15.41093
Skewness	0.179304	-0.165910	0.759852	2.111284
Kurtosis	1.396868	2.721635	2.469886	6.248306
Jarque-Bera	14.50515	1.008307	13.92405	152.5509
Observations	129	129	129	129
	Correlation Analysis			
	GDP	EGR	RER	INFR
GDP	1			
EGR	0.282164	1		
RER	0.809422	0.609914	1	
INFR	-0.445706	0.012673	-0.343583	1

The lowest part of the table contains the correlation matrix's findings. The inflation rate, which was statistically significant at 5%, showed a predictable negative association with GDP and RER. The real exchange rate fluctuation and inflation had a statistically significant positive impact on economic growth. The pre-test analysis showed positive and negative correlations between inflation, economic development, and exchange rate fluctuation.

Table 2: Stationarity tests

S/N	Variables	ADF Stat	Critical Values			Order of Integration
			1%	5%	10%	
1	GDP	-3.234824 PV (0.0014)	-2.583***	-1.943***	-1.615***	1(1)
2	EGR	-3.482453 PV (0.0257)	-3.146**	-2.884**	-2.579**	1(1)
3	RER	-2.015022 PV (0.0425)	-2.584**	-1.943**	-1.615**	1(0)
4	INFR	-3.621940 PV (0.0066)	-3.484***	-2.885***	-2.579***	1(0)

Note: GDP, EGR, RER, and INFR represent Gross Domestic Product, Employment Growth Rate, Real Exchange Rate, and Inflation Rate, respectively. *** and ** are, respectively, the statistical significance at 1%, and 5%

The collected data are subject to the scientific test of the Augmented Dickey-Fuller Test, which is a pre-test. Before conducting the analysis, observing the data set's nature is necessary. This is necessary to avoid spurious results. The unit root result in Table 2 shows real exchange rate fluctuation, and the inflation rate was stationary at level I(0). The employment growth rate and GDP, which serve as economic growth (ECG) measures, remained stationary at their first difference, I(1). In light of the findings, the decision to use the Auto Distributive Lag (ARDL) technique for the study was justified.

A co-integration test must be done on the variables to determine whether a long-term link exists because they are in levels and the first difference. The Shine and Smith (2001) Bound test was deemed suitable for achieving this.

The hypothesis is stated as follows:
H_o: no co-integrating equation
H_1: H_o is not true

The Long-run Model (ECM) and the short-run model, the Autoregression Distributed Lag (ARDL)

Decision Criteria for the Bound Test
Reject the null hypothesis of no co-integration at 10%, 5%, or 1% significance level.

The co-integration test is carried out if there is a long-run relationship and the estimated F-statistic is greater than the critical value for the upper bound 1(1). The Error Correction Model (ECM), the long-run model in this situation, is estimated.

On the other hand, the co-integration test is unnecessary if there is no long-run relationship and the estimated F-statistic is lower than the critical values for the lower bounds 1(0). The short-run model's Autoregression Distributed Lag (ARDL) is estimated in this instance. The results of the Bounds Test performed on all hypotheses are displayed in Table 3 below:

Table 3: Summary of Bound Test Result

Dependent Variable	F-Statistics	Significant Level	Upper Bound Limit 1(1)	Lower Bound limit 1(0)	Co-integration	What Next???
GDP (Hypothesis One)	F_{LTNFFC} = 1.541260	10%	2.63	3.35	No	Estimate the ARDL (Short-run Model)
		5%	3.1	3.87		
		2.5%	3.55	4.38		
		1%	4.13	5		
EGR (Hypothesis Two)	F_{LTNFFC} = 4.766278	10%	2.63	3.35	No	Estimate the ARDL (Short-run Model)
		5%	3.1	3.87		
		2.5%	3.55	4.38		
		1%	4.13	5		
Appropriate Lag Length for all two hypotheses						
Hypothesis One						
Lag	LogL	LR	FPE	AIC	SC	HQ
2	-380.3266	128.3881*	34.16509*	6.369034*	6.484563*	6.415955*
Hypothesis Two						
2	-229.7082	152.1721*	0.001427*	-3.714185*	-3.598657*	-3.667265*

Source: Author's Computation using data from CBN and World Bank

Table 4 displays the results of the bound test. For both hypotheses, the f-statistics results are lower than the critical values at the lower bound limit 1(0). The test result shows a short-run relationship; as a result, the

short-run ARDL model was applied for Hypotheses one and two.

Table 4: ARDL model on the impact of real exchange rate fluctuations and inflation on gross domestic product (GDP) in Nigeria

Variables				
Short-run Estimation				
		Coefficient	t-Statistic	Prob.*
GDP (Dependent Variable)				
ΔRER		-0.562323***	-6.751758	0.0000
		(0.0000)		
ΔINFR		-0.026818*	-0.850695	0.3966
		(0.3966)		
C		1.926373	1.629613	0.1058
		(0.1058) *		
Observation after adjustment		**127**	**127**	**127**

R^2	99%
F-statistics	30856.72
Prob(F-statistic)	0.000000
Durbin-Watson stat	1.85 (Appxo. 2)

Source: Author's computation using data from CBN and World Bank. The ***, **, and * show the hypotheses are significant at 1%, 5%, and 10% significance level, respectively. P-values are in parathesis.

The R^2 of 99% in Table 4 above illustrates the model's goodness of fit. This suggests that only 1% of the relationship is explained by variables outside the model, while the independent variables accounted for 99% of the variation in GDP. The entire regression is significant as the F-statistics of 30856.72 and the corresponding P-value of 0.000003 are pointers that the result can be used for a meaningful analysis. There is no indication of a first-order serial autocorrelation based on the Durbin-Watson statistics (DW) value of 1.85, approximately 2. As a general rule, DW statistics roughly equal to 2 indicate that a first-order serial correlation is absent.

Table 4 presents the ARDL result of hypothesis one, real exchange rate fluctuation and inflation on economic growth (GDP). The findings showed that the real exchange rate fluctuation had a detrimental effect on Nigeria's economy (Heartbeat of the nation) proxy with GDP growth. This is illustrated in our model in Figure 2.1. The outcome demonstrated that changes in exchange rates can negatively explain the fluctuations in Nigeria's economic growth. In other words, changes in the exchange rate impede the nation's economic development. Given Nigeria's significant reliance on imports, it appears that a rise in exchange rate fluctuation has a negative impact on the country's economic growth.

Additionally, a negative correlation between inflation and GDP was found, indicating that the effects of inflation on the country's economic growth were adverse. According to Revelli (2020), one possible explanation for this would be the country's operating environment, which makes it so that any exchange rate instability might worsen inflation and, as a result, undermine regional financial operations. Moyo and Pierre (2019) also mentioned inflation as a significant economic issue. Furthermore, they contended that a rising and steady inflation rate could result in imported inflation in a nation and reduce the purchasing power of the populace.

Table 5: ARDL model on the impact of real exchange rate fluctuations and inflation on employment growth rate in Nigeria

Variables				
Short-run Estimation				
		Coefficient	t-Statistic	Prob.*
EGR (Dependent Variable)				
ΔRER		4.770005*	1.466738	0.1451
		(0.1451)		
ΔINFR		-0.010030***	-5.874892	0.0000
		(0.0000)		
C		0.168443	2.441416	0.0161
		(0.0161) **		
Observation after adjustment		**127**	**127**	**127**

R^2	99%
F-statistics	7893.561
Prob(F-statistic)	0.000000
Durbin-Watson stat	2.01 (Appxo. 2)

Source: Author's computation using data from CBN and World Bank. The ***, **, and * show the hypotheses are significant at 1%, 5%, and 10% significance level, respectively. P-values are in parathesis.

The relationship between the exchange rate and employment growth rate is shown to be positive by the real exchange rate coefficient. According to the theoretical expectation, a 1% increase in Nigeria's exchange rate will result in a 4.77% increase in the employment growth rate while holding the influence of all other essential variables constant. This is to be expected because a rising currency rate makes Nigeria's exports less expensive abroad, increasing revenue as demand rises. As a result, there will be more merchandise exported. Of course, an increase in employment rate is necessary to meet the volume of exported commodities due to the rise in exported goods.

The outcome of how inflation affected employment growth showed that the inflationary consequence negatively impacted the growth rate. This shows that exchange rate volatility has negatively impacted the employment growth rate: the more volatile the exchange rate, the worse the employment growth rate relationship in the nation's heartbeat. This supports the menu cost

theory of price setting, which states that the exchange rate pass-through effect occurs more quickly with a higher inflation rate. The model's goodness of fit is demonstrated by the R^2 of 99% in Table 6. This indicates that whereas independent factors were responsible for 99% of the variation in GDP, variables outside the model only account for 1% of the connection. The F-statistics of 7893.561 and the associated P-value of 0.000003 indicate that the result can be used for a meaningful analysis, making the entire regression significant. The Durbin-Watson statistics (DW) value of 2.01 does not suggest a first-order serial autocorrelation.

A diagnostics test, the Breusch-Godfrey Serial Correlation LM Test, was carried out to support the results' outcome further. Table 7 contains the result:

Table 6:Diagonistic Test for ECM model; Hypothesis Two

	statistic	s*R-squared
pothesis One	0.3362	128
pothesis Two	0.9983	982

The result in Table 7 looks good; the F-values are 0.3128 and 0.3128, respectively, which are way above the 5% significance level. This implies the model is not suffering from serial correction; therefore, the result is suitable for a meaningful interpretation.

5.   Conclusion, Summary and Recommendation

This study evaluated the effects of exchange rate fluctuations and inflation on economic development in the Nigerian economy. The dependent variable is economic development proxied with GDP and EGR, while the independent variables are exchange rate fluctuation and inflation. Exchange rate fluctuation is proxied with real exchange rates. The estimation method used a combination of ARDL and correlation matrix. In particular, the study put out hypotheses regarding the interactions between exchange rate fluctuations, inflation, and economic development on the one hand and their effects on the employment growth rate on the other. We can conclude that changes in exchange rates have negatively impacted the nation's economic development (Heartbeat of the nation), leading to inflation. Although exchange rates and inflation negatively affect GDP, there is a positive correlation between exchange rate inflation and employment growth. As a result of rising costs for products and services and increasing demand for more workers to meet that demand, inflation may result in higher employment growth.

Exchange rate imbalances may cause inflation to impact economic growth, negatively slowing Nigeria's economic development. Further, the negative effect of exchange rate fluctuation on inflation caused the nation's inflation-growth pass-through. The diversification ought to have precedence over all else, as it is said that it is foolish to put all of one's eggs in one basket.

These findings are consistent with the body of literature that has demonstrated that a stable exchange rate and a low level of inflation can ensure a country's economic development in developing countries (Ogujiuba and Cornelissen, 2020).

Valued addition

This study was conducted in Nigeria due to the persistent and continuous rise in the exchange rate and inflation in the country. Studies on the relationship between exchange rate fluctuation and inflation are almost nonexistent in the country. There is, therefore, a need for this study. The study contributed to already existing knowledge in this field, as much has not been done. In addition, the study constructed a framework showing the relationship among the study variables. There is a   positive and negative relationship between the variables. It was established that the relationship affected the nation's heartbeat positively and negatively.

Policy Implication

The results of this study could have a lot of policy implications. The negative impact of exchange rate fluctuations on the country's economic growth suggests that monetary and fiscal measures taken to support local currencies and limit the importation of particular commodities and services have not had the desired effects for the country. In Nigeria, inflation and exchange rate fluctuation are perennial problems. The nation's monetary authorities should uphold their obligations under the country's monetary policy by ensuring that the negative effects of exchange rate imbalances on economic growth are dynamically addressed through appropriate policies and with the requisite political will. Finally, it appears that current policies have not been effective enough, given the detrimental effects of the complementary influence of inflation and exchange rate instability on economic growth. As a result, it is essential to reassess economic policies that will support regional currencies and promote domestic manufacturing.

COMPETING INTERESTS

The authors have no competing interests to declare.

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HOW TO CITE THIS ARTICLE:

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