DOES GDP MATTER WHEN ASSESSING EXCHANGE RATE PASS-THROUGH TO INFLATION AND AGGREGATE IMPORT? EVIDENCE FROM ECOWAS REGION

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Abstract

The study examines how aggregate import and inflation dynamics are affected by exchange rate pass-through in ECOWAS nations. The study's theoretical underpinnings are based on buying power parity, which holds that since imports are valued in US dollars, abrupt changes in import prices will impact the importing countries' currency exchange rates. The analysis made use of panel data from 2006 to 2023 from the four most populous West African nations: Nigeria, Ghana, Cote d'Ivoire, and Niger Republic. This study makes use of Non-Linear Autoregressive Distributed Lag (NARDL). The results of this study show that the exchange rate and total imports have an unequal pass-through. An uneven pass-through between inflation and exchange was also discovered by the study. An asymmetric pass-through between inflation and exchange was also discovered by the study. The study concluded that to properly examine exchange rate pass-through, GDP must be included as a distinct variable. To lower the level of total imports, the report advises policymakers in ECOWAS economies to develop import substitution policies. In order to lower the region's unfavourable inflation rate, the study also suggests that measures to lower inflation be implemented such as a reduction in government spending in administration and firm monetary policies.

Keywords; Aggregate imports, ECOWAS, ERPT, Inflation, Purchasing power parity.

Jel Classification Code: C33, C044, C055

1. Introduction

As countries trade, a price change in one country is likely to affect the traded prices of goods in another country. The pass-through rate is the rate at which a change in one country's pricing impacts the price of a traded good in another. The long-term elasticity of import prices with respect to exchange rates is known as the exchange rate pass-through (ERPT) to import prices (Bas & Kara, 2020). A good knowledge of ERPT by policymakers in a country enables the country to proactively formulate and implement policies that target any adverse effects from exchange rate issues from importers. An

ECOTIS report (2022) noted that aggregate imports in ECOWAS countries have witnessed significant growth over the past decade; the region's import sector has played a crucial role in meeting the domestic demand for various goods and services and fostering international trade relations. Motivated by an expectation that the ERPT to import prices may change over time, this paper examines the time-varying behaviour of ERPT in the four most populated West African countries.

With a diverse range of imports, including machinery, consumer goods, raw materials, and petroleum products, ECOWAS members maintain a vibrant and dynamic import market. Depending on the demographic structure, a nation's population can have either a beneficial or negative impact on the nation. Within and between nations; the structure of production and consumption is directly impacted by population growth over time. For the majority of ECOWAS nations, the population growth rate is still increasing, in contrast to the industrialized economies where it is decreasing. The country's commercial connections with other nations will be greatly impacted by how governments and corporations handle the opportunities and difficulties presented by demographics (Urich et al., 2024).

Few studies have attempted to directly or indirectly link exchange rate pass-through with the population of a country. For instance, the study by Hetel and Keeney (2006), observed that population growth raises both the supply and demand for goods and services. As a result, the majority of developing nations are forced to raise their import demand, which will affect the exchange rate. The type of exchange rate system that the nation is using will dictate how severe the pass-through rate is. Since the US dollar is the most tradable and widely accepted legal tender for the purchase and sale of goods and services on global markets, any increase or decrease in the global market, when paired with the US dollar's strength, could have a variety of effects on the exchange rates of trading nations (Edwards et al. 2003). It's worth noting that, while high international goods prices benefit export-oriented countries, they cause major challenges for importing countries.

ECOWAS countries have tried many measures over the years to proactively prepare for shocks in the prices of goods and services, in an attempt to alleviate perceived negative consequences. Such measures include; maintaining separate exchange regimes, to stockpiling goods and services especially, oil inventories. However, such policies have been ineffective owing to the fact that, no government is able to accurately forecast the scope and severity of such kinetics (Fatai & Akinbobola, 2015). As a result, the problem has persisted leading to alternative and more advanced methodologies being used to analyze the effect of aggregate import and inflation on ERPT.

The objectives of the study include determining whether a symmetric pass-through exists between aggregate imports and exchange rate dynamics among the selected ECOWAS countries. The study also investigates if, there is a symmetric pass-through between inflation and ERPT movement among the selected ECOWAS countries. Finally, the study finds out if, GDP matters as a separate variable in the study of exchange rate dynamics.

The study is important to importers and exporters, researchers, as well as monetary policy authorities charged with the management of inflation targeting measures, exchange rate and other macroeconomic management because a good knowledge of ERPT to inflation and aggregate imports will enable them to understand and devise policies that will ensure that countries in ECOWAS benefit from imports price changes or at least cushion against its adverse effects.

2.0 Review of Relevant Literature

2.1 Conceptual Review

The issue of exchange rate fluctuations and their effects on economic activity has been one of the most significant challenges in managing economic policy globally, especially in rising and developing nations. Changes in exchange rates have the potential to seriously harm home economies and reduce a nation's ability to compete. Based on the relationship between the exchange rate and other economic variables and the exchange rate's critical role in monetary policy formulation, prior research has also emphasized the significance of the exchange rate as a tool for attaining overall economic improvement (Carrier-Swalloe et al., 2021). Therefore, a solid grasp of ERPT is crucial for formulating policy, particularly for central banks in charge of maintaining price stability and managing the exchange rate.

ERPT is the term used to describe how changes in exchange rates affect consumer prices, trade volumes, investments, and import and export pricing (Frimpong & Adam, 2010). The effect that exchange rate variations have on local prices and the rate at which they spread define how important they are for macroeconomic adjustment. The relative price of commodities will be impacted by exchange rate fluctuation if the degree of pass-through is significant, which will cause trade balances to quickly alter. For instance, a high ERPT causes the cost of imported goods to increase, the demand for imports to decline, and consumers to switch to domestically produced items. On the other hand, the exchange rate has minimal impact on domestic pricing and trade balances when the ERPT is low.

2.2 Theoretical Review

The fact that international trade prices are negotiated mainly in US dollars is the theoretical starting point for causality between international trade kinetics and ERPT dynamics. The monetary theory of exchange rate determination, purchasing power parity (PPP), and the law of one price (LOOP) serve as the foundation for the theoretical literature on ERPT (Bada et al., 2016).

2.2.1 The Law of One Price and Purchasing Power Parity.

As an extension of the law of one price (LOOP), purchasing power parity (PPP) establishes the theoretical foundations for the relationship between price and exchange rate under the assumption that there are no trade barriers or transportation expenses. However, trade frictions do occur in real-world situations, and these distort the PPP

assumptions. The law of one price is still helpful in determining the relationship between prices and the exchange rate despite these modifications.

The prices of identical goods in different markets must be the same after considering the currency exchange rate. (that is, if the prices are taken into consideration)" is what the LOOP says, according to Umoru et al. (2023). Therefore, total pass-through should be ensured when two markets are in equilibrium and the prices of tradable goods should not differ when stated in the same currency. A change in the native currency of one market will cause an equal change in the pricing of the other, even if the markets are located in different nations.

The following is an algebraic representation of PPP without transportation costs and tariffs:

$P_t^a = EXC_t P_t^* \ P_t^*$ ---------- (1)

Where P_t^a represent the domestic price at the time (t), Pt stands for the world import price and $EXCH_t$ is the nominal exchange rate.

In certain situations, the LOOP might or might not hold because of trade frictions. This is because domestic import pricing is influenced by a number of factors, such as producer markup, manufacturing costs, and exchange rate variations. The macroeconomic counterpart of the microeconomic LOOP is the PPP principle. Conversely, the LOOP links the exchange rate to the relative costs of a basket of goods. Depending on whether the focus is on the macroeconomic level or the firm level, ERPT is theoretically supported by both theories. However, in the short term, PPP cannot endure due to transaction costs, non-traded commodities, price stickiness, incomplete completion, and various legal barriers (Feensta & Taylor, 2008).

Three transmission channels were identified by Garcia and Restrepo (2001) as how the exchange rate influences domestic inflation: (a) a direct impact on the consumer price index through the pricing of imported goods (b) an impact on intermediate-goods prices; and (c) an impact on price setting and expectations, including the anticipated monetary policy response. The study was conducted using the Chilean evidence and employing the cointegration and error correction technique.

According to Bada et al. (2016), the monetary theory explains how changes in exchange rates have a direct impact on price levels by combining Krugman's monetary exchange rate model with the LOOP and PPP. Increases in the money supply should be equivalent to increases in inflation and depreciation of the exchange rate, all other things being equal. This approach holds that the money supply, interest rate, price level, and exchange rate are all nominal variables that are interconnected over the long term. Decisions on monetary policy can therefore significantly affect important economic indicators like inflation and pricing.

2.3 Empirical Review

2.3.1 Imports and Exchange Rate Pass-through

The degree of ERPT also has a significant impact on the effect of spending switching, which causes current account adjustments as a result of ER movement. Numerous authors have examined how inflation affects ERPT levels and provided several explanations for why prices cannot be fully passed on to customers. Burstein, et al. (2003) undertook a study in the US and Argentina by representing more than 40% of retail prices in the US and roughly 60% of the retail prices in Argentina. The study asserted that adding local value reduces the sensitivity of consumer prices to exchange rates since imported items must pass through a distribution sector before reaching consumers. In a similar vein, Edward and Igal-Magendzo (2003), collected data from strictly dollarized economies and employing treatment regression analysis, found that highly monetized and dollarized nations likewise have slower rates of economic growth than non-dollarized nations and that the inflation rate in dollarized nations is substantially lower than in non-dollarized economies.

Additionally, Cheikh et al. (2003) examined how geopolitical risk affected ERPT between September 2020 and August 2022, using Caldara and Lacoviello's (2022) geopolitical risk (GDP) index as a cutoff point. They discovered that high geopolitical uncertainty surrounding the Ukrainian crisis had probably raised ERPT prices. Lastly, it should be noted that a high GDP indicates higher production rates, which in turn indicates a stronger demand for the nation's goods. Demand for a nation's currency frequently rises in tandem with an increase in demand for its goods and services. Similarly, Rowland (2003) used VECM to study ERPT for Colombia and discovered that ERPT was lacking for both import and domestic prices. He discovered that while pass-through is modest for producer pricing (28%) and extremely limited for consumer prices (15%), import prices react to changes in the exchange rate quickly (80% within 12 months).

Aliyu et al. (2010) used VECM to examine the extent of ERPT to import and consumer prices in Nigeria from 1956 to 2007. They concluded that over the reviewed period, Nigeria's ERPT to import and consumer prices was insufficient (low), consistent, and noteworthy. Additionally, they discovered that ERPT is somewhat larger for imports than for consumer prices, indicating that pass-through decreases occur throughout Nigeria's pricing chain.

Additionally, Berga (2012) used SVAR to investigate ERPT about imports and consumer pricing in Ethiopia. Quarterly data using impulse response functions served as the basis for the conclusions. He observed that ERPT is more robust for import pricing than for consumer prices. Alvarez et al. (2012) used Chile as a case study to assess whether ERPT into import prices are dropping by employing a unique database of disintegrated import prices both at the border and wholesale level in Chile. Their findings showed that import prices had a substantial and non-declining pass-through from changes in exchange rates.

Likewise, Fatai and Akinbobola (2015) examined how ERPT affected Nigerian import prices, inflation, and monetary policy; they estimated the impulse response function and variance decomposition using the six variables VAR. They discovered that ERPT in Nigeria over the reviewed time is low and transient for inflation, but moderate, considerable, and persistent for import prices.

The question of what level of GDP growth causes asymmetric pass-through of one currency against the other has always existed, despite studies suggesting that GDP growth amplifies responses to import prices and inflation dynamics (Ndou & Gumata, 2017a). Using counterfactual analysis and adopting data from South Africa, the authors found that the evidence is consistent with a model of optimizing importing firms, which suggests that the degree of ERPT is higher during periods of GDP growth. In a different study, Ndou and Gumata (2017b) using data obtained from South Africa, investigated how GDP regimes affected the ERPT to inflation. He employed counterfactual analysis. Their research demonstrates that GDP growth regimes cause non-linearity in the way inflation reacts to the depreciation of the South African rand.

Carriere-Swallow et al. (2021) investigated the relationship between the exchange rate and the economic situation using complementary methodologies. They capture a pertinent characteristic using each variable. They discovered that the degree of economic uncertainty is raising PT into consumer prices and inflation expectations, which may indicate that exporters are less inclined to modify their markup following cost increases during these times.

Ulrich et al. (2024) examined the relationship between population growth and international trade components (exports, imports and trade volume) in Europe from 2001 to 2021 using fixed effect regression. The study concluded that population growth appears to depress exports by boosting local demand for goods and services, while simultaneously reducing imports because of weakened economic conditions and diminished purchasing power.

In a similar study, Hayelom et al. (2023) investigated the effect of exchange rate pass-through on imports in South Africa using data from 1970Q to 2020Q1. The study utilized a generalized impulse response function. The study concluded that the exchange rate pass-through to imports in South Africa is incomplete but relatively high. Equally, Okereke et al, (2023) studied the impact of the exchange rate on economic growth in Nigeria utilizing data from 1070 to 2022. ARDL tool was used to analyze the data collected and the study concluded that there is a positive relationship between exchange rate and economic growth in the long run.

2.3.2 Inflation and Exchange Rate Pass-through

The negative consequences of inflation are widely known in the majority of West African nations. Since the majority of West African nations have been dealing with multifaceted and multidimensional inflation, ERPT to consumer pricing and inflation has been highly topical. Shintani et al. (2009) estimated the impact of ERPT on inflation using a nonlinear

time series analysis. They collected data from the United States from 1995 to 2007. The study concluded that the decline in ERPT is associated with lower inflation. Shin et al (2014) suggested a nonlinear ARDL model in which a single-threshold repressor is decomposed into its positive and negative partial sum components for studies on asymmetric cointegration.

A study by Abdullai (2016) used the SVAR approach to examine the impact of macroeconomic shocks on ERPT on consumer price inflation in Nigeria. The outcome demonstrates Nigeria's poor and insufficient ERPT to consumer price inflation. Additionally, there is a high rate of adjustment to structural shocks from the money supply, output, monetary policy rate, and exchange rate. Kara et al. (2007) employed time-varying parameters and regression that appeared to be unrelated to examining the effect of ERPT on inflation in Turkey between 1980 and 2006. They discovered that the exchange rate's pass-through effect is less than it was before the floating exchange rate regime. Furthermore, they found that the exchange rate regime and the inflation targeting approach are the two key elements that affect inflation.

Similarly, Sadeghi et al. (2015) used the dynamic Panel GMM estimators to examine the impact of ERPT on domestic inflation in a few Middle Eastern and North African nations. The empirical finding demonstrates that the devaluation of the exchange rate significantly and favourably affects domestic pricing. Kassi et al. (2019) investigated the impact of exchange rate pass-through on consumer prices by collecting data from Asian developing countries from 1995Q1 to 2016Q4 using NARDL. The study found that ERPT is asymmetric in both the short and long –run.

Teferra (2020) employed NARDL analysis in his study on ERPT and inflation dynamics in a few chosen sub-Saharan African nations, including Ethiopia. Using time series data from 1992 Q1 to 2018 Q4, the study discovered that the production gap, global oil prices, and nominal effective exchange rate appreciation were the main determinants of long-term consumer price index (CPI) inflation. Furthermore, the short-term ERPT was influenced by the money supply and nominal exchange rate depreciation.

Equally, Nuhu (2021) used annual time series data from 1968 to 2019 to examine the impact of ER volatility on inflation in Nigeria. The analysis of the study was conducted using the VECM approach. Their results demonstrate that the consumer price index is positively and significantly impacted by the money supply and nominal exchange rate.

As a largely import-dependent sub-region, the population of ECOWAS countries has a significant effect on its level of imports, which is ultimately connected to its exchange rate movement. Furthermore, the lack of consistent results on the relationship between aggregate imports and ERPT dynamics, particularly in emerging nations, indicates that further study and analysis are needed.

3.0 Research Methodology

According to Fratzscher et al. (2014), when monetary authorities react to price fluctuations, foreign producers may raise the prices of exports or limit supply (if the US

currency depreciates, and vice versa). Hence, ERPT can either be positive or negative in connection to the aggregate imports, inflation and GDP. The inflation rate, on the other hand, has an impact on ERPT, due to an increase in exchange rate movement, all things being equal. This usually manifests in symmetric or asymmetric pass-through to domestic prices. The degree of market uncertainty also has a significant effect on both imports and ERPT. If individuals perceive a currency to operate as a haven, such as the US dollar, a domestic appreciation of the exchange rate may occur from uncertainty (Beckmann et al., 2017).

3.1 Model Specification

This study used a non-linear Autoregressive Distribution Lag (NARDL) model, which makes exchange rate dynamics dependent on import kinetics, as proposed by Shin, et al. (2014). The NARDL approach is used in particular to determine both short-run and long-run asymmetries. An equation of exchange rate dynamics that is long-run in nature will be formulated following Ibrahim's (2015) specification.

$$EXCHp_{it}^{+} = \sum_{i=1}^{+} \Delta EXCHp_{i}^{+} = \sum_{i=1}^{+} max(\Delta EXCHP_i, o) - - - - - - - (2)$$

$$EXCHp_{it}^{-} = \sum_{i=1}^{+} \Delta EXCHp_{i}^{-} = \sum_{i=1}^{+} min(\Delta EXCHP_i, o) - - - - - - - (3)$$

Where;
$EXCHp_{it}^{+}$ Positive exchange rate at the time (t) and country (i)

$EXCHp_{it}^{-}$ = Negative exchange rate at time t and unit i
$\Delta EXCHp_{i}^{+}$ = Change in the positive exchange rate at time t and the unit i
$\Delta EXCHp_{i}^{-}$ = Change in the negative exchange rate at time t and unit i

max = maximum value
min= minimum value
P_i, unit and period

We therefore re-write equation (1) in a panel. NARDL framework as:
$\Delta Exc\square_{1t} = \beta_1 + \propto_{1i} IMP_{t-1} + \propto_{2i} LGDP_{it-1} + \propto_{3i} LINFL_{it-1} \propto_{4i} Limp_{it}^{+} + Limp_{\bar{i}t} + e_{it}$ ---- (4)
Therefore, the long-run connection between exchange rate dynamics and the rise in aggregate import prices is $\propto_{1i} w\square ile \propto_{4i}$ captures the long-run linkage between ERPT dynamics and aggregate import prices.

Where;
*L*GDP denotes the log of GDP, *L*EXCH represents exchange rate dynamics, *L*IMP is the price of imports kinetics, *L*INFL denotes the log of INFL, and $\propto (\propto_{oi}, \propto_{il}, \propto_{2i}, \propto_{zi}, \propto_{zi},)$ is expressed in vector form and long-run parameters. $Limp_{it}^{+} + and\ Limp_{\bar{i}t}$ are sums of both positive changes and negative changes in the prices of imports. The t and i represent time and unit of measurement. The values are logged in order to reduce the problem of serial correlation in the study if any.

3.2 Estimation Techniques and Sources of Data

Because it produces superior cointegration relations in small samples than classic cointegration approaches, the non-linear Autoregressive Distributed Lag (P-NARDL) estimate technique is employed in this study. Similarly, the short- and long-term asymmetry was identified using the NARDL approach. For this study, data on aggregate import prices, the Nigerian naira (NGN) exchange rate, the Ghanaian Cedi (Cedi), Cote d'Ivoire, and Niger relative to the US dollar were obtained from the World Bank databank 2024 and the CBN statistical bulletin 2023. Data collected were from 2006 and 2023. This period is used because it signifies the period of structural adjustment in most ECOWAS countries especially Nigeria.

4.0 Research Results

A variety of diagnostics tests are performed before presenting the NARDL result for this study. These include the Breuch – Godfrey L. M. test for serial correlation, the Ramsey RESET and Cusum tests to assess parameter stability, the Jarque-Berra test to assess residual normality, and the Bound test to assess long-term asymmetry between the model's variables. Table 1 lists every test along with its findings.

Table 1a. Descriptive Statistics

	EXCH	GDP	IMP	INFL
Mean	354.4133	1.46E+11	3.33E+10	7.909694
Median	359.5475	1.47E+11	3.49E+10	6.712402
Maximum	465.7363	1.72E+11	4.06E+10	17.71365
Minimum	274.4695	1.25E+11	2.28E+10	3.735852
Std. Dev.	45.23137	1.18E+10	4.33E+09	3.219411
Skewness	0.082331	0.064855	-0.947466	1.673082
Kurtosis	2.833980	2.307161	2.886281	5.013671
Jarque-Bera	0.330337	3.001809	21.77233	92.14557
Probability	0.847751	0.222928	0.000019	0.000000
Sum	51389.92	2.12E+13	4.82E+12	1146.906
Sum Sq. Dev.	294606.2	1.99E+22	2.70E+21	1492.503
Observations	145	145	145	145

Source; Author's calculation 2024

Table 1b. Residual diagnostic test

Issue	Diagnostic	Value	Probability	Result
Autocorrelation	Breuch-Godfrey L. M	0.032663	0.9699	No serial correction
Specification	Ramsey reset	2.33089	0.1284	Correctly specified
Normality	Jarque-Berra	3.579261	0.156722	Normality exist

Source; Author's calculation 2024

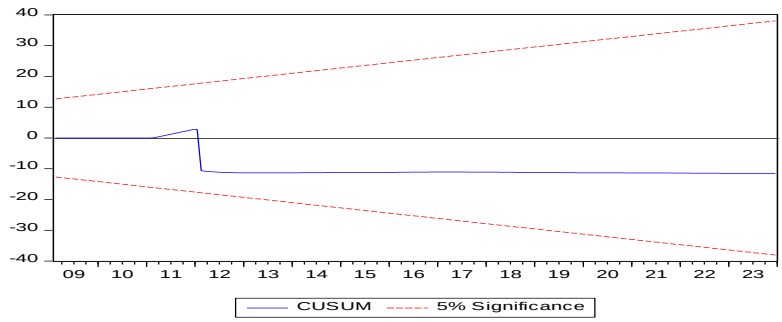

Fig. 1. The CUSUM graph

From Fig.1 above which is the CUSUM test, the result again shows that there is no presence of serial correlation and heteroscedasticity. The result further indicates that the residuals are normally distributed.

Table 2a: Bound Test

F-Bounds Test		Null Hypothesis: No levels of relationship		
Test Statistic	Value	Signif.	I(0)	I(1)
F-statistic	4.305657	10%	1.99	2.94
K	6	5%	2.27	3.28
		2.5%	2.55	3.61
		1%	2.88	3.99

Source; ***Author's calculation*** 2024

From Table 2 with the F-statistics value of 4.30565, one can infer that there is a long-term correlation between our dependent variable, exchange rate, and the independent variables, GDP, inflation rate, and aggregate imports. This is because the F-value is greater than the upper bound critical value of 3.99 at a 1% level of significance.

Table 2b; Group Stationarity test

Variables	Order	ADF test	Conclusion
INF	I(1)	-1.6193	Stationary
IMP	I(0)	-3.0739	Stationary
GDP	I(0)	-3.2737	Stationary
EXCH	I(2)	-11.8743	Stationary

Source: Author's calculation 2024

Table 2b shows that all the variables are stationary at levels and first difference except EXCH which is stationary at the second difference. *See appendix*

Table 3: NARDL Result for both the Short-run and Long-run

Short-Run Results				
Variables	Coefficient	Coefficient	Std Error	Prob
$D(IMP^{+})$	-1.82	5.34	-3.42	0.0008
$D(IMP^{-})$	1.87	6.16	3.42	0.0008
$D(INFL^{+})$	2.25	0.54	4.15	0.0000
$D(INFL^{-})$	-5.23	1.08	-4.83	0.0000
$D(GDP^{+})$	4.80	1.59	3.02	0.0029
$D(GDP^{-})$	-1.38	2.11	-6.55	0.0000
Coint Eq (-1)*	-0.049	0.0142	0.0142	0.0000
Long-run result				
EXCH (-1)	0.004	4.26	86.69	0.0001
IMP^{+} (-1)	8.9	1.32	2.72	0.0001
IMP^{-} (-1)	-3.0	2.40	-0.50	0.007
$INFL^{+}$ (-1)	-2.3	0.01	-5.73	0.619
$INFL^{-}$ (-1)	-1.8	0.03	-2.28	0.0235
GDP^{+} (-1)	-3.5	2.99	-4.62	0.0001
GDP^{-} (-1)	14.7	8.12	7.23	0.0001

Source; Author's calculation 2024

As a follow-up to the short-run and long-run estimation results, the Wald test is conducted to determine the asymmetric nature of the relationship between variables.

Table 4: Asymmetric Test (Wald Test)

Test Statistics	Value	df	Probability
F-Statistics	135.2455	3,211	0.0001
Chi-square	405.7366	3	0.0001

Source; Author's calculation 2024

The exchange rate has asymmetric impacts on both positive and negative changes in our dependent variables, according to the Wald test result in Table 3 above.

5. Discussion of Results,

According to our NARDL's long-term projections, a 1% increase in total imports results in an 8.9% rise in exchange rate pass-through; this outcome is consistent with Brun-Aguerre et al. (2017) findings. However, a decline in total imports is not statistically significant, suggesting that the link is asymmetric. It is important to remember that the economies of the four most populous West African nations import a lot of energy, production inputs, military hardware, general goods, and services. As a result, a decrease in total imports does not necessarily translate into a decrease in exchange rate pass-through.

An asymmetric relationship is seen about inflation; that is, during the period under examination, a 1% increase in inflation caused an ERPT to drop by around 2.3%, whilst a 1% decrease in inflation caused the pass change rate of the exchange rate to rise by 1.8%. This demonstrates unequivocally the unequal relationship between ERPT and inflation.

Our findings point to inadequate competitive market structures and downward pricing rigidity. This is entirely consistent with Kassi et al.'s (2019) findings. Lastly, a positive GDP increase resulted in a negative exchange rate pass-through, but a decline in GDP also resulted in a larger decrease in the exchange rate pass-through rate. This result is consistent with related research by Okereke et al. (2023).

From the ECM depicting the short-run results, it is seen that all the independent variables used in the study were statistically significant at 5% and below. The cointegration term indicates that the short-run dynamics are stable and the dependent variable reverts to the long-run average. Specifically, the coefficient of -0.049 shows that it takes a monthly average of 0.05 to revert to equilibrium whenever there is disequilibrium or a yearly average of 0.06

The impact of aggregate imports and inflation rate on the pass-through effect of the exchange rate is examined in this study. Four countries (Nigeria, Ghana, Niger and CIV) were selected based on their population. Using population as a criterion is hinged on the work of Ulrich et al. (2024) who noted that population plays a crucial role (especially the demography of the population) in a country's consumption pattern. It must be noted that aggregate imports in this study refer to imports of energy, oil, production inputs, agricultural inputs and products etc.

The relationship between aggregate imports and ERPT was shown to be asymmetric in the long run, supporting similar studies such as Heyelom et al. (2023). Equally, the relationship between inflation and ERPT exhibited an asymmetric relationship and was statistically significant in line with similar work by Shintani et al. (2009). Finally, the question of, whether GDP matters or has a direct pass-through relationship with the exchange rate has been settled by this study, because both the positive and negative shocks of GDP were statistically significant to the ERPT. This result gives credence to similar studies by Okereke et al. (2023).

6. Conclusion and Recommendations

However, studies on the relationship between GDP and ERPT are scarce because most studies note that the effect of GDP on ERPT is indirect through other macroeconomic variables such as inflation rate, money supply etc, hence, using GDP as a separate variable has been discouraged. However, this study made use of GDP as a separate variable and the results of adopting this approach showed interesting outcomes. In this study, both the positive and negative changes in GDP to exchange rate dynamics were statistically significant and this answers the question that GDP matters when estimating the effect of exchange rate pass-through to inflation and aggregate imports among ECOWAS countries.

The following suggestions are based on the study's findings:

Because of the asymmetric relationship between total imports and exchange rate kinetics, governments in the impacted nations should work to lower total imports, particularly those of non-essential items like sanitary napkins, fancy cars, alcohol and non-alcoholic

beverages, fruits, and vegetables. This is because; this study has demonstrated that an increase in imports leads to a positive pass-through of the exchange rate.

Equally, policymakers in the selected countries should put adequate inflation-reducing mechanisms in place to reduce the inflationary situation in their countries. This is because the analysis clearly shows that there was negative ERPT when the inflation rate increased. Finally, the study found that the inclusion of GDP is necessary to the studies of ERPT. This is because the analysis revealed that both the positive and negative shocks in GDP were statistically significant in the analysis.

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