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Exchange Rate Depreciation and Inflation Dynamics in Sierra Leone: Evidence, Structural Episodes and Econometric Sensitivity

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Abstract

This paper examines the relationship between annual exchange-rate depreciation and consumer-price inflation in Sierra Leone using a World Bank country-indicator extract for 2017–2025. The study focuses on the distinction between nominal exchange-rate changes and economic depreciation, and on the redenomination of the Leone in 2022. Descriptive trends, Pearson and rank correlations, bivariate ordinary least-squares, heteroskedasticity-robust inference, lag sensitivity, leave-one-out regressions, and influence diagnostics are used. The results show a positive contemporaneous association between depreciation and inflation, with a benchmark slope of 0.630. However, the small sample of eight depreciation observations means that no defensible statement of long-run cointegration can be made. Model instability is an explicit conclusion. The analysis is associational rather than a causal pass-through estimate. The paper contributes a transparent empirical description and a concrete agenda for higher-frequency research. The findings suggest that exchange-rate movements matter for inflation in Sierra Leone, but the evidence is not strong enough to support precise policy multipliers.

Keywords: *Sierra Leone, Inflation, Exchange-Rate Depreciation, Exchange-Rate Pass-Through, Monetary Policy, Small-Sample Inference, Currency Redenomination.*

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Introduction

The roles of exchange-rate depreciation and inflation continue to be core issues in the macroeconomic policymaking of small and import-dependent economies. An external shock to consumer prices can be transmitted through an increase in the local-currency cost of foreign-priced goods and inputs when the external value of the local currency declines. The size, duration and intensity of this pass-through of the exchange rate, however, is not automatic and uniform. This depends on the currency in which imports are invoiced, the pricing behavior of firms, the degree of competition in the market, the credibility of monetary policy and the inflation environment in general (Goldberg & Knetter, 1997; Taylor, 2000; Campa & Goldberg, 2005). Imported food, fuel, equipment and intermediate goods are especially important in household expenditure and in domestic production costs, and it is therefore important to have information on these mechanisms. There is also a complex and ambiguous empirical relationship between currency depreciation and consumer-price inflation. The impact of exchange rate changes on import prices can be immediate, but can only impact consumer prices more slowly as inventories

are replenished, distribution costs change and firms adjust retail prices. Meanwhile, the domestic inflation rate, the monetary condition and confidence in the national currency can affect the exchange rate. Two variables can both be impacted by international commodity-price shocks and external financing changes. Thus, the direction of the relationship of depreciation to inflation does not necessarily reflect the direction of the causal pass-through effect, and several economic mechanisms exist that would not necessarily yield such a relationship. Recent evidence from multicurrency regimes shows that both official and parallel market exchange rates can drive inflation, with the parallel rate often being more significant (Matsvai, 2025). This finding is particularly relevant for economies where foreign exchange rationing creates a gap between official and market rates.

Macroeconomic fluctuations in small open economies are largely determined by price shocks to commodities. Naraidoo and Paez-Farrell (2023) demonstrate that a commodity price shock leads to a real exchange rate appreciation, a rise in output, inflation, nominal interest rate and the trade balance, a decrease in the unemployment rate for a commodity exporter. They highlight search and matching frictions in the labour market and the behaviour of monetary policy as important for the model to replicate their data. The evidence indicates that the effect of exogenous price shocks on domestic inflation can be complex and may not be due to exchange-rate pass-through. The study of exchange rates and inflation in a commodity exporting economy should, therefore, be sensitive to the possibility that common shocks affect both variables. Real exchange rates in emerging economies tend to be very volatile and this volatility is closely correlated with commodity prices. Yépez and Dzikpe (2022) break down international prices into their elements in order to identify the main determinants of the high volatility of real exchange rates. They show that, based on quarterly data for 28 countries between 1985 and 2015, the relative price of tradeable goods explains most of the volatility observed, commodity price movements are responsible for approximately 30% of the real exchange rate's movements, and commodity price shocks lead to large and persistent real exchange rate appreciations in emerging market economies. The results make it clear that the role of commodity prices in the behavior of exchange-rate policy is important. They also indicate that a bivariate analysis of depreciation and inflation might mask the impact of exchange-rate changes from the impact of commodity-price changes. The transmission of commodity prices up the pricing chain is also only partial and uneven. The authors, Jiménez-Rodríguez and Morales-Zumaquero (2022), study the commodity price pass-through for the global commodity price index and advanced and emerging economy commodity price indices of the main commodity groups (agricultural raw materials, food and beverages, energy and metals). Their findings indicate that there is partial pass-through from commodity prices to producer prices, but there is less evidence of pass-through to consumer prices. The price increases in all four categories lead to significant price increases in almost all cases in the producer price index, with the largest effects being found for the energy and metal categories, and the variability of producer and consumer prices in the energy category is the largest. All this work indicates that exchange rates, commodity prices and inflation are related in various ways and that careful empirical analysis is needed. The theoretical literature has focused on the non-structural nature of pass-through. Shah and Garg (2026) demonstrate a relation between pricing and the degree of pass-through, and the type of monetary policy regimes and shocks. Producer currency pricing is more likely to have a stronger pass-through effect in the short-term, because of pricing power, but this effect diminishes as more local currency prices become prevalent. The pass-through effect of an inflation-targeting regime is lower when there are interactions among the shocks. The results indicate that there is evidence that policy frameworks have an impact on the relationship between exchange-rate changes and consumer prices. This evidence indicates that the sensitivity of inflation to exchange-rate fluctuations can be affected by structural changes in trade and technology like that which can occur in Sierra Leone, being an importer.

Sierra Leone is an interesting example to look at these issues. The economy also faces external price pressures, limits its own productive potential and monetary authorities are bound in their

ability to ensure price stability, foreign exchange market needs and other needs for economic recovery and development. In addition to the economic importance of exchange-rate adjustments for monetary policy, there is their economic importance for the purchasing power of households, for agricultural and industrial input costs, for planning of public expenditure and for private-sector investment. Within an institutional framework, the relationship between currency pressures and inflation has been analyzed, drawing attention to the recent country studies conducted by the International Monetary Fund (IMF) (2024) and the World Bank (2026). The observations of these annual events have been consolidated for this research and there is a great variation in the observations between 2017 and 2025. High inflation and exchange-rate depreciation were accompanied by high inflation in episode 2022–2023, and low inflation in the following periods. An important empirical question is how closely did depreciation and consumer-price inflation track each other, and how susceptible is the apparent link to the specification and individual observations? It is also observed that the event observed is used to warn against considering a large fitted association as a stable parameter of the structure, because it may lead to a bias toward the estimate of the slope after a few years. Another measurement problem occurs due to the redenomination of the Leone. The Bank of Sierra Leone has started redenomination of the monetary system, with 1 new Leone equivalent to 1,000 old Leones (Bank of Sierra Leone, 2021). A nominal exchange rate level mix of both pre- and post-redenomination would result in an artificial discontinuity and thus the percentage change calculation would be meaningless. For this reason, this paper uses a set of equivalent exchange rates in New Leone and clarifies the distinction between an accounting conversion and a real depreciation. The existing literature on exchange rate pass-through provides a good conceptual starting point, but the results do not translate directly to Sierra Leone in the absence of considering data frequency, sample coverage and institutional factors. Price changes will not necessarily be revealed by short annual samples, will not necessarily reveal reversals during the year, and will not necessarily provide reliable coefficients. The present study tackles this question by reporting on the evidence available in annual data, which can be credibly supported rather than the estimation of an elaborate long-run model with too few observations. This is important because you need to be able to make inferences clearly and recreate this work at a later date. Against these, the study examines the relationship between depreciation of the annual exchange-rate and the inflation rate of consumer-price index for Sierra Leone in the period 2017–2025. In particular, it reports the evolution of the two series; provides estimates of contemporaneous relationships based on alternative depreciation measures; considers lagged relationships and some macroeconomic controls; and conducts robustness tests based on heteroskedasticity-consistent inference, residual diagnostics and influential-observation analysis. The null hypothesis of the benchmark regression is that the contemporaneous depreciation coefficient equals 0. The estimated coefficient is considered as an association coefficient and not as a long-run pass-through coefficient or as a causal elasticity. There are three contributions. First, the paper provides an economically relevant recent history of inflation and depreciation in Sierra Leone, which is well documented. Second, it is an example of how the selection of the currency units, the selection of the specifications and some observations can affect the interpretation of a short macroeconomic series. Third, it shows a clear direction to a more complete monthly and/or quarterly exchange-rate pass-through analysis, allowing for a more complete use of monetary and price data.

Literature Review

A depreciation in the local-currency price of foreign currency could lead to an increase in the domestic price of tradables. Pass-through is affected by the currency of the goods invoices, reliance on imports, pricing to market, distribution margins, market power and policy credibility. Changes in exchange rates also can have an effect on future prices and wage-setting. Theoretically, recent studies indicate that the amount of pass-through is not predetermined but depends on the interaction of pricing strategies, type of shocks and monetary policy regimes (Shah & Garg, 2026). The short-term pass-through effect is more pronounced with producer currency pricing because it is easier for the producer to exert pricing power, but this diminishes as the practice of local currency pricing increases. The pass-through effect of shocks is that it reduces inflation in an

inflation targeting regime. According to these results, policy frameworks have a role in determining the implications for consumer prices of exchange rate changes. Inflation and exchange-rate pressures are potential risks to be considered and can reinforce each other. Common shocks, like commodity prices and the financing situation for fiscal needs and supply disruption can affect both variables. Thus, a parallel contemporaneous OLS slope is not capable of separating these mechanisms. Goldberg and Knetter (1997), Taylor (2000) and Campa and Goldberg (2005) are some of the literature on exchange-rate pass-through. The ARDL bounded approach of Pesaran, Shin and Smith (2001) and the unit root methodology of Dickey and Fuller (1979) might be applicable for a longer follow-up study though the annual sample is not adequate to apply these two methods to their strong form. Recent focus has been on the impact of globalization and technology on exchange rate pass-through. Darwiche and Baker (2026) study the moderation effects of trade shocks on the pass-through from the internet to inflation. They find that the negative impact of exchange rate depreciation on inflation is compounded in economies with higher import shares and that higher internet use further increases the compounding effect. One of their key conclusions is that globalization due to the internet affects the pass-through mechanism and therefore the sensitivity of interest rates to inflation. This emphasizes the need for policy makers to take account of the changing technological structure worldwide in designing appropriate monetary policy. This evidence is important because Sierra Leone is a highly import-dependent economy and, based on the evidence presented here, an economy can become less or more sensitive to exchange-rate movements, depending on the structural changes in trade and technology. The experience of a multicurrency regime gives further lessons that apply to economies that have foreign exchange rationing. The study by Matsvai (2025) focuses on the relationship between official and parallel market exchange rate for inflation in Zimbabwe from 2014 to 2024 in the multicurrency system. The study employs monthly data in an ARDL estimation framework which reveals a positive short run and long run relationship between the official market exchange rate, the parallel market exchange rate and inflation, with the most significant variable being the parallel market exchange rate. Domestic productivity has a highly significant negative impact on inflation through both the official and parallel exchange rate models in both the short and the long run. Money supply, real interest rate, trade balance, foreign prices, foreign output, stock market prices and foreign currency reserves have varied impacts through either the official or parallel market exchange rate models. This information is also applicable to Sierra Leone, where there is a possibility that parallel market activity affects prices as well as domestic productivity constraints may be contributing to inflationary pressures.

Theoretical literature on the pass-through effect on the exchange rate highlights the importance of the credibility of monetary policies. Low inflation and credible monetary policies will diminish the pass-through from exchange rate changes to prices, according to Taylor (2000). If firms anticipate low inflation, they will be less responsive to exchange-rate fluctuations by changing prices. The inflation environment and the credibility of the central bank may be key factors in pass-through. Pass-through can be greater in economies with a legacy of high inflation because firms and households have come to understand how to react quickly to exchange-rate signals. Further support for this view is provided by Shah and Garg (2026), who demonstrate that pass-through decreases in an inflation-targeting regime, and that the interaction between pricing strategies and shocks influence the process of pass-through. Empirical analysis with micro-information shows an empirical link between uncertainty and product-level inflation, and that this link is positive. Using micro-level data from the Chilean Consumer Price Index for 2010–2018 and a typical dynamic distributed lags specification, Canales and Lopez-Martin (2024) run a series of analyses.Canales and Lopez-Martin (2024) run a series of analyses using micro-level data underlying the Chilean Consumer Price Index for 2010–2018, and a standard dynamic distributed lags specification. They discover that the uncertainty and the exchange rates are positively and negatively linked to product-level inflation, and are positively and negatively linked to the frequency of positive and negative price changes at the variety-establishment level. The results for frequencies are quantitatively important and provide a focus on this adjustment

margin in the face of exchange rate and uncertainty movements, and show little association with the size of price adjustments. The results of this evidence imply that the number of price changes and not the size of those changes is a significant channel through which exchange-rate changes impact inflation. Pass-through is also emphasized in the literature as being nonlinear and asymmetric. Based on retail scanner data from Kazakhstan—a developing country with notably and unpredictably high exchange rate volatility, Kim, Lee and Im (2024) find that there is an incomplete but non-negligible pass-through of exchange rate shocks into prices, and that a year after an exchange rate shock, the pass-through is 50%. The pass-through is found to be asymmetrical in the sense that the price response to a change in the exchange rate is different for imported goods than for domestic goods. They also find that pass-through is non-linear: the pass-through effect is stronger when the exchange shock is small, consistent with the presence of menu costs. This asymmetric and non-linear price response to exchange rate shocks could be important for designing appropriate inflation targeting policies, particularly in emerging economies with high inflation.

The importance of the role of inflation expectations in the dynamics of nonlinearities has been also discussed. Anderl and Caporale (2023) estimate a smooth transition regression model with different inflation expectations regimes for five inflation targeting countries and three non-targeters over the period January 1993–August 2021. The transition variable is either market or survey measures of inflation expectations, and an assessment of the nonlinear model is made against a linear benchmark model. The pass-through to both consumer and import prices is found to be higher in the nonlinear model and at times very close to complete. It is also stronger in the inflation targeting regime when inflation expectations of markets and consumers are high; this suggests that anchoring inflation expectations has contributed to decrease the pass-through, and that inflation expectations have a greater effect on the pass-through in inflation targeting countries. Another dimension of interest is time variation in pass-through. Using the dynamic model averaging method, Colak, Erden and Ozkan (2024) revisit the time varying nature of the pass-through effect in the exchange rate. It gives the flexibility of changing the model parameters and the model predictors over time, thus mitigating the uncertainty of the model in terms of pass-through degrees. The results for the 39 advanced and emerging economies in the sample indicate that in every quarter, the short-run pass-through effect has followed a different pattern than in the previous one, with the global crisis of 2008–09 responsible for the change. The pass-throughs are small at first, but have increased over the course of the sample period since the beginning of the pandemic in all advanced economies, and are around double in emerging economies; pass-throughs have a U-shape.

Pass-through has been observed for African economies. Sumba, Nyabuto and Mugambi (2024) explore the threshold effect of pass through of exchange rate depreciation on inflation in Kenya, and augment the depreciation of the exchange rate in the monetary policy rate using the Taylor rule. They apply monthly time series data from January 2005 to November 2023 and a non-linear threshold autoregressive model to find that the depreciation of the exchange rate has a positive and significant impact on inflation only when it is above the threshold value of 0.51% per month. Contrastingly, the results of the Taylor rule analysis show that the depreciation of the exchange rate has positive and significant impact on the monetary policy rate across the different thresholds of 0.67%. They also determined that the relationship between exchange rate depreciation and inflation, as well as the relationship between exchange rate depreciation and the monetary policy rate are not-linear, meaning that the pass through effect is higher when the exchange rate depreciation is high. Manopimoke, Nookhwun and Pattararangrong (2024) have studied the stabilizing function of the flexible exchange rate. They employ zero, sign and exchange rate pass-through restrictions in a model of a structural VAR to identify structural macroeconomic shocks. In general, they conclude that exogenous exchange rate shocks account for approximately half of the total exchange rate shocks in emerging countries. Notwithstanding this predominant role, they discover that exchange rate does not seem to be a source of shocks to the real economy, but rather it absorbs and dampens the output growth and inflation volatilities.

They also show that this shock-insulation property varies starkly with the shock and that while flexible exchange rates have sizeable shock-insulating effects on demand and global monetary policy shocks, the overall effects of the shock are small in the presence of supply shocks. Pass-through sensitivity of the exchange rate and the inflation targeting have been a subject of numerous studies. Naqvi, Rizvi, Mirza and Kazi (2025) aim to quantify a possible link between exchange rate pass-through and the inflation targeting framework while focusing on four Asian economies which have adopted inflation targeting during the period of 1990–2010 against a control group of non-inflation targeters. They estimate the impulse response of domestic inflation to exchange rate and world commodity price shocks using a structural VAR model that restricts the covariance matrix with non-recursivity restrictions applied at the same time. Past empirical evidence indicates that there is no pass-through in Asian inflation targeting and non-inflation targeting economies since the 1990s, and that world commodity prices are the leading variable explaining domestic inflation rather than the depreciation of the local currencies in these economies.

Mirroring the inflation targeting literature, Mirza, Naqvi, Rizvi and Boubaker (2023) have investigated the relationship between energy price shocks and exchange rate pass-through under the inflation targeting regime. To test the hypotheses and make an empirical test, the results from the analysis of the non-linear autoregressive distributive lag model are based on secondary data for twenty-one countries that follow an inflation target for 1997-2020, with special consideration of possible asymmetries, show that exchange rate depreciation raises the domestic price level in the long run, and exchange rate appreciation lowers it. This study also shows that increased energy prices lead to increased inflation in economies that target inflation. The results indicate inflation targeting economies have a big problem to maintain their fundamental price stability target, as the exchange rate seems to pass through to the retail prices of the important goods, particularly during the energy price shocks. Luangaram and Wongpunya (2024) have investigated the links between trade openness, exchange rate changes and monetary policy. Within a small open economy, such as Thailand, which is highly trade-opened, they conclude that reacting to exchange rate changes with policy rates increases welfare, more so than ignoring them. Besides, they note, opening up trade has the effect of flattening out the Phillips curve, making it more sensitive to the need to push back against deviations from the inflation target with policy tightening. Their results stress the importance of taking changes in exchange rates into account, as well as the level of trade openness when deciding about monetary policy. The distribution of inflation risks and the nonlinear impact of exchange rates have been studied by Banerjee, Contreras, Mehrotra and Zampolli (2024). They analyse the determinants of inflation risks in a large panel of advanced and emerging market countries with quantile regression methods. They confirm that the exchange rate has a quantitatively significant, non-linear effect on the inflation forecast in emerging markets: depreciation is related to greater inflation increases in the upper tail of the inflation distribution, causing it to be more right skewed. Unlike the case of advanced economies, however, the non-linearities are not evident. They also find that the adoption of inflation targeting is associated not only with lower mean inflation but also with a less right-skewed distribution.

Ji (2022) has studied the pass-through of the exchange rate shocks to prices at different points in the distribution chain. The main findings of this study are that the pass-through effect is not strong (only moderate for consumer prices) and that a country's currency appreciation is likely to reduce domestic inflation at the early production stage using a distribution chain of pricing. The paper suggests that the monetary authority can contribute to the permanent component of low exchange rate pass-through to domestic inflation by continually conducting a credible and efficient stable-inflation policy. Heterogeneity in pass-through across product categories has been observed by Oktay (2022). The pass-through estimates are derived from a synthetic difference-in-differences strategy based on the large appreciation of the Swiss franc after the shock of the withdrawal of the Swiss franc–Euro floor in January 2015. The pass-through is very low (0.12) overall over one year. The pass-through is very strongly dependent on the product

category with the highest value being 0.80. These differences are found to be correlated with the nature of the products' international trade, since the prices of products with high degree of international tradability, high import share or tourism dependence are found to be more sensitive to the exchange rate. Pham, Nguyen, Nguyen and Vu (2024) analyze the pass-through under a pegged regime and find it to be heterogeneous. Analyzing the exchange rate pass-through effects into consumer prices in Vietnam with a pegged regime during 2001–2019 using a structural vector autoregressive approach, they find that the degree of pass-through in the country is higher than that in other emerging and developed economies. The difference is best attributed to high and volatile inflation, high degree of openness and exchange rate regime. They also find that pass-through is positively related to the volatility as well as the level of inflation on a sectoral level. Mendali and Das (2024) have looked at the asymmetric effect of exchange rate fluctuations on prices in India. They employ non-linear autoregressive distributed lag model, using five variables: exchange rate, consumer price, output gap, money supply and oil prices, and the structural break techniques to study the differential effect of the pass-through and arrive at the conclusion that exchange rate shocks have no significant impact on consumer price in the long run. In terms of policy, this means that the pass-through has insignificant consequences for monetary policy, and depreciation might pose a little threat to price stability. They also conclude that oil price shocks are not one of the key factors affecting inflation in the country.

The time-varying nature of pass-through in Peru has been documented by Rodriguez, Castillo, Calero, Salcedo Cisneros and Ataurima Arellano (2024). Examining the evolution of exchange rate pass-through into import, producer and consumer prices in Peru from 1995Q2 to 2022Q4 using time-varying parameter and stochastic volatility VAR models, they find a resurgence of pass-through into import and producer prices since 2009, particularly during the period of a strong US dollar following the 2013 taper tantrum and from 2020 to 2022. This may have been reflected in the recent rise in volatility of the exchange rate and in the uncertainty about future macroeconomic policies. Pass-through was greater in the short term than in the long term, perhaps due to the fact that prices are often dollarized in the import and producer markets in Peru; consumer pass-through rose until 2009 and has stayed at 15% ever since. Volatile exchange rates and inflation targeting have been the subject of research on pass-through by Alexius and Holmberg (2024). They model pass-through using a Bayesian VAR with time-varying parameters and stochastic volatility, and then provide analysis of the nature of pass-through over time and to macroeconomic variables. Pass-through increases with the size of the volatility of the exchange rate and the level, variance and persistence of shocks to domestic prices, which is in line with theory. Pass-through tends to be higher for observations with low inflation for the persistence of exchange rate shocks, and the impact of the persistence of inflation on pass-through is far larger for appreciations of the exchange rate than for depreciations. A helpful summary of the literature from a meta-analysis of pass-through estimates is found below. To gain insight into the reasons for difference in estimates, and to establish consensus for the conflicting results, Iorngurum (2025) carries out a meta-analysis. The data are based on 72 primary studies with 1219 estimates of the pass-through from the nominal effective exchange rate to consumer prices for 111 countries. The study shows that, although factors that are asymmetric and product-specific are important, the results differ primarily based on the country-specific and methodological characteristics, after integrating them together using Bayesian model averaging. The country specific factors are: trade openness, exchange rate flexibility, status of the economy, exchange rate persistence, and commodity dependence, and the methodological factors are estimation methods, data characteristics, endogeneity bias, and the choice of control variables by the researcher. The study concludes that a 1 per cent rise in the exchange rate causes the consumer price level to fall by 0.09 per cent, while a 1 per cent fall in the exchange rate causes the consumer price level to rise by 0.19 per cent. There is little empirical literature specific to Sierra Leone. There are few detailed academic studies of pass-through for exchange rates, while the IMF (2024) and the World Bank (2026) offer country-level analysis. This paper is a first step in closing this gap in reporting annual data in a clear way, and recognizes the constraints of small sample size. The study does not make any claim to be able to represent a precise measure of pass-through, but

rather a detailed depiction of the co-movement between depreciation and inflation in the recent period.

Hypothesis Development

Theoretical models of exchange-rate pass-through predict that a depreciation of the local currency raises the domestic price of imported goods, which in turn can feed into consumer prices (Goldberg & Knetter, 1997; Campa & Goldberg, 2005). The magnitude of this effect depends on the share of imports in consumption, the pricing behavior of firms and the monetary policy framework. Empirical evidence from multicurrency regimes shows a positive relationship between exchange rate depreciation and inflation (Matsvai, 2025). In the case of Sierra Leone, the economy is highly dependent on imports of food, fuel and intermediate goods, which suggests that exchange-rate movements should be reflected in consumer prices. The 2022–2023 episode of sharp depreciation and high inflation is consistent with this mechanism. Therefore, the following hypothesis has been developed:

H1: *Annual exchange-rate depreciation is positively associated with contemporaneous consumer-price inflation in Sierra Leone.*

Taylor (2000) argues that pass-through is lower when inflation is low and monetary policy is credible. In contrast, in high-inflation environments, firms adjust prices more frequently and pass-through tends to be higher. Shah and Garg (2026) show that pass-through declines in an inflation-targeting regime, which is consistent with the view that the monetary policy framework shapes the transmission of exchange-rate movements to prices. Anderl and Caporale (2023) find that pass-through is stronger when markets and consumers expect high inflation rates in the future, suggesting that anchoring inflation expectations helps to reduce pass-through. The structural episode of 2022–2023 in Sierra Leone was characterized by both high depreciation and high inflation, while the periods before and after showed lower values on both variables. This suggests that the association between depreciation and inflation may be state-dependent. The subperiod comparison in Table 7 shows that mean inflation and mean depreciation were both substantially higher in 2022–2025 than in 2017–2021. Therefore, the following hypothesis has been developed:

H2: *The positive association between exchange-rate depreciation and inflation is stronger during high-inflation episodes than during low-inflation episodes.*

In small samples, a single influential observation can drive the estimated coefficient. The 2022–2023 episode contributes substantial variation to the estimated association, and the leave-one-out analysis in Table 6 shows that excluding 2023 reduces the slope from 0.630 to 0.376 and renders it statistically insignificant. This suggests that the headline association is not robust to the exclusion of the most influential year. A credible empirical analysis should therefore acknowledge this sensitivity rather than presenting a single estimate as definitive. Therefore, the following hypothesis has been developed:

H3: *The estimated association between depreciation and inflation is sensitive to the exclusion of influential observations, particularly the 2023 observation.*

Exchange-rate changes may affect consumer prices with a delay as inventories are replenished, contracts are renegotiated and firms adjust retail prices. The lagged specification in Table 4 (M3) shows a positive but statistically insignificant coefficient for lagged depreciation. This suggests that the temporal ordering of the relationship is not well identified in annual data. The hypothesis is that lagged depreciation has a positive association with inflation, but the evidence is weaker than for the contemporaneous specification. Therefore, the following hypothesis has been developed:

H4: *Lagged exchange-rate depreciation is positively associated with inflation, but the association is weaker than the contemporaneous relationship.*

Inflation is influenced by many factors beyond exchange rates, including GDP growth, monetary conditions and external shocks. The GDP-controlled specification in Table 4 (M5) shows that the depreciation coefficient remains positive and significant when GDP growth is included as a control. This suggests that the association between depreciation and inflation is not simply a reflection of broader macroeconomic conditions. However, the small sample size limits the number of controls that can be included. The hypothesis is that the positive association between depreciation and inflation holds even after controlling for GDP growth. Therefore, the following hypothesis has been developed:

H5: *The positive association between exchange-rate depreciation and inflation is robust to the inclusion of GDP growth as a control variable.*

Methodology

The primary input is the previously assembled World Bank Sierra Leone Selected Indicators extract. Nine annual observations are recorded for inflation, exchange rate, import growth and GDP growth. The original report draws on multiple underlying statistical systems. The 2025 entry is treated as a reported series value in this extract, but its final/revised status must be rechecked against the source vintage before submission. No synthetic observations have been added. Exchange rate is reported in new-Leone-equivalent units per US dollar in the supplied workbook. The Bank of Sierra Leone's redenomination factor is 1 new Leone to 1,000 old Leones. The level series must be harmonized before constructing annual changes. The workbook's rounded annual values may differ from the World Bank API's unrounded official-rate series; results therefore apply to this exact published extract. Depreciation is calculated as

$$100 \times \left(\frac{E_t}{E_{t-1}} - 1\right)$$

; log depreciation is

$$100 \times \ln\left(\frac{E_t}{E_{t-1}}\right)$$

; inflation is annual average consumer-price growth in percentage points. Positive depreciation denotes a weakening Leone. The first year has no calculated depreciation. The data are presented in Table 1.

Table 1: Annual Data for Sierra Leone, 2017–2025

Year	Inflation %	FX NLe/USD	Depreciation %	GDP Growth %
2017	17.900	7.400	—	3.200
2018	16.000	7.900	6.757	2.900
2019	14.800	9.000	13.924	5.500
2020	13.400	9.800	8.889	-1.300
2021	11.900	10.400	6.122	5.900
2022	27.200	14.100	35.577	5.300
2023	47.700	21.400	51.773	5.700
2024	28.400	22.500	5.140	4.600
2025	7.600	23.500	4.444	4.800

The benchmark equation is

$$\pi_t = \alpha + \beta Dep_t + \varepsilon_t$$

A log-change specification substitutes

$$100 \times \ln\left(\frac{E_t}{E_{t-1}}\right)$$

Additional exploratory specifications use lagged depreciation, inflation changes and a restricted macroeconomic control. Because n is exceptionally small, models with many parameters are intentionally avoided. Statistical inference is shown with conventional and HC3 robust standard errors where feasible; neither approach solves omitted-variable bias or endogeneity. The analysis also reports Spearman rank association, Jarque-Bera residual normality, Breusch-Pagan heteroskedasticity, Durbin-Watson residual autocorrelation, leverage/influence measures and leave-one-out coefficients. These diagnostics have low power in small samples and must be interpreted cautiously.

Results and Discussion

Descriptive Statistics

The descriptive statistics are presented in Table 2. The mean inflation rate over the period is 20.544%, with a standard deviation of 12.234. The mean depreciation rate is 16.578%, with a standard deviation of 17.524. The maximum depreciation of 51.773% occurred in 2023, and the minimum of 4.444% occurred in 2025. The series shows a sharp joint inflation-depreciation episode in 2022–2023, followed by a marked moderation of annual inflation in 2024–2025. This episode contributes substantial variation to the estimated association. The 2025 observation should be checked against the final revised World Bank release.

Table 2: Descriptive Statistics

Variable	N	Mean	SD	Minimum	Maximum
Inflation	9	20.544	12.234	7.600	47.700
FX	9	14.000	6.649	7.400	23.500
Depreciation	8	16.578	17.524	4.444	51.773
Log Depreciation	8	14.444	13.952	4.349	41.722
Imports	9	12.244	18.120	-16.600	41.100
GDP	9	4.067	2.273	-1.300	5.900

Correlation Analysis

The correlation results are presented in Table 3. The Pearson correlation coefficient is 0.847 with a p-value of 0.008, indicating a strong positive linear association between depreciation and inflation. The Spearman rank correlation coefficient is 0.571 with a p-value of 0.139, which is not statistically significant at conventional levels. The Pearson coefficient measures linear co-movement, while the Spearman statistic provides a rank-based alternative. Their p-values are descriptive under the usual independence assumptions, which may be inappropriate for time series with common shocks. The difference between the two measures suggests that the linear association is stronger than the rank association, which may reflect the influence of the extreme 2023 observation.

Table 3: Correlation Tests

Measure	Coefficient	p-value	N
Pearson	0.847	0.008	8
Spearman	0.571	0.139	8

Regression Specifications

The regression results are presented in Table 4. The benchmark contemporaneous specification (M1) yields a depreciation slope of 0.630 with a standard error of 0.161 and a p-value of 0.008. The R-squared is 0.718 and the adjusted R-squared is 0.671. The estimated intercept is 10.428, and the 95% confidence interval for the slope is [0.235, 1.025]. This model uses inflation as its outcome and depreciation as a predictor. Its coefficient is a conditional sample association, not an identified causal effect.

Table 4: Regression Specifications

Specification	N	FX Slope	SE	p	R^2	Adj. R^2
M1: Contemporaneous	8	0.630	0.161	0.008	0.718	0.671
M2: Log Depreciation	8	0.781	0.210	0.010	0.698	0.648
M3: Lagged Depreciation	7	0.505	0.258	0.107	0.434	0.321
M4: Inflation Change	8	0.713	0.167	0.005	0.752	0.710
M5: GDP-Controlled	8	0.622	0.187	0.021	0.718	0.606

The HC3 standard error for the FX slope is 0.285 with a p-value of 0.0688, which is marginally insignificant at the 5% level. HC3 inference can be especially unstable under high leverage and very small residual degrees of freedom. The finding of a positive but incomplete association is consistent with the meta-analysis of Iorngurum (2025), which reports that a 1% decrease in the exchange rate leads to a 0.19% increase in the consumer price level on average across studies.

The log depreciation specification (M2) yields a slope of 0.781 with a standard error of 0.210 and a p-value of 0.010. The estimated intercept is 9.600, and the 95% confidence interval is [0.268, 1.294]. This model uses log depreciation as a predictor. Its coefficient is a conditional sample association, not an identified causal effect. The larger slope in the log specification suggests that proportional changes in the exchange rate have a slightly stronger association with inflation than absolute percentage-point changes, which is consistent with the nonlinear pass-through documented by Kim, Lee and Im (2024) using scanner data. The lagged depreciation specification (M3) yields a slope of 0.505 with a standard error of 0.258 and a p-value of 0.107. The estimated intercept is 12.327, and the 95% confidence interval is [-0.157, 1.167]. The sample size is 7. The HC3 standard error for the FX slope is 0.631 with a p-value of 0.4601. The coefficient is positive but statistically insignificant, which suggests that the temporal ordering of the relationship is not well identified in annual data. This is consistent with the microdata evidence in Canales and Lopez-Martin (2024), who find that exchange rates are associated with the frequency of price changes rather than the magnitude of individual adjustments, a channel that annual averages cannot capture. The weak lagged result also aligns with the finding of Ji (2022) that pass-through to consumer prices is moderate and occurs gradually along the distribution chain.

The inflation change specification (M4) yields a slope of 0.713 with a standard error of 0.167 and a p-value of 0.005. The estimated intercept is -13.115, and the 95% confidence interval is [0.304, 1.123]. The HC3 standard error for the FX slope is 0.219 with a p-value of 0.0174. This specification has the highest R-squared of 0.752. The stronger fit in this specification may reflect the persistence of inflation, which is consistent with the finding of Alexius and Holmberg (2024) that pass-through increases with the persistence of shocks to domestic prices. Their evidence that inflation persistence matters more for appreciations than for depreciations also suggests that the asymmetry documented by Kim, Lee and Im (2024) may be relevant here. The GDP-controlled specification (M5) yields a slope of 0.622 with a standard error of 0.187 and a p-value of 0.021. The estimated intercept is 9.835, and the 95% confidence interval is [0.143, 1.102]. The HC3 standard error for the FX slope is 0.300 with a p-value of 0.0928. The coefficient remains positive and significant at the 5% level with conventional standard errors, but is marginally insignificant with HC3 standard errors. The small change in the slope when GDP growth is added suggests that the association between depreciation and inflation is not simply a reflection of broader macroeconomic conditions. This is consistent with the finding of Matsvai (2025) that domestic productivity has a significant negative impact on inflation alongside exchange rates, which implies that both supply-side and exchange-rate factors matter. The robustness of the depreciation coefficient to the inclusion of GDP growth is also consistent with the evidence in Pham, Nguyen, Nguyen and Vu (2024) that pass-through is positively correlated with the level and volatility of inflation across sectors, independent of output fluctuations.

Residual Diagnostics

The residual diagnostics for the benchmark model are presented in Table 5. The Durbin-Watson statistic is 1.991, which is close to 2 and suggests no strong evidence of first-order autocorrelation. The Breusch-Pagan LM statistic is 0.293 with a p-value of 0.588, which does not reject the null hypothesis of homoskedasticity. The Jarque-Bera statistic is 2.346 with a p-value of 0.310, which does not reject the null hypothesis of normality. However, non-rejection is not evidence that model assumptions hold: these diagnostics have very low statistical power with only eight observations. Serial correlation, common macroeconomic shocks and endogenous policy responses remain plausible. The evidence from Yépez and Dzikpe (2022) that commodity prices explain a substantial share of real exchange rate fluctuations in emerging economies reinforces the concern that omitted common shocks may bias the estimated association. The finding of Naraidoo and Paez-Farrell (2023) that commodity price shocks affect output, inflation and the trade balance through search and matching frictions in the labour market further suggests that a simple bivariate model cannot capture the full transmission mechanism.

Table 5: Residual Diagnostics

Diagnostic	Statistic	p-value/Interpretation

Durbin-Watson	1.991	Descriptive only
Breusch-Pagan LM	0.293	0.588
Jarque-Bera	2.346	0.310

Influence and Leave-One-Out Sensitivity

The influence analysis is presented in Table 6. The leave-one-out slopes range from 0.376 to 0.726. Excluding 2023 reduces the slope to 0.376 and renders it statistically insignificant with a p-value of 0.220. The Cook distance for 2023 is 1.515, which is well above the conventional threshold of 1, indicating that this observation is highly influential. Excluding 2024 increases the slope to 0.726 with a p-value of 0.000, and the Cook distance is 0.544. The 2022–2023 episode is economically important and should not be deleted merely because it is influential. The range of leave-one-out slopes is a direct check of whether a single year materially drives the headline association. The results show that it does.

Table 6: Influence and Leave-One-Out Sensitivity

Excluded Year	FX Slope	p-value	Cook Distance
2018	0.637	0.017	0.004
2019	0.624	0.015	0.029
2020	0.619	0.017	0.013
2021	0.616	0.019	0.013
2022	0.701	0.012	0.167
2023	0.376	0.220	1.515
2024	0.726	0.000	0.544
2025	0.591	0.019	0.084

Subperiod Comparison

The subperiod comparison is presented in Table 7. The period 2017–2021 had a mean inflation of 14.800% and a mean depreciation of 8.923%. The period 2022–2025 had a mean inflation of 27.725% and a mean depreciation of 24.234%. The subperiod averages are descriptive rather than formal structural-break estimates. With so few years, a Chow test or regime-switching model would not yield reliable evidence of a stable parameter change. Nevertheless, the contrast between the two periods is striking and suggests that the relationship between depreciation and inflation may be state-dependent. This is consistent with the theoretical prediction that pass-through is higher in high-inflation environments (Taylor, 2000). It is also consistent with the evidence in Shah and Garg (2026) that pass-through declines in an inflation-targeting regime, since Sierra Leone did not operate such a regime over this period. Anderl and Caporale (2023) find that pass-through is stronger when inflation expectations are high, which suggests that the high-inflation episode may have amplified the association between depreciation and inflation.

Table 7: Subperiod Comparison

Period	N	Mean Inflation %	Mean Depreciation %
2017–2021	5	14.800	8.923
2022–2025	4	27.725	24.234

Discussion of Hypotheses

The results provide support for H1. The contemporaneous slope of 0.630 is positive and statistically significant with conventional standard errors. This is consistent with the theoretical prediction that exchange-rate depreciation raises consumer prices through imported goods and inputs. The finding is also consistent with empirical evidence from other economies. Matsvai (2025) finds a positive relationship between exchange rates and inflation in Zimbabwe, and the IMF (2024) country study for Sierra Leone documents high pass-through. Pham, Nguyen, Nguyen and Vu (2024) find that pass-through is higher in Vietnam than in other emerging and developed economies, and attribute this to high and volatile inflation, a high degree of openness and the exchange rate regime. These factors are also present in Sierra Leone. However, the association is not robust to heteroskedasticity-robust inference, which suggests that the precision of the

estimate is overstated by conventional standard errors. The finding of partial rather than full pass-through is consistent with the pricing-to-market literature, in which firms absorb part of exchange-rate movements in their margins (Goldberg & Knetter, 1997; Campa & Goldberg, 2005). The estimate is also broadly in line with the meta-analysis of Iorngurum (2025), which finds that a 1% decrease in the exchange rate leads to a 0.19% increase in the consumer price level, although the estimate in this paper is larger.

The results provide partial support for H2. The subperiod comparison shows that both inflation and depreciation were substantially higher in 2022–2025 than in 2017–2021. This is consistent with the idea that the association is stronger during high-inflation episodes. However, the small sample size prevents a formal test of state-dependence. The influence analysis shows that the 2023 observation, which is part of the high-inflation episode, is highly influential. This suggests that the estimated association is driven in part by the extreme values observed during this episode. The theoretical literature on pass-through and inflation regimes provides a rationale for state-dependence (Taylor, 2000; Shah & Garg, 2026). Anderl and Caporale (2023) find that pass-through is stronger in the regime when markets and consumers expect high inflation rates in the future, and that anchoring inflation expectations helps to reduce pass-through. Sumba, Nyabuto and Mugambi (2024) find that exchange rate depreciation has a positive and significant effect on inflation in Kenya only when it rises above a monthly threshold level, which implies a greater pass-through effect when exchange rate depreciation is high. The evidence from Darwiche and Baker (2026) that pass-through is amplified in economies with higher import shares also supports the view that structural characteristics shape the transmission mechanism.

The results provide support for H3. The leave-one-out analysis shows that the estimated slope is sensitive to the exclusion of individual observations, particularly 2023. When 2023 is excluded, the slope falls to 0.376 and becomes statistically insignificant. This indicates that the headline association is not robust to the exclusion of the most influential year. A credible empirical analysis should acknowledge this sensitivity rather than presenting a single estimate as definitive. The influence diagnostics are therefore more informative than a single significance threshold. This finding is consistent with the broader point in Iorngurum (2025) that pass-through estimates vary substantially due to methodological factors, including data characteristics and the researcher's choice of control variables.

The results provide weak support for H4. The lagged specification yields a positive coefficient of 0.505, but it is not statistically significant at conventional levels. This suggests that the temporal ordering of the relationship is not well identified in annual data. Annual averaging may obscure exchange-rate pass-through occurring within weeks or months; contemporaneous annual coefficients blend immediate and delayed adjustment. The lagged specification probes temporal ordering but does not provide a credible causal instrument. The microdata evidence in Canales and Lopez-Martin (2024) shows that exchange rates are positively associated with the frequency of price changes at the variety-establishment level, which suggests that the adjustment of prices to exchange-rate movements may occur through changes in the frequency of price changes rather than through large adjustments in individual prices. This channel would be invisible in annual aggregate data.

The results provide support for H5. The GDP-controlled specification yields a slope of 0.622, which is positive and significant at the 5% level with conventional standard errors. This suggests that the association between depreciation and inflation is not simply a reflection of broader macroeconomic conditions. However, the coefficient is marginally insignificant with HC3 standard errors, and the small sample size limits the number of controls that can be included. The result should be interpreted with caution. The finding in Matsvai (2025) that domestic productivity has a highly significant negative impact on inflation is a reminder that supply-side factors can be important drivers of inflation alongside exchange rates. Ji (2022) finds that an appreciation of the local currency tends to suppress domestic inflation at the early production

stages, although the pass-through effect only amounts to a moderate degree for consumer prices. This suggests that the stage of the distribution chain matters for the magnitude of pass-through.

Practical Applications

The findings have several practical implications. First, the positive association between depreciation and inflation suggests that monitoring exchange-rate movements can provide useful information for inflation forecasting. The Bank of Sierra Leone should monitor exchange-rate pressures alongside imported-food and energy prices, expectations and liquidity indicators. Currency-market interventions should be evaluated against reserve adequacy, fiscal consistency and the broader inflation objective. The evidence from multicurrency regimes shows that parallel market rates can be more significant than official rates for inflation dynamics (Matsvai, 2025). This suggests that monitoring should include both official and parallel market rates where they exist. Second, the sensitivity of the results to influential observations suggests that policymakers should be cautious about extrapolating from short periods. The 2022–2023 episode was unusual in both the magnitude of depreciation and the level of inflation. Policy decisions based on the assumption that this relationship will always hold at the same magnitude could be misguided. The theoretical literature emphasizes that pass-through depends on the inflation environment and the credibility of monetary policy (Taylor, 2000; Shah & Garg, 2026). In a low-inflation environment, pass-through may be lower than in a high-inflation environment. Anderl and Caporale (2023) find that anchoring inflation expectations helps to reduce pass-through, which suggests that communication and credibility are important policy tools. The evidence in Darwiche and Baker (2026) that internet-driven trade shocks moderate the sensitivity of interest rates to inflation further suggests that structural and technological change can alter the transmission mechanism over time. Third, the results highlight the importance of data quality and transparency. For statistical agencies and researchers, transparent metadata on currency units, series revisions, price-index definitions and vintage dates are essential for reproducible economic policy research. The redenomination of the Leone in 2022 is a case in point. Without careful harmonization of the exchange-rate series, the percentage change calculation would be meaningless. This underscores the need for clear documentation of data transformations. The heterogeneity in pass-through across product categories documented by Oktay (2022) also suggests that disaggregated price data would be valuable for understanding which prices are most sensitive to exchange-rate movements. Fourth, the findings suggest that exchange-rate stabilization alone cannot eliminate all sources of inflation. Government policy should address domestic supply bottlenecks, agricultural productivity, logistics and trade financing, since these channels can affect how external price shocks reach households. The literature on commodity price pass-through shows that energy and food prices can have significant effects on producer and consumer prices (Jiménez-Rodríguez & Morales-Zumaquero, 2022). The evidence in Matsvai (2025) that domestic productivity reduces inflation supports the view that supply-side policies can complement exchange-rate policy. Policies that reduce reliance on imported food and energy could help to insulate the economy from external shocks.

Theoretical Applications

The study contributes to the theoretical literature on exchange-rate pass-through by providing a transparent case study of a small, import-dependent economy. The theoretical framework emphasizes that pass-through is not a structural constant but depends on the pricing behavior of firms, the currency of invoicing, the degree of competition and the monetary policy framework (Goldberg & Knetter, 1997; Taylor, 2000; Campa & Goldberg, 2005). The findings are consistent with this framework. The estimated slope of 0.630 is less than one, which suggests incomplete pass-through. This is consistent with the theoretical prediction that firms absorb some exchange-rate movements in their margins rather than passing them fully to consumers. The microdata evidence in Kim, Lee and Im (2024) that pass-through is non-linear and asymmetric, with the price response more pronounced when the exchange shock is small, aligns with the existence of menu costs. This suggests that the aggregate estimates in this paper may mask important heterogeneity at the micro level. The study also contributes to the literature on state-dependent

pass-through. The theoretical work of Shah and Garg (2026) shows that pass-through declines in an inflation-targeting regime. This suggests that the monetary policy framework matters for how exchange-rate movements translate into inflation. In Sierra Leone, the monetary policy framework is not a full inflation-targeting regime, and the inflation environment has been volatile. This may explain why the association between depreciation and inflation appears strong in the data. The subperiod comparison, which shows higher mean inflation and depreciation in 2022–2025, is consistent with the idea that pass-through is higher when inflation is high. Banerjee, Contreras, Mehrotra and Zampolli (2024) find that the exchange rate has a quantitatively important and non-linear impact on the inflation outlook in emerging market economies, with a depreciation associated with larger increases in the upper quantiles than in the lower quantiles. This suggests that the risk of high inflation outcomes is asymmetric and that exchange-rate movements may increase the right skewness of the inflation distribution. The study also illustrates the importance of considering commodity prices in the analysis of exchange rates and inflation. Yépez and Dzikpe (2022) show that world commodity prices explain about 30% of real exchange rate fluctuations in emerging economies. Naraidoo and Paez-Farrell (2023) show that commodity price shocks can have complex effects on output, inflation and the trade balance, and that search and matching frictions in the labour market matter for the transmission. Jiménez-Rodríguez and Morales-Zumaquero (2022) document partial pass-through from commodity prices to producer prices, with energy prices explaining the highest variability of producer and consumer prices. These findings suggest that the relationship between exchange rates and inflation cannot be analyzed in isolation from commodity price shocks. The current study is limited in this respect because it does not include commodity prices as controls. This is a direction for future research. The study also speaks to the literature on multicurrency regimes and parallel markets. Matsvai (2025) finds that the parallel market exchange rate is the most significant variable for inflation in Zimbabwe. This suggests that the official exchange rate may not capture the full extent of currency pressure in economies with exchange controls. The current study uses only the official rate, and this is a limitation that future research should address. The time-varying nature of pass-through documented by Colak, Erden and Ozkan (2024) and Rodriguez, Castillo, Calero, Salcedo Cisneros and Ataurima Arellano (2024) also has implications for the interpretation of the results. Colak et al. find that pass-through levels have been rising steadily since the onset of the pandemic across all advanced countries, and that pass-through levels are approximately twice as high in emerging economies. Rodriguez et al. find a resurgence of pass-through into import and producer prices in Peru since 2009, particularly during periods of exchange-rate uncertainty. These findings suggest that the pass-through estimated in this paper for 2017–2025 may not be stable over time. A longer sample would allow for the estimation of time-varying pass-through, which would provide a more complete picture of the relationship between exchange rates and inflation.

Policy Applications

The policy implications of this study are conditional on the limitations of the data. The positive association between depreciation and inflation suggests that the Bank of Sierra Leone should continue to monitor exchange-rate developments closely. However, the small sample size and the sensitivity of the results to influential observations mean that the estimated coefficient should not be treated as a precise policy multiplier. The Bank should use the estimate as a rough guide rather than a definitive parameter. The findings also suggest that policies aimed at reducing import dependence could help to lower pass-through. If the economy produces more of its own food and energy, then exchange-rate movements will have a smaller effect on consumer prices. This is consistent with the literature on commodity price pass-through, which shows that energy and food prices are important drivers of producer and consumer prices (Jiménez-Rodríguez & Morales-Zumaquero, 2022). Policies that support agricultural productivity, logistics and trade financing could therefore have benefits beyond their direct effects on output and employment. The finding in Matsvai (2025) that domestic productivity has a highly significant negative impact on inflation provides further support for supply-side policies. The study also highlights the importance of monetary policy credibility. Taylor (2000) argues that low inflation and credible

monetary policy reduce pass-through. If the Bank of Sierra Leone can establish a track record of low and stable inflation, firms may become less sensitive to exchange-rate movements when setting prices. This would reduce the inflationary impact of future depreciations. The literature on inflation-targeting regimes supports this view (Shah & Garg, 2026; Mirza, Naqvi, Rizvi & Boubaker, 2023). Mirza et al. conclude that the exchange rate pass-through is posing a serious challenge to the inflation targeting economies in maintaining their core price stability objective and call on the authorities of inflation targeting economies to reconsider the policy framework which is convenient to ignore exchange rate pass-through, and imposes obligatory floating exchange rate regime. Sierra Leone's current inflation targeting framework is incomplete, but the principle of good communication and policy consistency could be used. The Bank should also watch for structural shifts in trade and technology, given evidence in Darwiche and Baker (2026) that globalization and technology can help to downshift the interest rate sensitivity to inflation.

The findings by Manopimoke, Nookhwun and Pattararangrong (2024) that flexible exchange rates play a stabilizing role is also applicable. They conclude that exchange rates do not generate real world shocks, but instead absorb and dampen shocks to the real economy, but this shock-insulating effect is highly shock-dependent and the benefits are small in the presence of supply shocks. This suggests that exchange-rate flexibility can be a useful shock absorber, but it is not a substitute for policies that address supply-side constraints. Luangaram and Wongpunya (2024) find that responding to exchange rate changes with policy rates enhances welfare in a small open economy with high trade openness, and that increased trade openness leads to a flattening of the Phillips curve and hence requires a stronger policy response to deviations from the inflation target. These findings suggest that the Bank of Sierra Leone should consider exchange-rate movements in its policy decisions, especially given the economy's high trade openness. Finally, the study underscores the need for better data. The current analysis is based on nine annual observations, which severely limits the scope for robust inference. A journal-strength extension should obtain at least a decade of monthly CPI and exchange-rate observations, preferably longer, from the Bank of Sierra Leone, Statistics Sierra Leone, IMF IFS and World Bank. With an adequate monthly sample, it would be possible to test stationarity, examine breaks, estimate distributed-lag or ARDL models and assess stability. This would provide a much stronger basis for policy decisions. The experience of Matsvai (2025) with monthly data in Zimbabwe shows that higher-frequency data can support more detailed analysis of the short-run and long-run relationships between exchange rates and inflation. Sumba, Nyabuto and Mugambi (2024) show that monthly data can be used to estimate threshold effects, which would be impossible with annual data.

Conclusion

The historical extract provides evidence of positive contemporaneous co-movement between exchange-rate depreciation and inflation in Sierra Leone. The benchmark slope of 0.630 is statistically significant with conventional standard errors, but it is not robust to heteroskedasticity-robust inference or to the exclusion of the influential 2023 observation. The available sample cannot establish causality or a stable long-run exchange-rate pass-through coefficient. The most defensible contribution is an auditable empirical description with sensitivity analysis, accompanied by a concrete design for stronger high-frequency research. Policy conclusions should therefore remain conditional on subsequent evidence. The study highlights the importance of data transparency, the role of the inflation environment in shaping pass-through, and the need for higher-frequency data to support robust inference.

Limitations and Future Research Directions

The first limitation is the small sample size. The study contains only nine annual inflation observations and eight annual depreciation observations. This severely constrains statistical power, degrees of freedom, structural-break detection and the stability of asymptotic p-values. It is not appropriate to describe the estimated slope as a proven long-run exchange-rate pass-through elasticity. A future research direction is to obtain at least a decade of monthly CPI and exchange-rate observations from the Bank of Sierra Leone, Statistics Sierra Leone, IMF IFS and

World Bank. This would allow for more robust estimation and inference, as demonstrated by the monthly analysis of Matsvai (2025) for Zimbabwe and the threshold analysis of Sumba, Nyabuto and Mugambi (2024) for Kenya. The second limitation is the annual frequency of the data. The annual exchange-rate indicator is a period average, and inflation is an annual average growth rate. Aligning them does not guarantee the timing needed to infer causal transmission. Annual exchange-rate averages also conceal within-year volatility. A future research direction is to use monthly or quarterly data to examine the dynamics of pass-through at higher frequency. This would allow for the estimation of distributed-lag or ARDL models and the testing of cointegration. The microdata evidence in Canales and Lopez-Martin (2024) and Kim, Lee and Im (2024) shows that exchange-rate effects operate at the level of individual price adjustments, which cannot be observed in annual aggregate data. The third limitation is the potential endogeneity of the exchange rate. The exchange rate may respond to inflation, and both variables may be affected by common shocks. A causal design would require defensible external shocks or instruments, such as a carefully validated international monetary or commodity-price shock, and a clear argument for exclusion restrictions. No such identification is asserted in this manuscript. A future research direction is to develop an identification strategy using external instruments or natural experiments. The work of Naraidoo and Paez-Farrell (2023) on commodity price shocks and Yépez and Dzikpe (2022) on the role of commodity prices in real exchange rate fluctuations provides a starting point for such a strategy. The structural VAR approach of Manopimoke, Nookhwun and Pattararangrong (2024) offers a framework for identifying structural shocks and examining their effects on exchange rates and inflation. The fourth limitation is the absence of control variables for commodity prices, monetary aggregates and fiscal variables. The current analysis includes only GDP growth as a control, and even this is limited by the small sample size. A future research direction is to include a broader set of controls, including international fuel and food prices, broad money, the monetary policy rate, import prices and seasonality. This would allow for a more comprehensive analysis of the channels through which exchange-rate movements affect inflation. The work of Jiménez-Rodríguez and Morales-Zumaquero (2022) on commodity price pass-through along the pricing chain provides guidance on which commodity price indices to include. The fifth limitation is the measurement of the exchange rate. The study uses the official exchange rate, but parallel market rates may also be relevant for price dynamics. The evidence from Zimbabwe shows that parallel market rates can be more significant than official rates for inflation (Matsvai, 2025). A future research direction is to incorporate parallel market exchange rates where data are available. This would provide a more complete picture of the relationship between currency pressures and inflation. The evidence from Oktay (2022) that pass-through varies across product categories also suggests that disaggregated price data would be valuable for understanding which prices are most sensitive to exchange-rate movements.

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