

The Impact of Exchange Rate Fluctuations and Money Supply on Inflation in Sierra Leone (1986-2019)

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Abstract

This paper aims at providing quantitative analysis of the impact of money supply and exchange rate fluctuations on inflation in Sierra Leone. The paper utilizes secondary data that were obtained from the International Financial Statistics (IFS), of all variables investigated in the model. The sample covers quarterly data from 1986:01 to 2019:04. The model was estimated using Vector Error Correction Mechanism (VECM). The empirical results confirm that in the long run, money supply and exchange rate have significant inverse effects on inflationary pressure, while real output growth and foreign price changes have direct effects on inflationary pressure. The possible justification for the inverse effect of money supply on price level is that inflation may not be due to aggregate demand pressure but rather due to hiccups in the supply chain of goods both from the domestic and foreign supply outlets. Empirical deductions also signify the presence of significant feedback from the long run to short run disequilibrium. However, there exists a causal linkage between inflation, money supply and exchange rate in Sierra Leone.

Keywords: Money supply • Exchange rate • Inflation • Real output

Introduction

The economy of Sierra Leone economy, like most developing economies, started experiencing economic problems in the 1970s. The problems that were notable in that era were exchange rate fluctuations, inflation, chronic balance of payments deficits and declining output which lead to excessive demand and fiscal instability, associated monetary instability and the absence of organized markets for securities and equities. Sierra Leone operates an open economy and this has made her to involve in international trade financed, with its rich mineral resources and agricultural exports (mainly coffee and cocoa). These commodities have provided much of the foreign exchange earnings before the outbreak of the rebel war in the 1991; they have not been meaningfully exploited for economic growth and development to the benefit of all. The country stilled one of the poorest in the world with the majority of the populace living in abject poverty. Exchange rate, money supply and prices are interrelated and affect each other. In the pursuit of non-inflationary policies, authorities target all three nominal variables in a consistent manner. However, the question is whether an announced commitment to target particular variable (rather than others) would be more binding and therefore more credible. Although it is difficult to be unequivocal on this issue, an announced fixing of the nominal exchange rate may be preferable in targeting either inflation or money supply [1].

Conceptualizing the linkages between growth in money supply and the general price level is relatively straightforward-increases in money supply lead to increase in prices. Price level changes results mainly from exchange rate devaluation. This is predicted on the assumption that the induced increases in the prices of imported inputs and final goods, following a devaluation of the local currency are passed on to the local consumer.

The rate of increase in the general price level and the exchange rate regime operation are also closely related, for instance, when a crawling peg exchange rate adopted in the economy, the implications are that it may lose a nominal anchor which could lead to inflation. Accordingly, the rate of inflation could become uncontrollable. This is because the exchange rate and money supply

are indices to the price level. Exchange rate changes the rate of increase in the price level affected each other to produce an inflation-devaluation spiral or a vicious circle in flexible exchange regimes or pass-through effects from the exchange rate changes and the foreign price level. These effects may worsen the domestic inflation rate.

According to Keren and Pack, the strength of the pass-through effects depends on the price elasticities. The loss of a nominal anchor could imply that shocks to the rate of inflation will have lasting effects, pushing the rate of inflation to a higher level and depreciating the exchange rate. In this case, exchange rate movements, money supply growth and changes in the rate of inflation drive each other. The Sierra Leone experience shows that for many years the exchange rate and the domestic price level have been unstable. Accelerating money supply growth, fiscal deficit and foreign exchange squeezed compounded the problem of inflation and exchange rate depreciation. Governments of developing countries including Sierra Leone have made efforts to achieve a steady exchange rate and slow growth in the money supply and general price level, but from research, it has been proven that there have been continuous fluctuations in these macroeconomic variables in the past four decades. It is also crystal clear that Gross Domestic Product (GDP) has been falling, while unemployment rate increasing. Also, inflation rate has been increasing, exchange rate and balance of payments, fluctuations have been worsening. The balance of payment crisis resulted among other things, a growing parallel market for foreign currency, which has been very difficult to control. Whilst the consequences on the economy have been severe [2,3].

Few studies have been conducted to explain the fluctuation of exchange rate and money supply on the general price level in Sierra Leone. Few have linked the exchange rate policy and monetary policy. Most studies have concentrated on explaining the domestic rate of inflation, where the nominal exchange rate enters as one of the explanatory variables. Others have estimated a money demand equation where the nominal exchange rate enters as one of the explanatory variables only two of these studies attempts to establish a statistical relationship between money and the exchange rate. For example, money supply growth, inflation and exchange rate are analyzed in a vector autoregressive model. The authors find that money supply growth drives nominal exchange rate changes with no feedback effects. In assessing the effect of exchange rate fluctuations and the growth in money supply on the general price level, an answer would be needed for the question below; are there link between nominal money supply and the nominal exchange rate? In the long run, De Grauwe argues that the correlation between money supply and the nominal exchange rate is relatively strong but tends to be lost in the short run. We would expect this relationship to be stronger in periods of nominal exchange rate flexibility. And finally, how do fluctuations in exchange

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rate and the growth in money supply affect the general price level in Sierra Leone is worthy of research at this point in time [4].

Literature Review

Literature on recent theories of inflation that have emerged in the past few years emphasised the role played by political stability, policy credibility and the reputation of the government and the political cycles in determining or explaining inflation. According to Selialia, this literature on inflation has come to be known as the political economy approach to macroeconomic policy. These recent theories of inflation have shifted attention away from traditional direct economic causes of inflation, such as money creation, towards political and institutional determinants of inflationary pressures. However, these theories have been criticised as they are theoretical and put emphasis almost exclusively on industrial countries. Structural factors are also believed to influence the rate of inflation. Examples of these are the weather conditions, and protective industrial and trading policies of the government. It can be argued that government protects infant industries from intra currency area trade and regulates domestic marketing of agricultural products by quantitative import restrictions through import permits or licensing. These policies are believed to have created monopolistic and oligopolistic structures of firms, which usually set their prices well above border prices. The general feeling is that these policies may be highly inflationary as prices of some of the controlled items may rise quickly.

Weather conditions, crop failures or drought are some of the structural factors that are also believed to have a direct impact on the inflation rate given that food items carry the biggest weight in the computation of the Consumer Price Index (CPI). During good weather (rainy agricultural year), prices in general, are expected to fall in the future and vice versa. Several studies have been conducted examining the impact of exchange rate and money supply on inflation. The impact of exchange rate movements on inflation and growth has been widely discussed and numerous channels through which the effects of currency fluctuations are transmitted onto the domestic price level and output have been identified in the literature.

Impact of exchange rate on inflation

Exchange rate movements can impact on domestic prices through direct and indirect channels, *via* their effect on aggregate supply and demand. The direct channel is due to operation of law of one price based on purchasing power parity theory. It is postulated that exchange rate between two currencies is determined by relative movements in the price levels in the two countries. PPP states that price levels between two countries are equal when expressed in the same currency at any period of time. Therefore, if PPP holds, exchange rate fluctuations translate into proportional movements in the domestic price level; i.e. pass-through is equal to one. In a small open economy (an international price taker), a depreciation of the domestic currency will result in higher import prices (both for finished goods and intermediate inputs), which will ultimately be transmitted to higher domestic prices. Exchange rate variations can also affect domestic prices through its indirect effect on aggregate demand. Depreciation of the domestic exchange rate reduces the foreign price of domestic goods and services, and thereby increases foreign demand, resulting to an increase in net exports and hence aggregate demand and real output. The increase in domestic demand and real income may bid up input prices and hence causing workers to agitate for higher wages to maintain a real wage. The nominal wage increase may result to further price increases. Furthermore, depreciation may increase the domestic price of imported goods and services and thereby lead to expenditure switching in favour of domestic goods and services, which will increase their demands and raising domestic prices [5-7].

Empirical Literature

Numerous researchers have studied the impact of exchange rate fluctuations and money supply on inflation and have produced mix results, based on methodological or geographical differences as well as the type of

data used. In terms of methodology, Copelman and Werner, by using a VAR model for Mexico with five variables—output, the real exchange rate, rate of depreciation of the nominal exchange rate, the real interest rate, and a measure for real money balances showed that declines in output are observed after a devaluation. During the same period, Kamin showed that the level of the real exchange rate was a primary determinant of the rate of inflation in Mexico. In a related study, Kamin and Roger examined the impact of depreciation on output and inflation in Mexico employing VAR model with four variables; real exchange rate, output, price index and US interest rate using quarterly data for the period 1981-1995. The result revealed depreciation shock leads to reduction in output and an increase in inflation. Sheeley also found that devaluations have a negative impact on output for Latin American countries, while the study by Calva, Reinhart and Vegh identified correlation between inflation and the real exchange rate in Brazil, Chile and Colombia. Using pooled time-series/cross-country analysis on the other hand, Edwards found that devaluations reduce output in developing countries in where the real GDP is explained by the real exchange rate, government spending, term of trade, and money growth. Morley also regressed capacity utilization to the real exchange rate, measures of fiscal and monetary policy, and term of trade, export growth and import growth in a pooled time-series/cross M country analysis and found that real devaluation tended to reduce output and it took at least two years for the full effects to show.

Using nonlinear three-stage least squares estimation, Domac, based on Turkish data for 1960-90, showed that unanticipated devaluations have positive effects on output but anticipated devaluations do not exert any significant effect on output. In a similar analysis, Mills and Pentecost used a conditional error correction model for four European Accession countries: Hungary, Poland, Slovakia, and the Czech Republic. They found that real exchange rate depreciation had positive effects in Poland, no significant effect in Hungary and the Czech Republic, and negative effects in Slovakia. Grigorian analyzes the dynamic effects of the exchange rate on prices in Armenia. By studying three inter-related markets (foreign exchange, money and labour), their estimation shows higher responsiveness of inflation to the exchange rate rather than to the other determinants (money supply and nominal wages). Their study revealed a negative correlation between inflation and exchange rate both in the short- and long-run.

Chhibber developed an economic model that considered both monetary and structural factors as the causes of the increases in the general price level (inflation) in Zimbabwe. They concluded that growth in money supply and exchange rate are the chief determining factors in explaining the increases in the general price in Zimbabwe. A similar study carried out in Ghana by Chhibber and Shafik, covering the period, suggested that growth in money supply is one key variable explaining upward movements in the general price level [8,9].

Recommendations

Inflation in Sierra Leone is positively related to money supply growth and real exchange rate depreciation, but negatively related to real GDP growth as observed from the coefficient estimates, impulse response functions and variance decomposition analyses. The result also revealed the existence of inflation inertia. Real exchange rate depreciation is explained by its own past values, money supply growth and inflation. The model passes all the diagnostic tests conducted, implying the results are not only consistent, efficient and unbiased but also non-spurious. Inflation and real exchange rate depreciation do not impact real GDP growth in Sierra Leone. Real money supply growth has net dynamic effect implying that cumulative increases in broad money supply will cause real inflation to in the current period. Real GDP growth exerts positive inertia in Sierra Leone such that an increase in real GDP will lead to increase in the general price level. Generally, growth appears to be driven by its own past values, probably by traditional supply side factors, and not demand-side variables [10].

Discussion and Conclusion

In addition, the authorities are encouraged to maintain price stability, through the implementation of prudent monetary policy and maintaining exchange rate stability. The authorities should note that increasing money supply in the short run to enhance real GDP growth, may lead to dynamic inconsistency, causing long run inflation without increase in real GDP. In this regard, policies aimed at achieving low inflation are desirable. Another policy implication arising from the study is that the authorities should provide a more favourable environment that would increase both traditional and non-traditional exports, increase domestic production of non-tradable and boost economic activities in the tourism sector. These activities might lead to increase in foreign exchange inflows and help stabilize the domestic currency. Stable domestic currency in turn attracts foreign investments. Large domestic production for export and potential for foreign investment caused by a stable domestic currency will increase the level of employment. This will provide a large revenue base for government through taxation.

The financing of huge budget deficits by the central bank through money creation is shown in this study to contribute to inflation in the economy. This arises because government cannot raise enough revenue to finance its expenditure. To reduce the effect for monetary growth on prices, government should improve its revenue collection to remove lags in the collection of revenue. Further expenditure adjustment should be undertaken by government. Extra budget expenditure should be avoided except for very vital programmer. Tight monetary and fiscal policies especially during periods of devaluations lower the rate of inflation by reducing excess demand for imports and foreign exchange in the economy. Shortages of foreign currency in the official market fuels black market activities. Adopting a flexible exchange rate policy should be considered and undertaken by government. This will encourage inflow of foreign currency into the domestic economy. The central bank should intensify their monitoring of foreign exchange bureaus to enhance their effective functioning and management of foreign currency.

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