BALANCE OF PAYMENTS, EXCHANGE RATE VOLATILITY AND RELATIVE EFFECTIVENESS ON MONETARY POLICY IN NIGERIA

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Abstract

The paper investigated the impact of exchange rate depreciation and the balance of payments (BOP) variations on the effectiveness of monetary policy in Nigeria. The analysis was based on a vector autoregressive framework. A long-term equilibrium relationship was found between BOP, exchange rate, real output growth and inflation. The empirical results showed a positive and significant relationship between exchange rate and inflation and balance of payments and inflation. Policy implication is that exchange rate depreciation which has been preponderant in Nigeria since the mid-1980s has not been very useful in promoting the country's positive BOP. It is recommended that growth in the real sector should be improved to enhance exports, create employment, curb inflation and reduce poverty, while cutting non-productive imports, attracting foreign private investment and implementing well-coordinated macroeconomic policies that impact inflation positively and stimulate exchange rate stability.

Keywords: Exchange Rate, Volatility, Balance of Payments, Monetary Policy, Effectiveness.

1 Introduction

A real economy has a complex structure capable of changing due to certain shocks such as oil shocks. Structural changes in the economy have major implications for monetary policy (Sinyakov and Yudaeva, 2016).Structural changes in the economy are usually accompanied by increased costs (cost-push shocks) and losses in potential output (supply shocks). There are two types of costs (losses) that occur at the time of structural economic adjustment accompanied by changes in relative prices. Costs generated by the old economic structure in response to changes in the real foreign exchange rate (cost-push shocks) and Costs associated with changes in

the economic structure. In the former, a weaker real foreign exchange rate makes imported components and raw materials, used for production, costlier. In the short run, while the economy has yet to switch to another production structure, the use of imported components affects production costs, leading to price growth. Those costs accelerate structural adjustment butalso make it impossible to maintain the current output at constant prices (or inflation rate). The later costs depend on how easy it is to "dismantle" production facilities in some industries(the degree of labor market liberalization, the extent of government support for industries) and "move" them to others (the ease of running a business, market entry barriers). These costs may have a long-term effect on potential GDP (Sinyakov and Yudaeva, 2016).

Monetary Policy is a key component of any pro-growth economic system and much so in developing economies such as the Nigerian Economy (Taylor, 2004). In general terms, monetary policy refers to a combination of measures designed to regulate the value, supply and cost of money in an economy in consonance with the expected level of economic activity (Nnanna,2001). However, the primary objective of monetary policy in any modern economy is the maintenance of price stability which is fundamental to the attainment of sustainable growth. Consequently, the pursuit of price stability invariably implies the indirect pursuit of objectives such as Balance of Payments (BOP) equilibrium (Imoisi, Olatunji and Ekpenyong, 2013). Depending on the country, monetary policy may assign these objectives equal weights or, as many countries have done in recent years, place greater emphasis on the objective of price stability. Monetary policy may also seek other objectives-including the stability of long term interest rates and financial markets, including foreign exchange marketsand may target economic activity in particular sectors of the economy, most notably agriculture. Although some objectives are consistent with each other, others are not; for example, the objective of price stability often conflicts with the objectives of interest rate stability and high short-run employment. (Khan, Nsouli, and Wong, 2002).

Monetary policy targets, as distinct from objectives, are proximate goals-goals that are not objectives in themselves but which, if attained, will work directly toward achieving the longer-term objectives of policy. Monetary policy targets are classified as either operating targets or intermediate targets. Intermediate targets are variables that, although thought to affect the ultimate objectives of monetary policy, are not controlled directly by the central bank. They include, for example, the money stock, outstanding credit, and long-term interest rates; these are variables that lie between the objectives and the instruments of monetary policy. In contrast, operating targets are tactical goals that the central bank tries to attain in the short run. Although central banks cannot use monetary policy instruments directly to affect intermediate targets, they can use them to affect operating targets, such as reserve money and short-term interest rates, which influence movements in intermediate variables. Operating targets can also be altered in response to short-run economic conditions. In both developed and emerging economies, exchange rate stability is important in achieving macroeconomic policy objectives. Governments have adopted different exchange rate management policies, especially for developing economies, to create a realistic and stable exchange rate (Kilicarslan, 2018). The centrality of exchange rate in the formulation of monetary policy derives from the fact that for most countries, the prevailing objective of monetary policy is price stability. Volatility in exchange rate is always seen to be counter-productive to the goals of price stability. There is indeed, a general consensus that domestic price volatility undermines the value of money as a store of value, and frustrates investments and growth (Adeoye and Saibu, 2014).

The widespread presumption is that volatility on the exchange rates of developing countries is one of the main sources of economic instability around the world. The impact of the global economy on emerging countries like Nigeria is driven significantly by swings among the currencies of the major economic powers like United State. In recent years these swings have been enormous, volatile and frequently unrelated to underlying economic fundamentals. This has prompted monetary authorities in developing countries that keep close ties with the economic powers to intervene on totally ad hoc and episodic basis, without any clear sense of a sustainable equilibrium. Such exchange rate stability intervention typically comes too late to prevent severe currency misalignment and volatility. These imbalances, in turn, trigger major economic distortions, protectionist trade pressures, and inevitably sharp currency reversals (Philippe *et al.*, 2006). Though, currency instability and volatility could only exist during flexible exchange rate regime.

Exchange rate volatility corresponds to large fluctuations around the balance value of the exchange rate or short-term fluctuations around the long-term trends of the exchange rate (Oaikhenan and Aigheyisi, 2015: Giannellis and Papadopoulos, 2011). In other words, the exchange rate volatility is a variation of the price of one currency in another currency. Volatility refers to all movements and changes that are effective in depreciation or appreciation of a currency. The profitability of foreign exchange transactions is affected by the appreciation or loss of foreign currency (Martins, 2015). Exchange rate volatility is associated with unpredictable movements in relative prices in the economy. For this reason, exchange rate stability is one of the main factors affecting foreign (direct and portfolio) investments, price stability and stable economic growth (Ajao, 2015). The changes in the main economic factors make the exchange rates more volatile by causing unexpected changes in the exchange rate level. In addition, changes in these factors can lead to further growth of the volatility, by exceeding the target for the long-term equilibrium exchange rate in the short term (Ayhan, 2016).

Excessive exchange rate volatility leads to delays in investment decisions, causing uncertainty in the economy. The uncertainty that is caused by volatility also negatively affects economic growth by affecting investment and investor confidence, productivity, consumption and international trade and capital flows (Oaikhenan and Aigheyisi, 2015). Exchange rate volatility leads to high degree of uncertainty in ensuring price stability and economic growth and in setting macroeconomic and monetary policy targets (Ajao, 2015). Finding reasons for real exchange rate volatility due to possible negative effects is important in terms of developing appropriate economic policies to minimize fluctuations. The general belief is that, an excess supply of money in the economy will result to excess demand for goods and services and in turn causes rise in prices and also, affect the Balance of Payments position. With the achievement of price stability, the uncertainties of general price level will not materially affect consumption and investment decisions. Rather, economic agents will take long-term decision without much reservation about price change in the macro economy. The condition in the financial markets and institutions would create a high degree of confidence, such that the financial infrastructure of the economy is able to meet the requirements of market participants (Nkoro 2003). In other words, an unstable and crisis-ridden financial system will render the transmission mechanism of monetary policy less effective, making the achievement and maintenance of strong macroeconomic fundamentals difficult (Imoisi, Olatunji and Ekpenyong, 2013).

The balance of payments could be viewed as a systematic record of economic and financial transactions for a given period of time, say one year, between residents of an economy and non-residents - rest of the world. These transactions involve the provision and receipts of real resources – goods, services and income – and changes in claims on and liabilities to the rest of the world. Specifically, the balance of payments records transaction in goods, services and income, changes in ownership and other changes in an economy's holdings of monetary gold, Special Drawing Rights (SDRs) and claims on and liabilities to the rest of the world. It also records unrequited or unilateral transfers – the provision or receipts of an economic value without the acceptance or relinquishing of something of equal value. Generally, transactions involving payments to a country by non-resident are classified as credit entries. Those involving payments by country to non-residents are debit entries.

Basically, the balance of payments is divided into the current and capital account. The capital account is made up of portfolio and direct investment, either long or short term capital and capital transfers. While the current account records all current transactions, which are transactions that include either the export or import of goods and services. They include merchandise and services. The capital account also refers to changes in financial assets and liabilities, portfolio investment, external loan drawings and amortization and changes in short-term capital movements. However, it should be noted that development in the other sectors – real, monetary and public – has implications for the balance of payments. As a result, current account deficit may

not necessarily be an inappropriate policy to pursue especially in a country that is for example, importing to increase domestic investment. However, in a short-term, import bills may remain unpaid or external reserves could be drawn down.

A long-term and more viable solution lies in ensuring balance of payments viability. A viable balance of payments position may be defined as a current account position, which can be financed on a sustainable basis by net capital movements on terms that are compatible with reasonable development, growth prospects and debt servicing capacity as well as macro-economic stability. It can be seen that the balance of payments is linked with the other accounts in a general equilibrium framework. This implies that disequilibrium in one sector; say external sector is transmitted to the other sectors and vice versa. Thus, there is need to achieve both internal and external balance.

According to Adeoye and Saibu, (2014), two types of policy measures are used in dealing with balance of payments problems. These are expenditure switching measures and expenditure reducing policies. Expenditure reducing policies refer to fiscal policy (conducted by changing government expenditure and /or taxes) and monetary policy which refers to changes in money supply, which in turn affect interest rate. Expenditure switching policies refers to devaluation (depreciation) and revaluation (appreciation) of the country's currency. The aim of expenditure reducing policies is to reduce domestic expenditure on consumption and increase expenditure on investment, thus, releasing goods and services for exports while leaving aggregate output unchanged. The aim of expenditure switching policies is to switch domestic demand from imported goods to home made goods.

However, the extent to which expenditure switching policies is achieved depends on elasticity of supply and demand for tradable goods. If the depreciation of the nominal exchange rate is matched by increase in wages, absorption and inflation, the real exchange rate would not depreciate and so the balance of payments would not improve. However, expenditure reducing policies have costs in terms of loss of output, investment and employment. The loss will be minimized if resources can be easily moved to the tradable goods sector. Alternatively bridging external loans may be contributed to sustain investment and output.

For this reason, many countries have been exposed to exchange rate fluctuations, which have become highly uncertain or volatile. Exchange rate volatility is an important factor that increases the risk in the financial world (Hassan et.al.,2017). So exchange rate volatility and its determinants for countries have become a new focus of interest.

All factors that determine foreign exchange supply and demand cause indirect exchange rate volatility to change. There are many factors that affect the real exchange rate volatility, even if the effect of each depends on the economic conditions of the countries of the world. These factors include output level, inflation, trade openness, interest rates, domestic and foreign money supply, exchange rate regime, central bank independence, changes in the balance of payments, international capital movements, developments in information and communication technologies and monetary and fiscal policies to be implemented. In addition, speculations, news, expectations that contribute to the exchange of these variables will indirectly affect the volatility of the exchange rate (Ayhan, 2016;Stancik, 2007; Ajao, 2015; and Hassan *etal.*, 2017).

In terms of the fundamental determinants of exchange rate volatility, the focal point is almost exclusively focused on macroeconomic fundamentals and structural features of the foreign exchange market. However, some studies have also analyzed the effect of "soft power" measures on exchange rate volatility (Cevik, 2015). In this respect, it can be said that the "soft power" factors have an important influence on the exchange rate volatility, directly and indirectly, by reinforcing complementarities among different institutions, promoting better policy choices and shaping the pattern and evolution of macroeconomic bases and risk premiums (Cevik, 2017).

Theoretical support for the determination of the exchange rate is based on monetary and macroeconomic theories. The theory of money, which assumes the integration of goods and capital markets, suggests that the rate of change between two countries' currencies should be equal to the total price level between the two countries. Macroeconomic (real) theory draws attention to macroeconomic variables in determining the exchange rate. This approach is divided into the Balassa-Samuelson approach and the approach of payment balance, as proposed by Nurkse. The Balassa-Samuelson approach focuses on the trade balance between traded and non-trade sectors, while Nurkse's approach draws attention to the balance of payments (Hassan *et al.*,2017). An appropriate payment balance leads to an excessive appreciation of the exchange rate, and an imbalance in payments leads to the depreciation of the exchange rate of the country. Therefore, foreign exchange demand and supply have an important role in determining the exchange rate in the foreign exchange market (Hassan *etal.*,2017). In addition, the floating exchange rate regime is more volatile than the fixed exchange rate regime (Oaikhenan and Aigheyisi, 2015).

In its effort to achieve a stable macroeconomic policy, the Central Bank of Nigeria adopts and employs monetary policy instruments. The instruments of discretional monetary policy include: Open Market Operation: Discount Rate: Reserve Requirement: Moral Suasion: Direct Control of Banking System and Direct Regulation of Interest Rate. Monetary policy frameworks are being actively discussed as central banks around the world attempt to chart their course in the unfamiliar post-crisis economic waters. The Federal Reserve has embarked on a review of its monetary policy framework, and other advanced economies central banks are acutely aware of the need to adapt their own frameworks so that they are fit to meet new challenges.

Emerging Market Economies (EMEs) central banks find themselves in similar circumstances. Even though EMEs were not at the epicentre of the Global Financial Crises, they suffered its shockwaves; and since then, they have been dealing with the spillovers of the needed remedial policies that Advanced Economies (AEs) have been implementing. The unconventional monetary policies that AE central banks have embarked on in the past decade have created unprecedented amounts of liquidity in the international financial system, part of which has been channeled to practically all EMEs - induced by the mantra of "search for yield". Such flows have taken the form of portfolio investments, including corporate and sovereign debt foreign direct investment, and bank lending, but also trade financing.

These flows act through different channels and therefore have different consequences. But the common trend is that they affect the exchange rate, making it more volatile and subject to large swings as the capacity of EMEs to handle massive capital flows and huge stocks of foreign resources is tested. Why do central banks care so much about the exchange rate? At a basic level, it's because the exchange rate is a core determinant of the nominal anchor in a small open economy. It goes to the heart of what central banks are meant to do: preserve the value of money. Large swings in the exchange rate, and especially large depreciations, can destabilize prices, and can do so in non-linear and even discontinuous ways (Carsten, 2019). Monetary stability, usually accompanied by at least moderate exchange rate stability in the medium term, is the cornerstone of orderly economic activity. And for monetary stability to prevail, it is vital to maintain the hard-won credibility of the monetary framework. The reason being that the behaviour of the exchange rate can fundamentally affects the dynamics of inflation and the capacity of monetary policy to produce the expected results. Exchange rates impact domestic inflation through their effect on the price of tradables. However, the ultimate effect of exchange rate changes on the broader price level depends crucially on the characteristics of the domestic inflation process, and specifically on the propagation of the initial impact through "second-round" effects. In particular, the initial impact on the price of tradables can feed into the non-tradables sector and to the general price level. The bigger the initial shock, the greater the chance of inflation expectations being set adrift from the central bank's target. To anchor inflation expectations in the face of destabilizing domestic currency depreciations, central banks tend to tighten their monetary policy stance, usually by adjusting a short-term reference interest rate. In technical terms, this type of reaction function would be equivalent to having a Taylor rule that would include exchange rate considerations, reflecting precisely the influence of the exchange rate on inflation dynamics.

In circumstances of extreme market volatility though, traditional monetary policy adjustment through short-term interest rates might not be enough to preserve the anchoring of inflation expectations. In such cases, it would be appropriate to use other instruments, such as foreign exchange interventions and/or macroprudential policies. Given the possibility of massive stock adjustments in capital markets as part

of the settling process for the unprecedented liquidity in the international financial system, the need to stabilise using multiple instruments might very well prove to be the norm rather than the exception. In view of the interactions between exchange rate, price of tradeables and monetary policy dynamics, this study seeks to empirically examine the effect of balance of payments and exchange rate fluctuations on monetary policy dynamics in Nigeria.

The study seeks to examine the relative effectiveness of balance of payments and exchange rate volatility on monetary policy in Nigeria. Specifically, the study seeks to;

- i. Examine the effect of balance of payments volatility on monetary policy dynamics in Nigeria.
- ii. Examine the effect of exchange rate volatility on monetary policy dynamics in Nigeria.
- iii. Examine the overall significance of exchange rate volatility on macroeconomic stability.

Majority of studies conducted have been on balance of payments and exchange rate and sometimes, exchange rate and monetary policy. To the best of author's knowledge study on combine effect of balance of payments and exchange rate volatility on monetary policy dynamics is scanty. This gap in the literature is the motivation for this study.

2 **REVIEW OR RELATED LITERATURE**

2.1 Conceptual framework

In macroeconomic management, exchange rate policy is an important tool. This is derived from the fact that changes in the rate of exchange have significant implications for a country's balance of payments position and even its income distribution and growth (Nwanekezie and Onyiro, 2018). It aids international exchange of goods and services as well as achieving and maintaining international competitiveness and hence ensures viable balance of payment position. It serves as an anchor for domestic prices and contributes to internal balance in price stability. It is not surprising therefore, that monetary authorities attach much importance to proper management of a country's foreign exchange since its behaviour is said to determine the behaviour of several other macroeconomic variables (Oyejide, 1989). It is even more so for Nigeria which had embarked on a course of rapid economic growth with its attendant high import dependency. In this way, the choice and management of an exchange rate regime is a critical aspect of economic management to safeguard competitiveness, macroeconomic stability, and growth (Cooper, 1999).

2.1.1 Exchange Rates and Export Volumes

Generally, a depreciation of the currency improves international competitiveness and boosts economic activity. However, this benign picture might be missing some key elements. In particular, as a consequence of widespread dollar invoicing (Gopinath*et al.*, 2019), there is a financial channel of exchange rates through global trade financing that weakens the traditional trade channel.

The role of trade finance has increased as global value chains (GVCs) have lengthened, requiring greater financial resources to underpin their expansion. One summary measure of the prevalence of GVC activity is the ratio of global trade to global GDP. Since trade measures gross output while GDP is about value added, the ratio of trade to GDP is a useful proxy for GVC activity. As a stronger US dollar is usually associated with tighter credit conditions for EMEs, this financial dimension weakens the expansionary effect of currency depreciation on a country's exports. In the extreme, currency depreciation could even have a contractionary effect on exports if GVCs are curtailed due to tighter credit conditions(Bruno *et al.*, 2018). One indication of the relevance of such mechanisms is that the ratio of global trade to global GDP is negatively linked to the strength of the US dollar.

2.1.2 Exchange Rates and Domestic Economic Activity and Financial Conditions

In emerging market economies, the exchange rate also affects domestic economic activity through financial conditions, further complicating the central bank's task. EMEs' exposure to financial channels of the exchange rate arises from two key features of their financial structure: (i) EME borrowers, especially corporates, rely heavily on foreign currency borrowing; and (ii) foreign investors' large holdings of EME local currency sovereign debt. Through both channels, exchange rate appreciation tends to loosen domestic financial conditions, exerting an expansionary effect on domestic economic activity. Since monetary policy works through financial markets, central banks understandably care about exchange rates in the context of their domestic demand conditions. More broadly, looser financial conditions lead to the build-up of financial vulnerabilities that may pose risks to price stability over longer horizons.

Over the past two decades, the stock of foreign currency debt of EMEs has surged, driven in particular by the non-financial corporate sector, and in many cases it has not been matched with foreign exchange assets and revenues, giving rise to currency mismatches (Chui, Kuruc and Turner, 2016)). Corporates have incurred long-term debt in foreign currencies, often to finance long-term real investment, or simply to accumulate financial assets, such as loans to other, less creditworthy companies, often in domestic currency.

Such currency mismatches on borrower balance sheets make financial conditions a function of the exchange rate. For instance, an appreciation of the domestic exchange rate against the funding currency reduces debt servicing costs and debt burdens, lowering EME borrowers' credit risk, attracting more capital inflows and loosening financial conditions. These mechanisms work in reverse when the currency depreciates, but are then potentially amplified through higher foreign currency debt burdens accumulated in the appreciation phase.

Even in the absence of currency mismatches on borrower balance sheets, exchange rate swings influence EMEs domestic financial conditions. EMEs sovereigns have increasingly relied on local currency debt issuance, facilitated by the rapid development of local currency bond markets. However, the ability to borrow in domestic currency has not alleviated the exposure to exchange rate swings. It has rather shifted it to a different form, as a large share of EMEs local currency sovereign bonds is held by foreign investors, reflecting the search for yield by asset managers (Carstens and Shin, 2019.)

Since foreign investors are subject to risk constraints in global currencies, the currency risk merely migrates from borrowers' to lenders' balance sheets. Currency and rollover risks on the borrower side have been replaced by duration and currency risk on the lender side. Exchange rate moves then tend to amplify investors' gains and losses, so that exchange rate fluctuations amplify portfolio flows. Exchange rate appreciation increases credit supply from foreign investors, pushing down bond yields. The same mechanism plays out in reverse when the exchange rate depreciates (Hofmann, Shim and Shin, 2019).

Since central banks care about domestic activity, exchange rates matter because they influence long-term interest rates above and beyond the textbook transmission channels of monetary policy. A strongly appreciating domestic currency is associated with compressed term premia, while a sharply depreciating domestic currency is associated with widening term premia. Even for a central bank that doesn't worry about financial stability, these swings in long-term rates matter for demand conditions. When financial stability considerations are factored in, the impact of exchange rates is greater still. External borrowing - from both banks and capital markets - and domestic borrowing interact. There is ample evidence that external borrowing increases relative to domestic borrowing during credit booms (Borio, McGuire and McCauley, 2011;and Avdjiev, McGuire and McCauley, 2012). And that strong credit expansion coupled with strong exchange rate appreciations has preceded financial crisis. In this way, global financial conditions and domestic financial cycles reinforce each other (Borio and Lowe, 2002: Gourinchas and Obstfeld, 2012). The strong presence of global investors in EME markets further

implies that financial shocks, such as a change in AEs' monetary policy or a change in investor sentiment, can trigger portfolio flows that are so large that they can become a driver of the exchange rate. The exchange rate may hence increasingly act as a transmitter and amplifier of financial shocks, rather than as an absorber of real shocks.

2.1.3 Taking Account of Exchange Rates in Monetary Policy Conduct

The link between exchange rates and domestic financial conditions and the weakening of the traditional trade channel have important implications for monetary policy. A depreciation of the domestic currency would push up inflation through exchange rate pass-through, but would have little effect on domestic output through traditional trade channels, at least in the near term. Through financial channels, exchange rate depreciation would further lead to a tightening of financial conditions across the board, exerting a contractionary effect on the domestic economy. As a consequence, the central bank may face the dilemma of rising inflation and a weak real economy when the exchange rate depreciates. A short-term trade-off between inflation and output stabilization may arise which would complicate the conduct and the communication of monetary policy (Carstens, 2019).

In the presence of powerful financial channels, exchange rate fluctuations push inflation and debt in opposite directions, potentially raising an inter-temporal tradeoff for the central bank in the pursuit of price stability. This trade-off is best described in the context of an appreciating currency. Exchange rate appreciation tends to push down inflation, but fuels the accumulation of debt by loosening financial conditions, raising vulnerabilities over the medium run. Since financial stability risks also imply risks to longer-run price stability, this raise, for central banks, an inter-temporal trade-off between short-term and medium-term for both output *and* price stability.

In the face of these difficult trade-offs, traditional monetary policy response through short-term interest rates runs the risk of falling short of what is needed. Thus, EMEs central banks have responded to these trade-offs and challenges through the activation of additional supporting policy instruments aimed at mitigating exchange rate swings and their macro-financial repercussions.

In analyzing the effect of monetary policy on the exchange rate, it is worth bearing in mind that monetary policy measures that anchor the short end of the curve (such as the negative interest rate policy or forward guidance on the future rate path) may have different effects from measures that operate on term premia, such as the asset purchase programme (APP) (Cœuré, 2017).

The forward-iterated solution of the uncovered interest rate parity equation implies that the level of the exchange rate can be mechanically split between expectations about the future path of short-term interest rate differentials and currency risk premia. To the extent that the current and expected future path of short-term interest rate differentials quantitatively dominates currency risk premia, it follows that the exchange rate may react more strongly to news about the path of the short-term policy rate than to news about asset purchases that operate through the compression of term premia.

In line with the predictions of uncovered interest rate parity, model-based analysis indeed confirms that the euro-US dollar exchange rate is much more reactive to "rate expectations" policy shocks such as rate cuts than to "term premia" policy shocks, such as those due to the APP (Lane, 2019b). Model-based results indicate that the bilateral euro-US dollar exchange rate on average reacts more than twice as strongly to a monetary policy shock affecting rate expectations compared to a policy shock of similar size to the term premium. One mechanism behind this could be that the exchange rate is determined more by market participants active at the short end of the yield curve, such as traders involved in carry trade strategies, than by market participants active at the long end of the yield curve, such as global bond asset managers.

2.1.4 Monetary Policy and the External Balance

It is important to keep in mind that a monetary easing that is common to major regions across the world should leave the external balance largely unaffected, whereas an asymmetric monetary easing may affect the external balance (Lane, 2019b). A priori, the overall effect of a monetary policy easing on the external balance is non-trivial (Lane, 2001). Along one dimension, if easier monetary policy raises domestic income, increased spending on imports will weaken the external balance. Along another dimension, if accommodative monetary policy generates a weaker exchange rate, this is expected to improve the trade balance (under typical calibrations). At least after some time in line with the standard J-curve effect which holds under the Marshall-Lerner conditions (named after economists Alfred Marshall and Abba Lerner). If the domestic currency depreciates, imports become more expensive and exports cheaper due to changes in relative prices; the depreciation will lead to an improvement in the trade balance if the absolute sum of the long-term export and import demand elasticities is greater than unity (Lane, 2019a andBoz et al, 2019). For example, a tightening in US monetary policy that is followed by a multilateral appreciation of the US dollar elicits a much stronger slowdown in global trade under dominant currency pricing (DCP) than under producer currency pricing (PCP). The reason is that a larger share of global trade prices is sticky in US dollars under DCP, even if the related trade does not involve the United States. As a result, a larger share of global imports becomes more expensive in local currency terms in response to the

appreciation of the US dollar, which elicits expenditure switching from imports to domestically produced goods.

Of course, the timing and quantitative effects of exchange rate movements on macroeconomic outcomes depend on the micro structure of international trade. For instance, the currency of invoicing matters: under producer currency or dominant currency pricing, the trade balance improves due to expenditure switching effects; under local currency pricing, this occurs primarily through terms of trade effects. At the same time, the importance of the invoicing currency becomes less relevant at medium to long-term horizons, once firms adjust their markups and prices. Finally, exchange rate movements can also affect the current account balance through the revaluation of international income receipts and payments (Auer, 2019).

2.2 Theoretical Framework

The argument of the traditional school is that exchange rate depreciation would promote trade balance, alleviate BOP difficulties and consequently expand output and employment, provided the Marshall–Lerner conditions are met. The Marshall–Lerner condition states that depreciation would lead to expansion in output if the sum of price elasticity of demand for export and the price elasticity of demand for imports is greater than unity. The mechanism behind these positive effects is to make export industries more competitive in international markets, stimulate domestic production of tradable goods and induce domestic industries to use more domestic inputs.

The monetarists on the other hand consider exchange rate volatility as having no effect on real variables in the long run. Accordingly, exchange rate devaluation affects real magnitudes mainly through real balance effect in the short run but leaves all real variables unchanged in the long run(Domac, 1977). This view is based on the assumption of the purchasing power parity, which predicts that in the short run, devaluation improves the level of output, but in the long run the monetary consequence of the devaluation ensures that the increase in output and improvement in BOP is neutralized by the rise in prices. Another strand of thought is the IS-LM model, in which exchange rate is viewed as not having direct effects on output, but indirectly through the import–export and the money supply channels.

In the model, the relationship between exchange rate changes and gross domestic product cannot be determined a priori because its effect can be either positive or negative due to the impact of exchange rate depreciation on the domestic economy's interest rate. In this model, depreciation is theoretically expected to have positive effect on export since it makes domestic goods cheaper to foreign consumers. It is expected that depreciation would reduce import as a result of the higher relative price of imported goods, thus increasing net export and income where the Marshall–Lerner condition is satisfied. Where this condition holds, domestic income (output) would

increase with depreciation through the goods market. Exchange rate can also affect domestic money supply and through it domestic income. Depreciation is theoretically expected to be accompanied by increase in money supply, leading to a reduction in interest rate and an improvement in investment.

Increase in investment would lead to increase in national income and output, given the national income identity. The negative relationship between the exchange rate and GDP can be through interest rate effect of exchange rate changes. With depreciation and the consequent reduction in interest rate due to its expansionary effect on money supply, domestic interest rate become slower relative to international interest rate. This is expected to lead to capital flight and consequently reduce domestic income and output (Kandil, 2004).

In monetary text, a number of researchers have argued the theory of rational speculative flexible price otherwise known as the rational speculative bubble as a useful means of explaining the volatility in the exchange rates (Meese, 1986; Evans,1986; and Macdonald and Taylor, 1993). This is because speculative bubbles prominently characterize the floating exchange rate regime in the world over.

Accordingly, the stochastic nature of money supply induces rational expectations into the dynamic analysis of exchange rate knowing that individuals possess perfect information. In effect, if individuals can distinguish between shocks to levels of money supply and shocks to monetary growth targets, then the changes in the exchange rate would be a one-time response. However, if the market information is imperfect, then the exchange rate feedback movements will reflect a superlative effect each time the market is unable to positively exclude the possibility of a deliberate change of monetary policy by the authorities (Sergeant and Wallace, 1975; Cumby and Obstfeld, 1981, 1984; Fama, 1984; and Hoontrakul, 1999).

Exchange rate is a price variable that is very germane in every economy as it performs the dual role of maintaining international competiveness and serving as nominal anchor for domestic prices in the economy (Sercu, Raman and Hulle,1995). Indeed, exchange rate is a very sensitive variable, the variation of which determines the pace of economic activities. Apart from being a potent instrument of international exchange, its stability dictates the growth in investment and output of every economy.

2.3 Empirical Literature Review

Nwanekezie, and Onyiro (2018) investigated the impact of exchange rate volatility on balance of payments in Nigeria using data from 1981 to 2016. The main objective of this study was to examine the extent to which exchange rate volatility measures have influenced the Balance of Payment (BOP) position in Nigeria during the period under study. The study utilized aggregate annual data from 1981 to 2016. The data was analyzed with the co-integration/error correction model (ECM) method. The Johansen-Juselius co-integration techniques were employed in testing for long run equilibrium relationship among the variables and the results indicated that co-integrating relationship was found among the variables. Findings from the study indicated that the systematic variation in the dependent variable (BOP) is explained by the four independent variables including nominal exchange rate, inflation rate, real interest rate and government expenditure. The result also reveals that there is long run relationship between exchange rate volatility and BOP. The study concluded that government should encourage export promotion strategies in order to maintain a surplus balance of trade which will help make the domestic currency strong and also prevent further depreciation of the Nigeria naira.

Makanza and Dunne (2015) employed structural vector autoregressive (SVAR) models to investigate the role of monetary policy in the stabilization of the external balance and to determine the effects of global/foreign and domestic monetary shocks on current account movements, and to analyze the channels through which monetary shocks are transmitted to the current account in South Africa. The findings showed that should domestic interest rates fail to rise by a large enough magnitude to upset the increase in foreign interest rates, there is a possibility of a current account reversal as the deficit narrows. In addition, the monetary shocks that are most important for the determination of the current account are the foreign interest rate and exchange rate, with the exchange rate depreciation improving the trade balance, and a contractionary foreign monetary policy shock stimulating an increase in the domestic interest rate, which increases government savings. The study recommended that appropriate policy measures to ensure a smooth adjustment of the current account, with minimal effects on the economy should be pursued.

Olanipekun and Ogunsola (2017) examined the effect of exchange rate on aggregate balance of payment (BOP), current account balance and capital account. Autoregressive Distributed Lags (ARDL) approach to cointegration was adopted to estimate the models. This was followed by the short-run error correction model. It was found that exchange rate appreciation had adverse effect on BOP and current account balance. However, no statistically significant effect of exchange rate on capital account was obtained. Additionally, inflation rate was found to have negatively affected the BOP in the country. An effective management of the exchange rate by the monetary authority is essential to yield a favourable balance of payment position in Nigeria.

Oladipupo and Onotaniyohuwo (2011) investigated the impact of exchange rate on the Nigerian external sector between 1970 and 2008 using an ordinary least square (OLS) technique. It was reported that exchange rate has a significant impact on the balance of payments position.

Iyoboyi and Muftau (2014) employed the vector error correction model to investigate the impact of exchange rate depreciation on the balance of payments. The

result shows evidence of bidirectional causality between balance of payment and exchange rate. Further, the variance decomposition indicates that exchange rate changes does not account for a significant variation in balance of payments. Similarly, Tijani (2014) empirically examined balance of payment adjustment mechanisms focusing on the monetary channel in Nigeria between 1970 and 2010. A positive relationship between the balance of payment, domestic credit, exchange rate and balance of trade was obtained. The study show that monetary measures contribute greatly to the balance of payment position.

Ozcelebi (nd) employed panel vector autoregression (PVAR) models to examine the relationships between industrial production growth rate, consumer price inflation, short-term interest rates, stock returns and exchange rate volatility and explored the consequences of the dynamics detected by the models on monetary policy implementation for 10 OECD countries. The study indicated that factors that may cause a rise in short-term interest rates with respect to the USA can lead to volatility in exchange rates and thus macroeconomic instability. It also implied that sustaining macroeconomic growth and decreasing inflation can result in increased export performance, which in turn provides the amount of US dollars to curb volatility in US dollar quotations. Accordingly, the study revealed further that high importance should be given to both monetary and non-monetary factors in the open-economy framework to detect the possible impacts on trade and capital flows by dynamic stochastic general equilibrium (DSGE) models. Due to their exchange rate risk of economic agents, the study further suggested that the economic policy makers of these countries had better create a theoretical framework including financial frictions, economic agents' preferences and different shocks to smooth the variations in exchange rates and minimize the negative outcomes of Brexit.

Alawattage (2002), while examining the effectiveness of exchange rate policy of Sri Lanka in achieving external competitiveness since liberalization of the economy in 1977, showed that the real effective exchange rate does not have a significant impact on improving the trade balance particularly in the short run. Even though the cointegration tests revealed that there is a long-run relationship between trade balance and the real effective exchange rate, it shows very marginal impact in improving trade balance in the long run. Crowe (1999) reveals that maintenance of strict exchange rate control has been central to continued BOP positions on Barbados and a fixed exchange rate is thus recommended in order to maintain macroeconomic balance.

Patricia and Osi (2010) examined the BOP equilibrium in the West African Monetary Zone. Using panel data analysis, the results of within-country effects indicate that interest rate and growth in output play a significant role in achieving a favourable BOP, while the cross-country effects show similar results. They therefore consider a tight rein on domestic credit creation as a necessary condition for maintaining stability in the BOP.

Imoisi (2012) examined the trends in Nigeria's BOP. The results indicated a significant relationship between BOP, exchange rate and interest rate. Theauthor recommended an increase in non-oil export through a diversified productive base as a vehicleto correct the deficit in the current account section of the BOP.

Odili (2014) examined the impact of exchange rate on balance of payment in Nigeria, using annual data from 1971 to 2012. The empirical methodology employed autoregressive distributed lag (ARDL) co-integration estimation technique to detect possible long-run and short-run dynamic relationship between the variables used in the model. The study also tested the Marshall-Lerner (ML) condition to see if it is satisfied for Nigeria. The results provided evidence in favour of a positive and statistically significant relationship in the long-run and also a positive but statistically insignificant relationship in the short-run between balance of payment and exchange rate. The results further revealed that depreciation/devaluation improves balance of payment and that Marshall-Lerner (ML) condition subsists for Nigeria. The study recommended policies that will discourage excessive importation and promote incentive based export promotion programmes. It further recommended diversification of the economy and the promotion of entrepreneurial development in Nigeria.

Adeoye and Saibu (2014)investigated the relationship between exchange rate volatility and monetary policy shocks in Nigeria. The study applied the classical ordinary least square to examine the short-run monetary policy determinants of exchange rate volatility in Nigeria. Also, the error correction mechanism model was estimated after establishing the long-run interaction among set of incorporated variables using the Engle-Granger approach. The results from the paper show that both real and nominal exchange rates in Nigeria have been unstable during the period under review. In the short run, the variation in the monetary policy variable explains the movement/behaviour of exchange rate through a self-correcting mechanism process with little or no intervention from the monetary authority (CBN).

In addition, the results from the causality tests between the exchange rate volatility and monetary policy variables showed that there is a causal link between the past values of monetary policy variables and the exchange rate. This is obvious in the case of the past value of the interest rates. Such that, a change in the level of previous values of monetary policy variables causes exchange rate volatility. Finally, the paper reiterated and concluded that inflation rate, reserves, interest rate and money supply depreciate and cause volatility in nominal exchange rate which further reinforce other findings that monetary policy is crucial to exchange rate management in Nigeria.

2.4 Evaluation of Literature Reviewed

A textbook view of exchange rates will argue that the exchange rate adjusts to balance receipts and payments arising from international trade in goods, services and assets. The current account is affected by the exchange rate because it changes relative prices and thus competitiveness, the capital account is affected to the extent that expectational considerations are important. The balance-of-payments model has drawn attention to the role of capital flows in the determination of exchange rates. This is also the perspective adopted by the modern macroeconomic approach to exchange-rate determination that originated with the path breaking work of Mundell (1968) and Fleming (1962). Their theory argues that the exchange rate enters the macroeconomic framework of interest and output determination because changes in exchange rates affect competitiveness. Depreciation acts much in the same way as fiscal policy by affecting the level of demand for domestic goods associated with each level of output and interest rate. A depreciation shifts world demand toward our goods and thus acts in an expansionary manner. The framework we have laid out here helps understand a controversy that has developed about the working of a flexible rate system. It has been argued that flexible rates make inflation stabilization more difficult in soft-currency countries and easier in hard-currency countries.

The reason is that monetary policy, through the rapid reaction of exchange rates and through the overshooting, exerts rapid inflationary pressure in expanding countries and inflation-dampening in relatively tight countries.

Monetary policy becomes quite possibly ineffective if one recognizes that the inflationary pressure of depreciation is quite soon translated into domestic price increases. These price increases limit the gain in competitiveness from depreciation. In these circumstances monetary policy is primarily inflationary; it has very little, if any, effect on real aggregate demand. All that would happen is that renewed attempts at stimulating aggregate demand would translate into increasing inflation rather than more employment.

What institutional factors would check or enhance such an ostensibly unstable process? It has been argued with force that the virtuous and vicious cycle is entirely a matter of monetary determination. Unless monetary policy validates the depreciation it will ultimately undo itself. There can be little dis--agreement with this conclusion, except that it is fundamentally irrelevant as an observation about policy. The relevant policy setting is one where wide spread indexation, for example, will immediately translate depreciation into wage and price inflation with the consequence of growing unemployment if the central bank fails to accommodate through further monetary expansion.

The central bank may in practice have very little power to stop this inflationary process and the right starting point is incomes policy not monetary policy. At the same time, it is of course, true that the prospect of an effective stabilization programme will immediately receive the side benefit of an appreciation and aconsequent bonus in terms of inflation reduction.

3 METHODOLOGY

The relationship between exchange rate volatility and macroeconomic and financial variables can best be determined using VAR models. Following the Marshall-Lerner (ML) condition (Marshall, 1923, Lerner, 1944) that exchange rate depreciation would lead to improvement in balance of payments through the expansion of output and export provided that the sum of price elasticity of demand for export and demand for import are greater than unity, we expect depreciation to improve monetary policy dynamics. Experience has shown that in Nigeria the monetary authority uses either the quantitative or qualitative measures of stabilizing the macroeconomic activities. But most often, money supply, interest rate and inflation are the major quantitative measures employed by the Central Bank in maintaining a close watch of monetary balances in Nigeria. However, the exchange rate deepening experienced in the past prompted the monetary authority to strengthen the stock of money reserves in order to decelerate exchange rate volatility and watch the overall economy performance closely in terms of productivity. In view of this, we identify major variables that could be influenced significantly by fluctuations in the exchange rate and balance of payments; these aremoney supply, inflation, monetary policy rate, interest rate and real output. Here, all these variables are considered in the analysis.Based on the relationship between the variables of interest, we use VAR models to isolate the exogenous component of shocks, with the economy described by the structural equation below:

G(L)yt = et ------(1)

In equation 1, yt is the data vector in the baseline model given by [LMS, LGDP, INF,MPR, RIR] where LMS is the log of money supply, LGDP is the log of real output: INF is the inflation rate which measures price stability: MPR is the monetary policy rate and RIR is the real interest rate in Nigeria. G(L) is the matrix polynomial in the lag operator, and et is a vector of serially uncorrelated structural disturbances. The structural model is based on the reduced form model below

yt = B(L)yt + ut-----(2)

To recover structural parameters from the reduced form equation, the model uses the generalized non-recursive method that imposes restrictions to identify the structural components of the error terms. The equation below summarizes the identification scheme used.

$$\begin{pmatrix} etexch(t) \\ etbop(t) \end{pmatrix} = \begin{pmatrix} etms \\ etgdp \\ etinf \\ etmpr \\ etrir \end{pmatrix} \begin{pmatrix} Ut(exch) \\ utbop \end{pmatrix} \quad -----(3)$$

etexch, etbop, are the structural disturbances which are exchange rate shocks and balance of payments shocks respectively. utexch, utgdpare the residuals for the reduced form equations. The first line of restrictions in equation 3 shows the effect of

exchange rate on monetary policy dynamics. The second line controls for the effects of balance of payments on monetary policy dynamics.

Variable	ADF	1%	5%	10%	remark	1(d)
GDPR				-3.202445	Constant,	1(1)***
					Linear	
	-8.934343	-4.234972	-3.540328		Trend	
			-3.540328	-3.202445	Constant,	1(1)***
					Linear	
BOP	-6.067388	-4.234972			Trend	
EXCH			-3.540328	-3.202445	Constant,	1(1)***
					Linear	
	-5.558158	-4.234972			Trend	
INF			-3.552973	-3.209642	Constant,	1(1)***
					Linear	
	-5.636465	-4.262735			Trend	
MPR					Constant,	1(1)***
					Linear	
	-5.172922	-4.728363	-3.759743	-3.324976	Trend	
MS					Constant,	1(1)***
					Linear	
	-4.757825	-4.234972	-3.540328	-3.202445	Trend	
RIR	-8.730690			-3.202445	Constant,	1(1)***
					Linear	
		-4.234972	-3.540328		Trend	

4 PRESENTATION AND ANALYSIS OF RESULTS Test of stationarity- Unit Root test Result

*** denotes significance at 1%, 5% and 10% respectively

Considering the pros and cons of stationary and non-stationary VARs, we weigh the two options with the consequences of differencing the data being the loss of information, and the consequences of non-stationary data being biased estimates and spurious regression. We proceed by using stationary data for the purposes of obtaining the asymptotic properties of unbiased estimates, and avoid spurious regression. To circumvent the loss of information, we explore the difference stationary and trend stationary properties of the data in the structural VAR models. Results from stationarity tests conducted using the Augmented Dickey-Fuller (ADF) show that all variables have unit roots at 1%, 5% and 10% levels of significance. As a result, since the variables are I(1), we proceed to test for cointegration, and we found out that a long run relationship exist between balance of payments, real output growth inflation and exchange rate but there appears to be no long run relationship between these variables and money supply using trace statistics. In the max-Eigen statistics, there are three co-integrating equations (BOP, EXCH and INF).

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.681380	118.3753	69.81889	0.0000
At most 1 *	0.661330	77.20008	47.85613	0.0000
At most 2 *	0.438138	38.22187	29.79707	0.0043
At most 3 *	0.353702	17.46788	15.49471	0.0249
At most 4	0.047557	1.754098	3.841466	0.1854

Unrestricted Cointegration Rank Test (Trace)

Trace test indicates 4 cointegrating eqn(s) at the 0.05 level

* denotes rejection of the hypothesis at the 0.05 level

**MacKinnon-Haug-Michelis (1999) p-values

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.681380	41.17523	33.87687	0.0057
At most 1 *	0.661330	38.97821	27.58434	0.0011
At most 2	0.438138	20.75399	21.13162	0.0564
At most 3 *	0.353702	15.71378	14.26460	0.0293
At most 4	0.047557	1.754098	3.841466	0.1854

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Max-eigenvalue test indicates 2 cointegrating eqn (s) at the 0.05 level

* denotes rejection of the hypothesis at the 0.05 level

**MacKinnon-Haug-Michelis (1999) p-values

correlation matrix

	BOP	EXCH	GDPR	INF	MPR	MS	RIR
BOP	1						
EXCH	0.110	1					
GDPR	0.136	-0.283	1				
INF	-0.088	0.388	-0.055	1			
MPR	0.463	0.541	0.014	0.056	1		
MS	0.221	0.903	-0.338	0.186	0.706	1	
RIR	0.047	0.404	-0.331	0.230	0.166	0.500	1

The correlation coefficient shows that balance of payments has a very low correlation of 13% with real output growth and a very low correlation with inflation. Consequently, the correlation between balance of payments and monetary policy

rate, money supply and real interest is positive though very low in some aspect. Exchange rate correlate negatively with real output growth, positively with inflation, monetary policy rate and very highly with money supply. Consequently, exchange rate correlates positively with real interest rate. What can be inferred from here is that while fluctuations in balance of payments does not correlate effectively with monetary policy dynamics, exchange rate volatility does.



VAR result above shows that there is a negative and non-significant relationship between exchange rate volatility and real output growth. This means that a one- time shock in exchange rate brings about a 3% reduction in real output growth. Exchange rate has a positive and significant relationship with inflation rate. This means that a one- time shock in exchange rate will result in an upsurge of 8% rise in inflation rate. Furthermore, it indicates that exchange rate is very significant in ensuring price stability. Exchange rate volatility impact negatively and non-significantly with monetary policy rate. The rate at which Central Bank instruct commercial banks to learn to the public can be influenced by exchange rate volatility. This means that as exchange rate fluctuates by one- time shock, the monetary policy rate will shoot up and vice-versa.

Exchange rate volatility impact positively on money supply though nonsignificantly. What this implies is that a one-time shock in exchange rate will shoot money supply up. The relationship between exchange rate volatility and interest rate is negative and non-significant.

Balance of payments shocks impact positively on all the monetary policy dynamics but the relationship is only significant with inflation. From the result we look at the overall impact of exchange rate volatility and balance of payments on monetary policy dynamics in Nigeria.

From the result we are able to confirm certain things about exchange rate volatility and other economic variables. One, exchange rate is very vital for the smooth working of monetary policy. From the finding, it can be established that an upsurge in exchange rate would *ab initio* result in rising price of goods and services probably due to imported inflation. The likelihood of an increase in inflation suggests that actively targeting an undervalued naira would require a substantial adaptation in monetary framework, which is currently constructed around an inflation target of one digit.

Two, increase in money supply to cushion the effect of rising exchange rate on price may inadvertently result in undervaluation of the national currency to the detriment of balance of payments position as external reserve could be drawn down to counter the over bearing effect of exchange on consumption and investment.

The macroeconomic consequences of using conventional monetary policy instruments to maintain a weaker real exchange rate is that when the capital account is relatively open, using monetary policy in this mode requires the central bank to accept a higher rate of inflation than would otherwise prevail, at least at the outset. A weak naira policy could therefore come into sharp tension with the CBN existing framework, with its long-standing inflation target of one digit. Achieving a persistent effect on the real exchange rate requires altering the equilibrium real exchange rate, which in turn means altering the demand-and-supply balance in the market for non-traded goods.

If monetary policy alone is going to achieve a similar effect, however, monetary instruments must be capable of reducing national spending on non-traded goods. How this is done depends on the degree of capital mobility. When capital mobility is low, a period of tight money and high real interest rates does the job, provided that the fiscal impacts of the higher public debt service can be handled through higher taxes. But when capital mobility is high, monetary policy has little traction over the real interest rate.

Widening the inflation band would re-pose the nominal anchor and the cost of this might reasonably be viewed as too great. Like any consensus about a complex issue

of institutional design, however, the consensus that continues to support inflation targeting among emerging market economies reflects the environment that produced it, most notably the great inflation among the industrial countries and the rise in global capital mobility. Two broadly competing visions exist – one largely discredited by experience, and the other likely, in our view, to remain a focus of debate. The discredited vision is that central banks can reconcile price stability with competing objectives – including providing ample finance to government – through the use of direct controls in credit and foreign exchange markets.

5 CONCLUSION AND RECOMMENDATIONS

Monetary policy as one of the tools of ensuring macroeconomic stability may not be effective in achieving this goal in the face of unstable exchange rate regime. Consequently, balance of payments position could also be influenced by the fluctuations in exchange rate. This is because, overvalue domestic currency will result in greater affinity for foreign goods which invariably could bring about imported inflation. Also, undervalue domestic currency has the potential of encouraging exports. But, in promoting export through undervalue exchange rate regime, what is the level of domestic production that could compete with foreign goods in international market? Thus, in considering monetary policy as stabilization tool it is imperative to consider other variables within and outside that may work for and against its effectiveness.

The message is that there are limitations to what monetary policy can accomplish without compromising its central roles of maintaining a nominal anchor and supporting a competitive and robust financial system. This is clearest with respect to real exchange rate targets, where Rodrik (2007) and others have argued that an undervalued exchange rate provides a market-based substitute for industrial policy in promoting nontraditional exports and productivity-enhancing FDI. If, however, other determinants of the investment environment are the binding constraints on these activities, as we believe they are, then the macroeconomic costs of subordinating exchange rate targets to inflation targets are likely to be high. The truly indispensable interventions to support a competitive real exchange rate are those that increase national saving, which is fundamentally a task of fiscal rather than monetary policy.

With respect to macroeconomic stability, we have focused on the degree of balance of payments variability and its implications for monetary policy. The evidence suggests that capital moves less readily into Nigeria than might be expected given its largely open capital account. This is particularly worrisome with respect to FDI, where direct restrictions are absent and the potential advantages in terms of an employment- and export-promoting growth profile are large. While most of the determinants of FDI are outside the CBN's control, restrictions on nonresidents may serve to discourage long-term commitments even in the absence of direct controls on FDI itself. Restrictions on short-term borrowing by banks, in turn, are more readily justified on macroeconomic grounds given the economic costs of a sudden reversal.

While the evidence we have presented places Nigeria well short of the trilemma, we find that balance of payments flows response to interest rate differentials, exchange rate expectations, and uncertainties about the domestic political process. These effects may well be nonlinear, allowing the CBN to achieve considerable short-term smoothing of the exchange rate during normal times but proving illusory in the presence of large stocks.

For Nigeria to have a sustainable and improved BOP, there is need to engender growth in the real sector of the economy, as a way of improving exports and creating employment, curbing inflation and reducing poverty. Management of demand in all its ramifications is called for; for example, drastic cuts in non-productive imports are palliative. Attracting foreign private investment through the institution of macroeconomic policies that impact inflation positively and stimulate exchange rate stability can assist in improving BOP position. Macroeconomic stability can be ensured through monetary and fiscal coordination in order to ensure proper management of macroeconomic dynamics of interest and exchange rates, inflation and output. In particular, a realistic exchange rate is imperative which takes account of prevailing local circumstances rather than the dynamics of international undertones. However, to maintain and have a sustainable BOP and avoid growing external debt stock, it is important to have a moderate exchange rate and in particular one that is not over-valued, both of which are capable of being achieved in an environment of fiscal and monetary discipline.

Above all, domestic fundamentals must be gotten right in terms of adequate power supply, infrastructure, governance and the like, all of which can reduce unemployment and inflation and consequently attract higher exports, while discouraging frivolous imports.

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