Re-investigating the Effect of Monetary Approach to Balance of Payment Adjustment in Nigeria

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Abstract

The study investigated the effect of monetary approach to balance of payments adjustment as a result of the persistent imbalances in the country's balance of payments and to find out its inherent causes using autoregressive distributed lag approach. The data used in the study spans from 1980 to 2019 and it was sourced from the Central Bank of Nigeria Statistical Bulletin and the National Bureau of statistics respectively. Evidence from the ARDL bound test approach revealed that, monetary approach (broad money supply and exchange rate) impacts on balance of payment, hence supports the monetary approach to BOP adjustment. Also, the results showed that trade-balances affects BOP adjustment but ineffective in correcting the longed experienced BOP deficits due to the country's over-reliance in imported goods and oil revenue. The study concludes that the monetary variables impacts on BOP adjustment but ineffective in correcting Nigeria's BOP deficits. Based on the above, the study recommends that monetary authorities should look inwards to stabilize the country's BOP. While doing so, she should endeavour to shave the supply of broad money moderately to suppress inflationary pressures attributable to it. CBN should also cut down the key policy rate to boost investment, aggregate demand and growth at large. Finally, the CBN should sustain its policy that circumscribes forex sales for imports of goods that can be produced locally to encourage infant industries which in turn boost local production and reduce the balance of payments deficits through an increase in exports. Boost of the foreign external reserves to avoid the risk of over-relying on oil; which is currently fluctuating, coupled with the effect of the global pandemic.

Keywords: Monetary policy, Economic growth, Balance of payment, Money supply, ARDL approach, Nigeria, MPR, Global pandemic, CBN, Investment
JEL Classification Codes: C5; E02; G11; G28; E05

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1. Introduction

The role of macroeconomic policy is vital in any country; be it developed or developing—a macroeconomic policy gears macroeconomic objectives via its monetary policy. The monetary policy of any country is controlled and regulated by the monetary authorities via the Apex bank of that country (i.e. Federal Reserve Bank (FRB) or Central Bank of Nigeria (CBN) as the case may be in Nigeria). Little wonder the reason why (Nnanna, 2001), described monetary policy as the combination of measures designed to control the value, supply and cost of currency in an economy in conformity with the prospective level of economic activity. To corroborate the aforementioned, Gbosi (2002), pointed that, the monetary policy aims at controlling money supply in order to counter-check all undesirable trends such as unemployment, inflation, sluggish economic growth or disequilibrium in the balance of payment among others in the economy.

The monetary authorities are vested with the power to regulate the growth of money stock, putting in mind its target of suppressing inflation through stabilization of the price level or correct balance of payment deficits. The implication here is that the monetary authorities expect that an increase in prices will respond to a decrease in the growth of money thereby implying a negative relationship between changes in prices and money stock; on the other hand, the monetary authority responds to a balance of payment deficits with a decrease in the growth of money, meaning that, the relationship is negative according to Ekwe, Ogbonanya, & Omodero (2017).

Not forgetting that, the time-frame it takes to either adjust the price level or the balance of payment in order to affect these policy decisions is a measure of the time lag between the emergence of a problem and the decision of the monetary authorities to take corrective actions. The above implies that a significant policy is a function of the Apex banks' respond to shocks or issues emanating from external factors that affect the economy or on the other hand, attend to issues that crop up internally due to rise in prices of goods and services which in turn results leads to a rise in the inflation rate of the country among others. These two macroeconomic objectives are primary while the other three (growth, distribution of income and employment generation) classified as secondary according to Osisanwo, Tella & Adesoye (2019).

Without mincing words, a stable exchange rate is the one whose balance of payments is fundamentally guaranteed by the quantity of money in each country, in such a way that the differences in the balance of payments may be resolved temporarily by reckoning to the movements of gold or by the changes in the balance of international short-term indebtedness. However, to eliminate the observed discrepancies caused by the home secure real improvement, the domestic supply of money must be adjusted.

Surprisingly, the intricacies regarding balance of payment disequilibrium and unfavourable monetary policy actions in developing countries has evolved the economic problem most especially in developing countries. To the extent that it has raised different troubles in the monetary activities which have, in turn, caused disarray in the right monetary instrument to be adopted by the monetary authorities. Which has, in turn, made many developing countries' including Nigeria to fashion out various policies and programmes to manage this balance of payment disequilibrium as buttressed by Ajie & Nenbee, (2010).

In Nigeria, to improve the above, monetary authorities have emphasized on the need to attain both internal and external balance equilibrium in the balance of payment. Little why the theory pointed out a direct relationship between the money supply and the balance of payments. From the theoretical viewpoint, money supply is expected to exhibit a positive relationship with balance of payment all things being equal. Though, the above assertion is evidence from past researches (see, Onwechu, Chukwegu, Nenbee & Wosu, 2018) have in

contrast noted that, the balance of payment position in Nigeria has recorded a consistent colossal deficit. Irrespective of the government efforts to introduce, adopt, expand existing and new policy instruments and programmes in the macroeconomy. Nevertheless, it has failed to yield the expected outcome, which in turn has spurred up curiosity among researchers to ascertain the possible causes of this imbalances.

Though some researchers were of the view that factors such as the economic and political factor have caused the imbalance, i.e. the Nigerian economy is import-dependent which in turn has a depleting effect on the external reserve which has consequently bedeviled the country's balance of payment condition. Furthermore, some researchers are of the view that the nature of import and export accounts for the unfavourable balance of payment which in turn has led to the decline of her foreign reserves, reduction in the value of the currency, fall in the aggregate demand and high rate of inflation among others.

Interestingly, there had been divers debates among different school of thoughts concerning how balance of payment imbalances can be adjusted. For instance, the first school of thought are the ones that believe in the role of the price level and interest to curb the imbalances in the balance of a payment issue. To achieve this, they relied on the classical doctrine whose focus is on the gold standard. The gold standard describes a monetary system where a country's currency or paper money relates to its gold, according to Taylor (2015). This school of thought has some limitations which pinpoint that the flow of gold is inversely related to the supply of money such that a decline in the supply of money will make output and employment to rise instead of price reduction. Furthermore, this, in turn, can lead to the expansion and contraction provided credit operations does not exist.

Consequently, guaranteeing adjustment when there is commodity balance as opined by Barrets (1937). The outcome of the above is that it will make full employment to be difficult to achieve which in turn would lead to hike in the price level as money supply skyrocket according to Tijani (2014) & Osisanwo et al. (2019). The keynesian school of thought debunk the classical school of thought by emphasizing that changes in income tend to affect the BOP adjustment, according to Harrods (1978). Particularly, Harrods pinpointed that the classical doctrine ruled out the possible direct effects of a specie movement on account of foreign lending and borrowing.

Accordingly, the classical economists aerated the movements of capital as an item in the current account to adjust themselves. Besides, Harrods believe that they can exercise a considerable influence on the flow of external investment and holds that capital mobility has the potentials to be induced by a gold flow which is possibly the most decisive factor in the automatic mechanism. The drawback of the Keynesian economists in this content was noted with some displeasure since countries with a surplus in income tend to experience increasing national income which in turn leads to rising demand for imports which partially expunge the excess and vice-versa when it involves deficit nation. The above means that suppose two countries A and B are engaged in a trade, one would experience deficit and the other surplus.

The monetary approach overcame the deficiency of other methods. This approach is different from all other orthodox approaches to external balance. The implication is that it emphasizes on monetary rather than the relative price effects of balance of payments adjustment. Interestingly, the assumption pinpoints that the country's monetary policy directly influences monetary account of the balance of payment of a given country. Besides, the monetary approach believes that the relative prices do play a minor role because they only affect its composition rather than the aggregate expenditure as pointed by Lanciaux (1990). It further noted that excess supply of money encourages imports, which results in foreign exchange flowing overseas and reducing the money supply as buttressed by Carbaugh (2004).

Surprisingly, inspite of enormous studies carried out by researchers, there is no consensus on how efficacious monetary approach is in correcting balance of payment imbalances. However, the reason for the discrepancies above is not far-fetched from the different techniques adopted, the scope of the study, and the objectives of individual research, among others. This study intend to tour the line of the study of Osisanwo et al. (2019) although with an increase in the time frame, i.e. scope and some others modification to ascertain if there would be an improvement in our outcome or not based on several interventions that have emerged from 2015 to date. Beyond the aforementioned, this study also want to analyze the role of federal external reserves (FER) can play in correcting the imbalances in the BOP of a country especially those from the oil exporting ones. And lastly, to identify the other factors that are responsible for the consistent colossal deficiency of BOP in Nigeria among others. It is based on the above, that this current study intends to revisit the relationship between monetary policy on balance of payment in Nigeria.

The remaining part of this research is sub-divided into four sections. Section 1 is the first aspect. Section 2 is going to entail the literature review and theoretical framework. While, section 3, showcases, the model specification, technique of analysis, and sources of data. Section 4 presents and discuss the analyzed results. Lastly, section 5 concludes and proffer policy implication.

2. Literature review

Despite various studies on the relationship between monetary variables and BOP imbalances, no consensus seems to exist among economists and policymakers via their effectiveness. Irrespective of the edge inherent in the monetary policy approach to the balance of payments over the other approaches, evidence from the literature has been with mixed feelings. This because these studies have failed to show consensus regarding the magnitude and time frame it takes for monetary policy to correct the imbalances in the balance of payments, especially in the developing economies which Nigeria is inclusive. In like manner, the study by Mundell (1968, 1971), posited further that monetary factors, rather than real factors exert the most influence on the balance of payments through their effects on the current and capital accounts of a country.

However, this approach contends that disequilibrium in a country's balance of payments exhibits a similar discrepancy between that economy's money demand and supply, according to Alawode (1997). Therefore, to contribute to the body of literature, this current study intends to revisit the upshot between monetary policy and balance of payment in Nigeria to show the magnitude and time-frame it takes monetary policy variable to correct imbalances in the balance of payments.

Notably, one of the first studies in the monetary approach to balance of payments (MTBP) can be traceable to the write up of Hume (1752) on the Price-Specie -Flow-Mechanisms (PSFM). Although Polak (1957) later modified it in his scholarly work; on the law of one price which holds for identical goods sold in different countries which give allowances for transport cost. Furthermore, the proponent argued that the general price levels determine the real value of nominal assets, money and international debt. Above accounts, for the relative prices, which played a key role due to the transitory effects it exerts on the balance of payments. Little wonder, the reason why the modern monetary approach propagated that for the balance of payment to be stable, policies that promote import substitution should be encouraged as against the belief of the Mercantilism school of thought.

Following the above line of studies, the study by Johnson (1972), examined the monetary approach to the balance of payments theory. His results pinpointed that an increase in the money supply brings about a rise in the level of real balances. Thus individuals can forecast their wealth to rise, hence causing the level of expenditure to increase in proportion to income and a decline in the balance of trade. In a similar but different study, Frenkel and Rodriguiz (1975), investigated on the monetary approach to portfolio equilibrium and the balance of payments in Spain. Evidence from their results revealed that excess money supply has the latent to increase consumption expenditure and reduce the trade balance accrued to their country.

Still, on the studies that researched on the monetary approach to the balance of payments imbalances in developed economies, the study by Shambaugh (2004) empirically investigated the effects of monetary policy on BOP in the United Kingdom between 1965 and 1971 using OLS estimation technique of analysis. The results from their study revealed that monetary policy has the potential to regulate BOP imbalances according to the dictates of theory. Similarly, the findings from an earlier study by Looney (1991) revealed that the monetary approach is appropriate in explaining the balance of payments fluctuations in the Caribbean using OLS estimation technique. The results showed that all indicators considered were statistically significant at the conventional level, which also came out with appropriate signs. Generally, the MTBP has a tie between BOP and money supply in any country as buttressed by Chacholiadas (1990) and Doguma (2002). They emphasized that when surpluses in supply are over the money demand in the money market, then such a country is said to be facing a deficit balance of payments and vice-versa if the reverse is the case according to Howard and Mamingi (2002).

The trend is not different in emerging and developing economies. For instance, Study by Ali (2010), in Pakistan evaluated the monetary approach to balance of payments imbalances from 1990 to 2008 using Error Correction Modelling (ECM) approach. Results from the study pointed out that BOP is not purely a monetary phenomenon and that it cannot play a distinct role in determining Pakistan's BOP. Consequently, they suggest that BOP disequilibrium cannot be corrected only through the use of monetary actions. In support of the above claim, study by Nankai University Fan Xiaoyun (NUFX, 2002) their research suggests that, if money supply exceeds money demand and the domestic currency depreciates to balance money supply to money demand. In essence, their study pinpoints that the BOP or exchange rate is a monetary phenomenon. In consonance to the above, the study by Umer, Muhammad, Sheikh, & Ghazali (2010). revealed that monetary variable does not play a prominent role in determining Pakistan's BOP and concludes that, the BOP is not purely a monetary phenomenon.

In a different study, contrary to the above, Radulescu (2007) investigated the monetary factors affecting the components elements of the balance of payments in Rome. The study used Augmented Dickey-Fuller (ADF) to test the stationarity level and OLS to evaluate the long-run estimates. Surprisingly the results also revealed that monetary policy of the Central Bank does not support the recovery of the economy. Possibly because to him, the monetary policy instrument in the past has been unpleasant, confining, ideally tailored towards curbing inflation at the expense of neglecting the other macroeconomic fundamentals, including local savings discouraged by the extreme level of inflation and the investments that would have supported the economic growth.

In Africa, numerous studies have accounted for the relationship between monetary policy and balance of payments imbalances. Nevertheless, the outcome of these studies evokes mixed feelings. For example, Dhliwayo (1996) explored the relationship between monetary policy variable and balance of payment imbalances in Zimbabwe. Evidence from their results revealed that money played a vital role in correcting BOP imbalances through

the use of appropriate financial programming and monetary targets. A little different from the findings of the above, a study by Boateng & Ayentimi (2012) examined the monetary approach to BOP in Ghana between 1980 to 2010 using the OLS method. The empirical results revealed that BOP is not wholly a monetary phenomenon. In addition, study by Fleermuys (2005) investigated the monetary approach to BOP imbalances in the Namibian economy. Fantastically, the results revealed that although some variables suggested by the monetary approach play significant roles and that BOP disequilibrium cannot only be corrected only through monetary actions by the authorities.

In the same vein, the study by Braimaand (2013) investigates to know if the BOP, is a monetary phenomenon in Sierra- Leone or not. His results conclude that BOP is a monetary phenomenon in Sierra-Leone. Furthermore, he pointed out that monetary policy reduces the balance of payment deficits. A similar study was done in Kenya by Osoro (2013) on MTBP. Interestingly, the results showed that BOP is a monetary phenomenon. Besides, the results equally revealed that apart from being a monetary phenomenon, BOP is also a real phenomenon due to its observed influence on foreign direct investment (FDI), exchange rate and trade balance as against the findings of Braimaand (2013). More recently, a similar study with a broader scope by Adamu & Itsede (2010), examined the impact of MTBP for the West Africa Monetary Zone (WAMZ) countries between 1975 and 2008. The empirical results revealed that the money supply plays a vital role in determining the BOP. Hence, validating the monetary approach to the BOP for the WAMZ countries examined.

In Nigeria, some empirical studies have been investigated on the monetary approach to balance of payments, too. For instance, Obioma (1998) tested the validity of the monetary approach to the balance of payments adjustment under fixed and flexible exchange regimes in Nigeria between 1960-1993. The results showed that an increase in domestic credit on money stock leads to external reserves outflow or adverse balance of payment during the fixed exchange rate regime. The contrast, is the case, during the flexible exchange rate era, in that, an increase in domestic credit brings about exchange rate depreciation. Besides, a study by Jimoh (2004) explored how a monetary approach can help in adjusting the balance of payment between 1960-1995 in Nigeria. Consistent with the study of Obioma, his result revealed that the monetary approach is capable of reducing the balance of payments imbalances. Also, a study by Imoisi (2012) examined the trends in Nigeria's balance of payments position to find a link between monetary policies and the balance of payments from 1970-2010 using OLS multiple regressions methods. Interestingly, the results of the study exhibited the correct sign and therefore, conforms to economic theory.

Similarly, studies by Onyeiwu (2012) and Imoisi, Olatunji & Ekpenyong (2013), also utilized the OLS technique of analysis to ascertain the effectiveness of the monetary approach to the balance of payments imbalances. Their results revealed that monetary policy represented by money supply exerts a positive effect on GDP growth and balance of payment. Also, the findings of the study support the money-prices-output hypothesis for the Nigerian economy. In more recent research, a study by Proso, Inaya & Okoye (2017) examined the impact of monetary policy on the balance of payment in Nigeria from 1980-2015 using ordinary least square (OLS). Consistently, the outcomes were all in-tandem with apriori expectation due to the effectiveness of money supply, and the interest rate in adjusting the balance of payments imbalances.

Other researchers also investigated the monetary approach to the balance of payment imbalances in Nigeria using different techniques of analysis ranging from error correction modelling (ECM), vector error correction modelling (VECM). These studies include a study by Imoughele & Ismaila (2015), Tijani (2014), among others. Their results proved that BOP disequilibrium is a monetary phenomenon. In contrast, a study by Tijani (2014),

despite utilizing ECM and VECM technique, showed that BOP in Nigeria is not morally a monetary phenomenon and that money management in the nation should seriously observe budget deficit because this can also cause local credit growth.

A study by Ajayi (2014), examined the determinants of the balance of payment adjustment for the period 1970 to 2010. He found that higher exchange rate and a lower monetary policy rate and money supply has the potential to boost the balance of payment in Nigeria. Similarly, a study by Taylor & Spanos (1984) investigated the effects of monetary policy variables on the balance of payments. Adopting co-integration approach, the empirical results revealed a positive relationship existing between the monetary policy variables such as money supply, interest rate, gross domestic product and exchange rate on the balance of payment as a dependent variable in the model. However, the result further indicated that only the interest rate and money supply were significant. Notwithstanding, the exchange rate showed an insignificant relationship to the balance of payments.

Above all, a study by Adamu & Itsede (2010), examined the impact of the monetary approach on the balance of payments for the West African Monetary Zone (WAMZ) countries for the period 1975–2008. The empirical results found that money supply played a significant impact in determining the balance of payments, as a result, validated the monetary approach to the balance of payments for the WAMZ countries. The foregoing outcome, was also noticed in the study by Akpansung (2013) when, balance of payment of Nigeria and some other countries were comprehensively chosen and reviewed. In particular, the study identified that a maximum number of the empirical studies of monetary methodology reviewed proved the stability of money demand functions and also showcased evidence of causal connections that exist between local credit and balance of payments. The growth in revenue and price have a positive influence on the balance of payment (i.e. surpluses). In contrast, advances in the local credit harm BOP (i.e. deficit) which results in reserve discharges. The above also implies that the balance of payment is a monetary phenomenon as buttressed by (Mundell, 1968).

Nwanosoke et al. (2017) verified the Marshall-Lerner hypothesis by investigating whether a nominal devaluation of the exchange rate improves the balance of payment position of the Nigerian economy. The results revealed that the condition is not meant in the short-run as a negative relationship exists between the exchange rate and balance of payment. The study, however, revealed that money supply improves the balance of payment position within the periods considered. More recently, a study by Osisanwo et al. (2019) investigated, the monetary approach to the balance of payments imbalances between 1980 to 2015 using ARDL technique of analysis. The results revealed that there is a long run linear relationship between monetary policy variables and balance of payments adjustment. Beyond, the above, the study also revealed that in the long-run trade balances and money supply exerted a direct influence on the balance of payments adjustment in Nigeria. Most recently, study Atoi (2020) explored on the macroeconomic assessment of monetary approach to the balance of payments in Nigeria from 2007Q1 to 2018Q4 using two-stage least squares (TSLS). The results revealed that domestic credit negatively impacts on foreign reserves assets. It was, therefore, signifying that BOP is a monetary phenomenon in Nigeria.

Observably, this current study finds that an ample number of empirical studies are in the literature concerning this relationship. After a critical review of the literature, evidence shows that a number of these studies had some methodological problem which ranges from skipping to check for the time series properties and / or direct utilization of ordinary least square (OLS) / dynamic regression model (DRM) on the specified variables (see, Proso, Inaya & Okoye, 2014; Tijani, 2014); utilization of Johansen co-integration test when the variables are integrated of different order as also buttressed by Osisanwo et al. (2019),

which in turn has reflected on the results of these studies accordingly and hence questioned their reliability in policy formation. Consequently, this current study seeks to evaluate its objectives by employing the autoregressive distributed lag (ARDL) model to establish short-run and long-run estimates based on the advantage it has over the other techniques of analysis. In that, it has intrinsic merit of combining time series that is stationary at the level and first difference. Furthermore, because it can ascertain the time frame, it can take for monetary policy to adjust the imbalances of the BOP in a country.

3. Methodology

3.1 Data and Data Sources

The primary objective of this research is to revisit the impact of the monetary approach via monetary policy variables in correcting the balance of payments imbalances in Nigeria. The reason for this is because there is a mixed feeling concerning how monetary policy approach has helped in altering the balance of payments imbalances, especially in developing countries which Nigeria is inclusive. Besides, the study is interested in knowing if this acclaimed relationship still exists between the balance of payments and monetary policy variables or not. And on the other hand, what is the time frame it takes monetary policy variables to adjust the imbalances in the balance of payments? To achieve the objectives above, the researchers intend to adapt inherit the BOP framework of Polak (1957) and Osisanwo et al. (2019). Simplistically, the study hopes to employ the below model as specified in equation (1).

$$BOP_t = \alpha_0 + \alpha_1 EXR_t + \alpha_2 MS + \alpha_3 DC + \alpha_4 TB + \alpha_5 RGDP + \alpha_6 INF + \alpha_7 FER + \mu_t \quad \text{.....(1)}$$

In the above model, BOP is balance of payments which is the dependent variable; while the explanatory variables are DC is domestic credit; TB is trade balance; FER is the Federal External Reserve; RGDP is Real Gross domestic product; EXR is exchange rate; MS is money supply; and INF, is inflation rate. Similarly, α0 refers to constant, while α1-7 are slopes of the independent variables, μ is the error term; and t is the time. From the above equation, it will be discovered that, FER was included in our model as different from the one specified by Osisanwo et al. (2019). the reason for the its inclusion is not far-fetched from the role it could play in correcting BOP imbalances via reduction in importation, if not has the tendency to deplete a country's FER. All these data will be sourced from various versions of the Central Bank of Nigeria (CBN) and National Bureau of Statistics (NBS) respectively between 1980 to 2019.

Expectedly, the theoretical underpinning of the above model is that the slope of money supply should either be positive or negative; such that an increase in money supply will result into an increase in the overall money in circulation in the economy. Consequently, a rise in money supply will lead to an increase in aggregate demand and which will in turn result to a rise in productivity, thereby accelerates investment opportunities in the country. This rise in the productive activities in the country will trigger export activities and at the end of the day leads to a rise in the balance of payments position of the country and vice-versa if the reverse is the case. Also, the coefficient of balance of trade and BOP is expected to exhibit a direct relationship while BOP is expected to be favourable owing to the fact that export is greater than import.

In the same vein, domestic credit is expected to exert an inverse relationship with balance of payments, while a rise in the exchange rate will allow the domestic currency to

be less expensive in the foreign exchange market. Such that the fall in the value of the domestic currency will now make exports to be cheaper and on the other hand, make imports to be more expensive in the global market for goods and services. Furthermore, this will make demand to accelerate more thus, leading to an increase in the balance of payments position of the country. Furthermore, it is expected that the growth of GDP will increase when export exceed import which invariably increase the balance of payments at the end of the day. In contrast, during inflation, people tends to rely more on imported goods whose price does not change, therefore it will brings about an unfavorably balance of payment.

3.2 Description of variables and Measurement

The variables specified in the above model are described appropriately in the Table 1 below.

Table 1. Description of variables and Measurement

Variable	Proxy	Expected relation
Balance of payment (BOP)	Current accounts balances	
Domestic credit (DC)	Credit to private sector	- ve
Trade balance (TB)	Total exports plus total imports	+ve
Federal external reserve (FER)	Accrued from crude oil	+ve
Real gross domestic product (RGDP)	Economic growth	+ve
Exchange rate (EXR)	Exchange rate	- ve
Money supply (MS)	Quantity of money in the economy	±ve
Inflation rate (INF)	Consumers price index	- ve

3.3 Econometric Model

The study employs the autoregressive distributed ag (ARDL) bounds test to examine the effects of monetary policy variables on the balance of payments imbalances in the long and the short run periods in Nigeria. In our analysis, we conduct an ARDL bound co-integration test to ascertain if there is a long-run relationship among the chosen variables. This co-integration test has some form of superiority over the classical co-integration test, which includes Engle and Granger (1987), Johansen (1991), among others which is the first step in the ARDL modeling approach while the second step is the estimation of the long-run form co-integrating equation where both the short-run and long-run estimate done simultaneously. With this approach, balance of payments is expressed as a function of the lagged value of itself and the current and the lagged values of the explanatory variables. An ARDL model is an ordinary least square (OLS) based model which is applicable for both non-stationary time series as well as for times series with mixed order of integration according to Johansen and Juselius (1990) and Pesaran (1999) respectively. This model takes sufficient numbers of lags to capture the data

generating process in a general-to-specific modeling framework according to Min & Bhatta (2018). Similarly, a dynamic error correction model (ECM) can be derived from ARDL through a simple linear transformation. In the same manner, the ECM integrates the short-run dynamics information and avoids issues such as spurious relationship resulting from non-stationary time series data as depicted in the below model.

$$\Delta LBOP_t = \partial_0 + \sum_{i=1}^{p} \psi_{1i}\, \Delta LBOP_{t-i} + \sum_{i=1}^{p} \vartheta_{2i} \Delta LDC_{t-i} + \sum_{i=1}^{p} \delta_{3i} \Delta INF_{t-i} + \sum_{i=1}^{p} \eta_{4i}\, \Delta EXR_{t-i} + \sum_{i=1}^{p} \phi_{5i}\, \Delta LTB_{t-i} + \sum_{i=1}^{p} \Omega_{6i} \Delta LRGDP_{t-i} + \sum_{i-1}^{p} \zeta_{7i} \Delta LFER_{t-i} + \sum_{i=1}^{p} \Lambda_{8i}\, \Delta LMS_{t-i} + \lambda ECT_{t-1} + \varepsilon_t \ldots\ldots\ldots (2)$$

From the above ARDL model, the difference operator is symbolized by 'Δ' while the short run dynamic coefficients are all represented by $\psi 1i, \vartheta 2i, \delta 3i, \eta 4i, \varphi 5i, \Omega 6i\ \Im 7i$ and $\zeta 8i$ as specified in the ARDL model in equation (2). Furthermore, λ represents the coefficient of the ECT term, that is, in the long run. As a matter of fact, once at least a co-integrating vector exist, in such a way that the reparameterized vector is incorporated into the ECM, then it implies that the ARDL will also possess a vector. The hypotheses here is that; null hypothesis, $H0: \psi 1i = \vartheta 2i = \delta 3i = \eta 4i = \varphi 5i = \Omega 6i = \zeta 7i = \Lambda 8i = 0$, while the alternative hypothesis is $H1: \psi 1i \neq \vartheta 2i \neq \delta 3i \neq \eta 4i \neq \varphi 5i \neq \Omega 6i \neq \zeta 7i \neq \Lambda \neq 0$. Systematically, equation (1), would be used to estimate the bounds co-integration test by restricting the parameters of the lag level variables to zero in order to test the above stated hypotheses.

4. RESULTS AND DISCUSSIONS

Table 2. Results of Unit root test

Variables	Statistics	Critical Value @5%	Probability	Remark
BOP	-3.11089	-2.97626	0.0376	I *(0)*
EXR	-3.73217	-2.94115	0.0074	I *(1)*
FER	-3.81354	-2.94840	0.0063	I *(1)*
TB	-6.57464	-2.94115	0.0000	I *(1)*
INF	-3.20224	-2.93899	0.0274	I *(0)*
LM2	-5.15998	-2.94584	0.0001	I *(1)*
GDP	-17.5618	-2.94115	0.0001	I *(0)*

Source: Computed by the author from Eview's 9

Here, the Augmented Dickey - Fuller (ADF) unit root test is used to examined the variables stationarity. This is because, when time series data are employed, stationarity absolutely needs to be verified in a satisfactory manner. The reason for this is because, if the variables are non-stationary, it will lead to spurious regression and invariably an unreliable results. The ADF results show that variables such as, balance of payments (BOP) and gross domestic product (GDP) were stationary at level, while others, like, broad money

M2, trade balance TB, inflation INF, and exchange rate EXR were not stationary, but later became stationary after first differencing thereby corroborating the assertion of Sim et al (1990), that if macro variables are non-stationary, the vector autoregressive (VAR) could make the system stationary based on detrending, differencing or co-integrating techniques.

Table 3. Results of Bounds Co-integration Test

Significance	***I* (0) Bound**	***I* (1) Bound**
10%	2.12	3.23
5%	2.45	3.61
1%	3.15	4.43
Null Hypothesis: No long run relationship exist		
F-statistics = 16.1886,	K= 6	

Source: Computed by the author from Eview's 9

Evidence from the mixed order (i.e. combination of $I(1)$ and $I(0)$) of integration, as seen in Table 3 among the variables employed, consequently the justification for the use of ARDL bounds co-integration approach. The results has reported in Table 3 revealed evidence of long run co-integrating relationship among the variables since, (16.19 > 3.61 & 2.45) is greater than both the lower and upper bounds at five percent level of significance. Interestingly, the aforementioned, was further supported by the coefficient of the error correction term (ECT_{t-1}) and its significance level as reported in Table 4 tends to be negatively signed and statistically significance at one percent level. Thereby indicates the existence of convergence among the variables.

Table 4. Results of the Short run of ARDL Estimate

Dependent Variable (BOP)				
Selected Model: ARDL (2, 2, 2, 2, 2, 0, 0)				
Variables	**Co-efficient**	**Std. Error**	**t-Statistics**	**Probability**
ΔLBOP(-1)	0.2305	0.0809	2.8499	0.0215
ΔLFER	-0.2199	0.2526	-1.0686	0.3164
ΔLFER(-1)	0.6458	0.3768	1.7037	0.1249
ΔLGDP	6.2124	3.4152	1.8190	0.1064
ΔLGDP(-1)	8.6849	3.6336	2.3902	0.0438
ΔLM2	-0.0318	0.0326	-0.9775	0.3570
ΔLM2(-1)	0.3210	0.0290	11.0723	0.0000
ΔLTB	0.0631	0.2581	0.2444	0.8131
ΔLTB(-1)	-1.2796	0.3963	-3.2286	0.0121
ΔINF	0.0193	0.0089	2.1555	0.0632
ΔEXR	0.0138	0.0035	3.9854	0.0040
Ect(-1)	-0.7767	0.1081	-7.1881	0.0001

Source: Computed by the author from Eview's 9

Results, as reported in Table 4, showed that the previous years' divergence, converged in the current year at approximately 78%. From the short run estimate as reported in Table 3, it was noted that the previous year values of the BOP, GDP, and M2 exerted a significant impact on the current year balance of payments thereby conformed to the studies by Frenkel & Rodriguiz (1975) and Mukolu et al (2017). The implication of the above is that there is a positive relationship between broad money supply and GDP on BOP in Nigeria.

Therefore, implying that as the government increases the supply of broad money, it will lead to an increase in the total volume of money in circulation in the country Atoi (2020). Consequently, leading in a rise in the aggregate demand such that increase in aggregate demand will spur producers to increase their production capacity, and consequently leading to an increase in exportation of goods and services, thus resulting into an increase in the BOP position of the country. Surprisingly, this assertion contradicts the outcome of Johnson (1972).

Similarly, in the short run, the previous one year value of GDP has a direct relationship with BOP. On the other hand, the previous one year value of exchange rate has a negative relationship with BOP such that a 1% increase in TB will bring about a reduction in the BOP. Thereby contravening the apriori expectation possibly because import exceeds exports which is the cause of Nigeria in the past 29 years as opined by the (CBN, 2015). On the other hand, EXR exerted a positive relationship with BOP. Expectedly, if EXR increases, it will make domestic currency to be cheaper in the foreign exchange market, such that this depreciation of domestic currency will make our exports to be cheaper and imports expensive in the global market for goods and services. Consequently, making goods and services to be more in demand. Hence, resulting in a favourable BOP in the country.

Table 5. Results of the Long run of ARDL Estimate

Dependent Variable (BOP)
Selected Model: ARDL (2, 2, 2, 2, 2, 0, 0)

Variables	**Co-efficient**	**Std. Error**	**t-Statistics**	**Probability**
LFER	-0.6219	0.7251	-0.8576	0.4160
LGDP	0.7250	1.0419	0.6959	0.5062
LM2	-0.4905	0.1017	-4.8216	0.0013
LTB	0.5299	0.3809	1.3910	0.2017
INF	0.0248	0.0136	1.8226	0.1058
EXR	0.0177	0.0059	2.9818	0.0176
C	27.0754	8.6583	3.1271	0.0146

Source: Computed by the author from Eview's 9

Contrary to the results obtained in the short run estimate above, money supply revealed a negative relationship with BOP in Nigeria, as reported in Table 4. Therefore, implying that excess money in circulation will prompt the nation and its citizens to be import-dependent and hence lead to BOP deficits and confirms the results of Howard & Mamingi (2002). The above is the reason why the outcome of TB is positively related to BOP, thereby showcasing the influence of an increase in MS which in turn makes a country to be import-dependent. Although, as the case may be in this study, an increase in MS may not be the only reason why the country is import-dependent based on its level of significant. Hence, making import to be more than exports. Also, exchange rate showed a direct relationship with BOP; which tends to be in-tandem with apriori expectation

nevertheless, because the country is deficient in production activities due to her over-reliance on oil revenue and imports.

Consequently, failing to diversify into other sectors of the economy to boost production capacity and at the end, expand exports. Subsequently, results in the balance of payments deficits in the country. Consistently, the results conformed to studies by (Chaacholiadas 1990, Doguma 2002), among others.

Table 6. Results of Diagnostics Test

Name of Test	F-statistics/Jarque-Bera	Probability
B-G Serial correlation (LM Test)	5.0804	0.0560
B-P-G Heteroskedasticity Test	1.8497	0.1906
Normality Test (Jarque-Bera) Test	0.4281	0.8073

Source: Computed by the author from Eview's 9

In Table 5, we carried out a series of diagnostics test to confirm the authenticity of the results. Interestingly, the results pass the serial correlation test, heteroskedasticity test and the normality test at 5% significant level.

5. CONCLUSION

This study revisited the impact monetary approach in adjusting the balance of payments adjustment in Nigeria for the period 1981 to 2019 both in the short and long run. The essence is to ascertain if the monetary approach to the balance of payments has been effective in ameliorating deficits balance of payments in the country or not. The study employed Autoregressive distributed lag (ARDL) to co-integration approach. In particular, the empirical results appeared fantastic due to the impact money supply and, the exchange rate has on BOP in the short and long-run in Nigeria as against the results of previous studies like (Onwe 2014, Osisanwo et al., 2019) where exchange rate and money supply had a different impact.

Given this, the study supports the monetary approach of the Chicago schools. Also, the study revealed, the existence of convergence among the variables, because of the error correction term was rightly signed and significant at 1% level. Subsequently concludes, that despite, the impact of the monetary approach on BOP adjustment; it has been ineffective in correcting BOP favourably due to over-reliance on imported products attributed to the outcome of the trade balances which is positively signed and hence conforms to the study of (Osoro, 2013).

Further to this, the study recommends that the monetary authorities should look inwards in order to stabilize the country's BOP. While doing so, she should endeavour to shave the volume of broad money supply moderately to suppress inflationary pressures attributable to it. Also, the government should ensure an increase in the productive activities of homemade goods and services via promotion of infant industries through wave pulling interventions and diversify the economy into other promising sectors. Therefore, it will, in turn, increase consumption of homemade goods, increase exports and recovery of currently the depleting foreign external reserves attached to the fall in the oil price in the international, BOP condition and the global pandemic.

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