**IMPACT OF EXCHANGE RATE ON THE NIGERIAS BALANCE OF PAYMENT**

**BY**

**OKEKE, ALEXIS ISIOMA. G.**

**U14/MSS/ECO/073**

**DEPARTMENT OF ECONOMICS,**

**FACULTY OF MANAGEMENT AND SOCIAL SCIENCES**

**UGWUOMU-NIKE, ENUGU**

**JULY, 2018**

**TITLE PAGE**

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**A PROJECT REPORT SUBMITTED TO THE**

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**SUPERVISOR: DR. EZE PIUS**

**JULY, 2018**

**CERTIFICATION**

This is to certify that the project work on “An Empirical Analysis of the Impact of Exchange rate on Balance of Payment in Nigeria (1981-2015)” by Okeke, Alexis Isioma Gift with Registration Number: U14/MSS/Eco/073 is adequate both in scope and quality and has met the requirements for the award of Bachelor of Science (B.Sc) degree in Economics.

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Dr Pius Eze Date

Supervisor

…………………………………….. …………………………………….

George Okorie Date

Head of Department

………………………………….. …………………………………….

External Supervisor Date

**DEDICATION**

This work is dedicated to my Almamata Godfrey Okoye University, my Vice Chancellor Rev. Fr. Prof. Anieke Christian, Department of Economics under the leadership of George Okorie and his excellent team of lecturers who have made the last four years of my life memorable.

**ACKNOWLEDEMENT**

From the conception of the idea to its logical conclusion, this research work has been made a huge success by the help and support of many.

My gratitude goes to God Almighty for his grace to have come this far and his constant love and protection. My sincere appreciation and love goes to my supportive parent, Chief Barr. And Lolo Mrs G.O.D Okeke, for the love, financial, moral and spiritual support throughout the proceedings of this research work. I must express my profound gratitude to my supervisor Dr Pius Eze.

Finally, I am also grateful to all my lecturers who in one way or the other have added to my repertoire of knowledge in economics and other courses.

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**OKEKE ALEXIS ISIOMA GIFT DATE**

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**ABSTRACT**

The study investigates empirically the impact of Exchange Rate on Balance of Payment in Nigeria. The broad objective of this study is; to determine the impact of exchange rate on Balance of Payment in Nigeria within the periods of 1981 to 2015. Annual time series data on Exchange Rate, Trade Openness, Import, Export and Balance of Payment from the Central Bank of Nigeria covering the period 1981 – 2015 were utilized. A model was constructed to incorporate Balance of Payment as the dependent variable, and exchange rate, Import, Export and trade openness as the independent variables and tested using the Ordinary least Square (OLS) Methods. The Stationarity (Unit roots) status of the series was examined using the appropriate statistics. Some of the assumptions of the OLS models were also tested to avoid spurious regression. The granger causality test was also conducted to determine the directions of causality. However, the result of this study indicates that exchange rate and export has positive relationships with balance of payment in Nigeria; the result also indicated that import and trade openness has negative relationships with balance of payment in Nigeria. The study recommends that the government should as much as possible encourage the production of most of the imported goods in the country by the local industries as well as encourage import substitutions.

**CHAPTER ONE**

**INTRODUCTION**

**1.1 Background of the Study**

Exchange rate fluctuations have been of serious concern to the monetary authorities, policy makers and business tycoons of developing countries, Nigeria inclusive because of the relevance of exchange rate in international trade, investment and in determining the level of output growth of a country*.* The movement of goods and services across national frontiers in one direction involves the movement of foreign exchange in the opposite direction. This creates the needs for a rate of exchange between the currencies of two trading partners to settle indebtedness arising from trade involving them (Nzotta, 2004).Exchange rate is a price at which a currency is regulated in the market, which varies at one time or the other. In other words, it links domestic prices with international prices. Through its effects on the volume of imports and exports, exchange rate exerts a powerful influence on a country’s balance of payments position. Paul (1996) defines balance of payments as an accounting record to all monetary transactions between a country and the rest of the world. These transactions include payments for the country’s exports and imports of goods, services and financial capital, as well as financial transfer. It summarizes the international transaction for a specific period usually one year and is prepared in single currency for the country concerned. Consequently, nations in the pursuit of the macroeconomic goals of healthy external balances as reflected in their balance of payments (BOP) position, find it imperative to enunciate an exchange rate policy.

Exchange rate is a key determinant of the balance of payments (BOP) position of any country. If it is judiciously utilized, it can serve as nominal anchor for price stability. Changes in exchange rate have direct effect on demand and supply of goods, investment, employment as well as distribution of income and wealth.

Exchange rate of the naira was relatively stable between 1973 and 1979 during the oil boom era and when agricultural products like cocoa, palm oil, groundnut, rubber etc accounted for more than 70% of the nation’s gross domestic products (GDP). During this period prior to 1986, Nigeria was on a fixed exchange rate determination system. At that time, naira was very strong in reference to dollar. The exchange rate was to one U.S dollar that is:#1 = $1. The increasing demand for foreign exchange allocation in consonance with the goal of internal balance made the fixed exchange rate determination system to be discarded in September, 26 1986 while the structural Adjustment programme (SAP) came in. One of the objectives of the various macro – economic policies adopted under the structural adjustment programme (SAP) in July, 1986 was to establish a realistic and sustainable exchange rate for the naira, this policy was recommended in 1986 by the International Monetary Fund (IMF) on exchange mechanism and was adopted in 1986 (Ewa, 2011:78).

The key element of structural adjustment programme (SAP) was the free market determination of the naira exchange rate through an auction system.

This was the beginning of the unstable exchange rate; the government had to establish the foreign exchange market (FEM) to stabilize the exchange rate depending on the state of balance of payments, the rate of inflation, Domestic liquidity and employment. Between 1986 and 2003, the federal Government experimented with different exchange rate policies without allowing any of them to make a remarkable impact in the economy before it was changed. This inconsistency in policies and lack of continuity in exchange rate policies aggregated unstable nature of the naira rate. (Gbosi, 1994:70).

In Nigeria, exchange rate has changed within the time frame from regulated to deregulated regimes. During the time of fixed exchange rate, the movement of exchange rate seemed to be stable but the economy were getting worse every day, the alarming deterioration of the economy and huge balance of payments deficits called for a change, hence the switch over to flexible exchange rate. The irony of this policy instrument is that our foreign trade structure did not satisfy the condition for a successful balance of payment policy. The country’s foreign structure is characterized by export of crude petroleum and agricultural produce whose prices are predetermined in the world market and low import and export price elasticities of demand. Hence the management of the floating exchange rate has not proved better as the naira deteriorates everyday and many macroeconomic variables are not stable (Anifowose, O.K.1994). .

 Therefore, the effects of various macroeconomic shocks and Balance of payment position depends on the exchange rate policy adopted by the country, it is therefore of importance to investigate the effects of exchange rate on the balance of payment of Nigeria and also the factors that influence exchange rate in Nigeria.

**1.2 Statement of Problem**

Right from time immemorial, a country’s exchange rate and balance of payment is usually regarded as the sum of indices by which a nation’s strength can be measured especially its economic strength. They are also factors to look into when comparing a country’s relationship with other nations. These factors directly or indirectly affect a host of other factors

However, in recent times in Nigeria, these variables have experienced staggering difficulties. This cannot be argued considering the fact that Nigeria as a nation conduct their foreign transactions with the use of the united states dollar (USD) which is only gotten from the exports the country make to other nations.

Nigeria being a mono-product export country tends to export oil as it major exports after its discovery in 1970s while neglecting the agricultural sector which used to be its major exports. The price and quantity of the oil products been exported by Nigeria however is exogenously determined by the organization of petroleum exporting countries (OPEC) this means that the quantity been sold as well as the price are not determined by the Nigerian authorities. Moreover, the country is an import dependent country as they import 95% of the commodities consumed in the country. This implies that the forex generated from the export of oil cannot equate the forex spent on the importation of foreign commodities and this tends to move the exchange rate of the naira currency to that of other countries in a negative direction. Which directly affect the balance of payment of the country in negative forms.

 Also, the country resorts to borrowing in order to finance their annual budget deficit and afterwards spends a greater percentage of the countries inflows in financing the loans incurred. This also affects the balance of payment of the country terribly.

**1.3 Research Questions**

The extent to which exchange rate affects Balance of Payment in Nigeria remains unclear and therefore forms part of the problem which the research work intend to study considering the following questions:

1. What is the impact of exchange rate on the Balance of Payment of Nigeria?
2. What is the relationship exists between exchange rate and Balance of Payment of Nigeria?
3. What is the causality relationship between exchange rate and balance of Payment of Nigeria?

**1.4 Objective of the Study**

Owing to the above listed research questions, the general objective of this study is to determine the impact of exchange rate on Nigeria’s Balance of payment. The specific objectives are to:

1. Examine the impact of exchange rate on the Balance of Payment in Nigeria.
2. Ascertain the relationship that exists between exchange rate and Balance of Payment in Nigeria.
3. Obtain the causality relationship that exists between exchange rate and balance of Payment of Nigeria.

**1.5 Hypothesis of the Study**

Derived from the objective of this study, the following hypothesis will be evaluated.

1. H0: Exchange rate has no significant impact on balance of payment in Nigeria.
2. H0: Exchange rate has no relationship with balance of payment in Nigeria.
3. H0: Exchange rate has no causality relationship with balance of payment in Nigeria

**1.6 Significance of the Study**

The result of this study will be beneficial to a wide range of audience, such as the following:

**Policy Makers-** This study will be of immense benefits to policy makers as it would assist them in the task of policy formulation by providing empirical evidence for their decision making concerning the roles of exchange rate in the balance of payment of Nigeria.

**Government-** The federal government will also find this study relevant as it will assist in making appropriate policies that will stabilize the exchange rate of the country or reduce the fluctuation to the barest minimum.

**Subsequent Analysts-** This investigation will also serve as a stepping stone for researchers who develop interest in carrying an empirical analysis on the impact of exchange on balance of payment.

**Students-** Students will find this piece highly relevant as it will undeniably increase their horizon and add to their existing stock of knowledge on the concept of exchange rate and its relationship with balance of payment.

**1.7 Scope and Limitations of the Study**

This study seeks to determine the impact of exchange rate on the balance of payment in Nigeria. The study is designed to cover a period of 36 years ranging from 1980 to 2016. The study is made up of five chapters, the chapter one which contains the introduction, chapter two concerned with literature reviews; chapter three covers the methodology of the study while chapter four focuses on the results and interpretations and chapter five on the summary and conclusion of the research work.

In the course of this work the researcher has been confronted with the difficulty in generating a valid time series data. In case where data is available, discrepancies between data on a variable from different sources still persist. The researcher was also confronted with technical problems such as lack of power supply to ensure a smooth running of the study.

**CHAPTER TWO**

**LITERATURE REVIEW**

**2.0 Introduction**

In this chapter Literatures which are related to and consistent with the objectives of this study, are reviewed under the following sub-headings:

Conceptual Framework

Theoretical Framework

Empirical Review

**2.1 Conceptual Framework**

**Concept of Exchange rate**

Conceptually, Exchange rate is the rate at which a currency is exchanged for another currency. It can also be said to be the price of one country’s currency in relation to another country. It is the required amount of units of a currency that can buy another amount of units of another currency. It is referred to as the ratio at which a unit of currency of one country is expressed in terms of another currency. According to Jhingan (2004), the exchange rate between the dollar and the pound refers to the number of dollars required to purchase a pound. The rate is normally determined in the foreign exchange market. The foreign exchange market is a market where currencies of different countries are bought and sold. It is a market where the values of local and foreign currencies are determined. As noted by Jhingan (2004), the national currencies of all countries are the stock-in-trade of the foreign exchange market, and as such, it is the largest market to be found around the world which functions in every country.

 Economic history has shown that there are two common concepts of exchange rate namely nominal exchange rate and real exchange rate. The nominal exchange rate (NER) is a monetary concept which measures the relative price of two countries’ moneys or currencies, e.g., naira in relation to the U.S. dollar (e.g., #198.00:US$ 1.00) and vice versa. But the real exchange rate (RER), as the name implies, is a real concept that measures the relative price of two goods-tradable goods (exports and imports) in relation to non-tradable goods (goods and services produced and consumed locally) (Obadan, 2006). Also, the nominal exchange rate is the number of unit of domestic currency that must be given up to get a unit of foreign currency. In other word, nominal exchange rate is the price of domestic currency in term of foreign currency. It is denoted as E. The real exchange rate is the relative price of foreign goods in term of domestic goods. In other word, it is the exchange rate adjusted for price. It is denoted as; e = Ep\*/p. Where E= nominal exchange rate, p\* = foreign price and p = domestic price. There are two broad methods of exchange rate management namely fixed and flexible exchange rate regimes. Exchange rate regimes refer to different systems of managing the exchange of a nation's currency in terms of other currencies. According to Obadan (1996), fixed exchange rates are to promote orderliness in foreign exchange markets and certainly in international trade transactions. On the other hand, a flexible exchange rate system is one which the exchange rate at any time is determined by the interaction of the market forces of demand and supply for foreign exchange.

**Concept of Balance of Payment**

The balance of payments is the record of all international financial transactions made by a country's residents. A country's balance of payments tells you whether it saves enough to pay for its imports. It also reveals whether the country produces enough economic output to pay for its growth. The BOP is reported for a quarter or a year. A country’s balance of payment can either be surplus, balanced or deficit.

 A balance of payments deficit means the country imports more goods, services and capital than it exports. It must borrow from other countries to pay for its imports. In the short-term, that fuels the country's economic growth. It's like taking out a school loan to pay for education. Your expected higher future salary is worth the investment.

In the long-term, the country becomes a net consumer, not a producer, of the world's economic output. It will have to go into debt to pay for consumption instead of investing in future growth. If the deficit continues long enough, the country may have to sell off its assets to pay its creditors. These assets include natural resources, land and commodities, A balance of payments surplus means the country exports more than it imports. Its government and residents are savers. They provide enough capital to pay for all domestic production. They might even lend outside the country.

 A surplus boosts economic growth in the short term. That's because it's lending money to countries that buy its products. That boosts its factories, allowing them to hire more people.

In the long run, the country becomes too dependent on export-driven growth. It must encourage its residents to spend more. A larger domestic market will protect the country from exchange rate fluctuations. It also allows its companies to develop goods and services by using its own people as a test market.
The balance of payments has three components. They are the financial account, the capital account and the current account. The financial account describes the change in international ownership of assets. The capital account includes any financial transactions that don't affect economic output. The current account measures international trade, the net income on investments and direct payments. Here are the balance of payments components and how they work together (Kimberly Amadeo, 2018).

**2.1.1 Exchange rate management in Nigeria**

Exchange rate policy in Nigeria has undergone a good number of changes. It has developed from a fixed parity in 1960 when it was solely tied with the British Pound Sterling. By 1967, following the devaluation of the Pound Sterling the US dollar was included in the parity exchange. In 1972, the parity exchange with the British Pound was suspended as a result of the emergence of a stronger US dollar. In 1973, Nigeria reverted to a fixed parity with the British Pound following the devaluation of the US dollar. In 1974, in order to minimize the effect of devaluation of a single individual currency, Nigerian currency was tired to both the pound and dollar. Almost throughout the 1970s there was persistent appreciation of the nominal exchange rate of the naira occasioned by increases in the price of oil in the international market. These appreciations in the nominal exchange rates gave rise to over-reliance on imports with its accompanying capital flight, discouraging non-oil exports which ultimately led to Balance of Payments problems and depletion of external reserves. The increase in the marginal propensity to import collapsed the agricultural sector in Nigeria Osaka, Mashe, and Adamgbe (2003). In 1978, the naira was pegged to a basket of 12 currencies comprising Nigeria’s major trading partners. However, the 1978 policy was jettisoned in 1985 in favour of quoting the naira against the dollar.

Before 1986, the prevailing exchange rate policies encouraged over-valuation of the naira. To solve the problems associated with the over-valuation the naira was deregulated in September 1986 under the Structural Adjustment Programme Package. To enhance the implementation of the Structural Adjustment Programme was the introduction of the Second-tier Foreign Exchange Market (SFEM). SFEM was expected to usher in a mechanism for exchange rates determination and allocation in order to ensure short term stability and long term Balance of Payments equilibrium. As stated by Mordi (2006) the essential objectives of SFEM include to achieve a realistic naira exchange rate through the market forces of demand and supply, more efficient allocation of resources, stimulation of non-oil efforts, encourage foreign exchange in flow and discourage outflow, eliminate currency trafficking by wiping out unofficial parallel foreign exchange market, and lead to improvements in the Balance of Payments. Several modifications were made in order to achieve the objectives of SFEM, from Foreign Exchange Market (FEM) to Autonomous Foreign Exchange Market (AFEM), to Dutch Action System and, to the wholesale Dutch Auction System. The FEM was introduced as a result of the problem arising from the first and second tier market rates in July 1987. Bureau de change was introduced in 1989 with a view to enlarging the scope of FEM. In 1994, the fixed exchange rate system was reintroduced. In 1995 there was a policy reversal of guided deregulation referred to as the Autonomous Foreign Exchange Market (AFEM). In 1999 was the reintroduction of the interbank foreign exchange market (IFEM). This brought about the merger of the dual exchange rate, following the abolition of the official exchange rate from January 1, 1999. In 2002 was the reintroduction of the Dutch Auction System (DAS) as a result of the intensification of the demand pressure in the foreign exchange market and the persistence in the depletion of the country’s external reserves. Finally, was the introduction of wholesale DAS in 2006, which further liberalized the market in an attempt to evolve a realistic exchange rate of the naira. Up till now, exchange rate regime in Nigeria is characterized as oscillating between fully managed and freely floating regimes.

 Obadan (2006) summarized the factors that led to the misalignment of the real exchange rate in Nigeria to include weak production base, import dependent production structure, fragile export base and weak non-oil export earnings, expansionary monetary and fiscal policies, inadequate foreign capital inflow, excess demand for foreign exchange relative to supply, fluctuations in crude oil earnings, unguided trade liberalization policy, speculative activities and sharp practices (round tripping) of authorized dealers. Others include over reliance on imperfect foreign exchange market, heavy debt burden, weak balance of payments position and capital flight.

**2.1.2 Balance of Payment in Nigeria**

Nearly all of Nigeria's foreign exchange assets before the 1970s were held in British pounds sterling. Under the post-World War II IMF modified gold exchange standard, which lasted until 1973, sterling was a key currency in international trade. A country that accumulated sterling, as Nigeria did in the twenty years before 1955, mostly years of restrictions on sterling convertibility, essentially extended credit to Britain. During this period, Nigeria restricted nonsterling imports, strengthening the balance-of-payments positions of the sterling area and Britain's international financial position. From 1956 to 1965, Nigeria had a persistent merchandise trade deficit, which changed to a surplus in the period between 1966 and 1977 (including the 1967-70 civil wars) with petroleum's rapid growth as an export commodity. In late 1977 and 1978, demand for Nigeria's low-sulfur crude decreased as oil became available from the North Sea, Alaska, and Mexico, and as global oil companies reacted to the less favorable participation terms offered by the Nigerian government. Except for the period from 1979 to 1980, when oil shortages and prices increased, demand for Nigerian crude remained sluggish until 1990. From 1978 through 1983 the trade deficit continued. In early 1984, the Nigerian government closed Nigeria's land borders and international airports for several days, replaced all old naira notes with new currency bills, and introduced tough exchange-control regulations designed to reduce the repatriation of naira smuggled abroad and prevent future convertibility to other currencies. From 1984 through 1986 and in 1990, Nigeria had surpluses, but not because of export expansion, but because an economic breakdown forced Nigeria to adopt severe import restrictions. Nigeria's structural adjustment under World Bank auspices brought some stability in the domestic and international economy but at the expense of falling real wages and decreased government social spending for much of the late 1980s (The Library of congress countries studies, 1991).

 The Nigerian Economic Summit Group, NESG, on April 2017, gave an insight into why Nigeria experienced trade deficit of N290 billion in 2016, even as it projected that the economy will experience a Gross Domestic Product, GDP growth rate of 0.6 per cent. Speaking during the 21st Annual General Meeting of the NESG, chairman of the Group, Mr. Kyari Bukar, said that the lower crude oil prices and inability of the country to finance its rising import bills in the face of plummeting non-oil export led Nigeria’s trade balance to a deficit of N290 billion while balance of payment deficit climbed to N1.8 trillion in the third quarter of 2016.

Bukar hinted that aside from the foreign exchange crisis, the inability of government to respond swiftly and appropriately to economic challenges worsened the situation. “For instance, the delayed passage of the 2016 budget and cloudy policy direction increased the level of uncertainty in the business environment. This also resulted in a decline in foreign direct investments which closed below $1 billion in the year. Major economic sectors such as construction, manufacturing and oil and gas also contracted by six percent, four percent and 14 percent respectively in the year.”

“In terms of competitiveness, Nigeria fell three places to 127th in the 2016- 2017 World Economic Forum Global Competitiveness Rankings. According to the GCR report, the five most problematic factors for doing business in Nigeria are inadequate supply of infrastructure, corruption, access to financing, foreign currency regulations and policy instability.” (Prince Okafor; 2017)

**2.2 Theoretical Framework**

Exchange rate is the price of one currency in terms of another. It is the amount of foreign currency that may be bought for one unit of the domestic currency or the cost in domestic currency of purchasing one unit of the foreign currency (Soderstine, 1998). It is the rate at which one currency exchanges for the other, and it is used to characterize the international monetary system (Iyoha, 1996).

Obadan and Nwobike (1991) opine that some countries with a weak balance of payments position adopt multiple exchange rate systems as an alternative to devaluation, which is viewed as too costly from a political or social perspective. They emphasize that a rationalized and properly administered dual exchange rate system can be very helpful to developing countries for ensuring the satisfaction of basic needs, ensuring fixed and balance of payments viability and general resource mobilization.

Khan and Lizondon (1987) observe that countries experiencing balance of payments problems should embark on devaluation or gradual depreciation of her currency to effect a change on the payments problems, since devaluation which is the reduction of the value of one's country is expected to have significant impact on international capital movements. Cooper (1976) examines the effect of devaluation on the balance of payments of some developing countries. He discovers that three quarter of the cases examined showed that the current account of the balance of payments improved. This implies that devaluation leads to higher exports and lowers imports, which in the long run would improve the balance of payments position of a country. Conversely, Birds (1984) is of the opinion that the improvements of balance of payments after devaluation does not necessarily suggest that the balance of payments always improve because of devaluation. Iyoha (1996) considers devaluation as the deliberate reduction of the value of a country's currency in terms of other currencies. It is an increase in the exchange rate from one par value to another and could be used as a policy instrument by a nation under a fixed exchange rate system to correct a surplus of deficits in its balance of payments.

**2.2.1 Theories of Exchange rate**

The potential causes of exchange rate fluctuations has lead to examination of the theoretical basis of exchange rates determination since exchange rates fluctuations partly reflect deviations from the ground on which exchange rates are determined. The theories explaining the determination of real exchange rates includes the following:

**The Mint Parity Theory** – This theory is associated with the working of the international gold standard. Under this system, the currency in use was made of gold or was convertible into gold at a fixed rate (Jhingan 2004). Here, the value of the currency unit was defined in terms of certain weight of gold and the Central Bank of the country concerned was always ready to buy and sell gold at the specified price. The rate at which the naira could be converted into gold is called the mint price of gold.

**The Purchasing Power Parity Theory** – This Theory states that spot exchange rate between currencies will change to the differential in inflation rate between countries. The theory states that the equilibrium exchange rate between two inconvertible paper currencies is determined by the equality of their purchasing power. That is, the exchange rate between two countries is determined by their relative price levels (Obadan, 2006).

 The origin of purchasing power concept has been traced to the 16th century Salamanca School of Spain. During the nineteenth century, classical economists, like Ricardo, Mill, Goshen and Marshall endorsed and developed more or less qualified PPP views. The theory, in its modern form, is credited to Gustav Cassel, a Swedish economist, who developed and popularized its empirical version in the1920s (Rogoff (1996). The nominal exchange rate should reflect the purchasing power of one currency Against another and that a purchasing power exchange rate existed between any two countries which are measured by the reciprocal of one country's price level against another Cassel (1916).The central tenet of the PPP is that the equilibrium exchange rate is proportional to the relevant purchasing power parity of national currencies involved that is exchange rate fluctuations willed stabilize the purchasing power of a country and hence impact significantly on investment and trade(Aghevli (1991).

 The condition for free trade is that the nominal exchange rate between two countries should be equal to the ratio of the price levels in the two countries (Taylor; 1988),This approach assumes that equilibrium real exchange rates remain constant over time and therefore, the nominal exchange rate movement tends to offset relative price movements. The purchasing power theory parity theory defines two equilibrium rate systems. The first is the short run equilibrium exchange rate which is defined, in this context, as the rate that would exist under a purely freely floating exchange rate balance. Second is the long-run equilibrium that would yield balance of payment equilibrium over a time period in cooperating and cyclical fluctuations in the balance of payments (including those of prevailing exchange rate from the relative purchasing power in a currency are generally attributed to problem of arbitrage and expectations in the goods market. Some of the assumptions of PPP theory however are quite unrealistic and ambiguous, for instance the level of efficiency are different in countries as such there are deferring cost functions. (Argy and Frenkel, 1978)

**The Balance of Payment Theory** – This theory stipulates that under Free exchange rates, the exchange rate of the currency of a country depends upon its balance of payment. According to Jhingan (2004), a favorable balance of payments raises the exchange rate, while an unfavorable balance of payments reduces the exchange rate. Thus the theory implies that the exchange rate is determined by the demand for and supply of foreign exchange.

 The traditional flow model is also known as the balance of payment model. In this model, the exchange rate is in equilibrium when supply equals demand for foreign exchange, (Olisadebe,1991:56). The exchange rates adjust to balance the demand for foreign exchange depends on the demand domestic residents have for domestic goods and assets. On the assumption that the foreign demands for domestic goods is determined essentially by domestic income, relative income plays a role in determined exchange rate under the flow model. Since assets demand can be said to demand on difference between domestic and foreign interest rates differential is other major determinants of the exchange rate in this frame work.

 This theory stipulates that under free exchange rates, the exchange rate of the currency of a country depends upon its balance of payment. A favorable balance of payments raises the exchange rate, while an unfavorable balance of payments reduces the exchange rate (Jhingan 2004). Thus the theory implies that the exchange rate is determined by the demand for and supply of foreign exchange. The major limitation of the traditional model or the portfolio balance model is the over-shooting of the exchange rate target and the fact that substitutability between money and financial asset may not be automatic; this limitation triggered the emergence of the monetary approach.

**2.2.2 Theories of Balance of Payment**

To express the balance of payments theories, we look at various approaches used to analyze the effects of exchange rate volatility on the balance of payments. These approaches include the elasticity approach, the absorption approach and the monetary approach.

**The Elasticity Approach**

The elasticity approach focuses on the trade balance. It studies the responsiveness of the variables in the trade and services account, constituting of imports and exports of merchandise and services relative price changes induced by devaluation. The elasticity approach to balance of payments is built on the Marshall Learner condition (Sodersten, 1980), which states that the sum of elasticity of demand for a country’s export and its demand for imports has to be greater than unity for a devaluation to have a positive effect on a country’s balance of payments. If the sum of these elasticities is smaller than unity, then the country can instead improves its balance of trade by revaluation.

This approach essentially detects the condition under which changes in exchange rate would restore balance of payments (BOP) equilibrium. It focuses on the current account of the balance of payment and requires that the demand elasticity be calculated, specifying the conditions under which a devaluation would improve the balance of payments. Crockett (1977) sees the elasticity approach to balance of payments as the most efficient mechanism of balance of payments adjustments and suggests the computation of demand elasticity as the analytical tool by which policies in the exchange field can be chosen, so as to form the equilibrium. In contrast, Ogun (1985) is of the view that most less developed countries who are exporters of raw materials or primary products, and importers of necessities may not successfully apply devaluation as a means of correcting balance of payments disequilibrium, because of the low values for the elasticity of demand.

**The Absorption Approach**

This approach summarily postulates that devaluation would only have positive effects on the balance of trade if the propensity to absorb is lower than the rate at which devaluation would induce increases in the national output of goods and services. It therefore advocates the need to achieve deliberate reduction of absorption capacity to accompany currency devaluation. The basic tenet of this approach is that a favourable computation of price elasticity may not be enough to produce a balance of payments effect resulting from devaluation, if devaluation does not succeed in reducing domestic expenditure. The approach dwells on the national income relationship developed be Keynes and it tries to find out its implication on balance of payments (Machlup, 1955).

**The Monetary Approach**

The monetary approach focuses on both the current and capital accounts of the balance of payments. This is quite different from the elasticity and absorption approaches, which focus on the current account only. As pointed out by Crockett (1977), the general view of monetary approach makes it possible to examine the balance of payments not only in terms of the demand for goods and services, but also in terms of the demand for the supply of money. This approach also provides a simplistic explanation to the long run devaluation as a means of improving the balance of payments, since devaluation represents an unnecessary and potentially distorting intervention in the process of equilibrating financial flows. Dhliwayo (1966) emphasizes that the relationship between the foreign sector and the domestic sector of an economy through the working of the monetary sector can be traced by Humes David’s price flow mechanism. The emphasis here is that balance of payments disequilibrium is associated with the disequilibrium between the demand for and supply of money, which are determined by variables such as income, interest rate, price level (both domestic and foreign) and exchange rate. The approach also sees balance of payments as regards international reserve to be associated with imbalances prevailing in the money market. This is because in a fixed exchange rate system, an increase in money supply would lead to an increase in expenditure in the forms of increased purchases of foreign goods and services by domestic residents. To finance such purchases, much of the foreign reserves would be used up, thereby worsening the balance of payments. As the foreign reserve flows out, money supply would continue to diminish until it equals money demand, at which point, monetary equilibrium is restored and outflow of foreign exchange reserve is stopped.

Conversely, excess demand for money would cause foreign exchange reserve inflows, domestic monetary expansion and eventually balance of payment equilibrium position is restored. The monetary approach is specifically geared towards an explanation of the overall settlement of a balance of payments deficit or surplus. If the supply of money increases through an expansion of domestic credit, it will cause a deficit in the balance of payments, an increase in the demand for goods and various assets and decrease in the aggregate in the economy.

**2.3 Empirical Review**

In this section, works done by other researchers on the topic of concerned are reviewed.

 Oladipupo, A. O. and Onotaniyohuwo, Faith Ogheneovo (2011) empirically investigated the impact of exchange rate on the Nigeria External sector (the balance of payments position) using the Ordinary Least Square (OLS) method of estimation for data covering the period between 1970 and 2008. They found that exchange rate has a significant impact on the balance of payments position. The exchange rate depreciation can actually lead to improved balance of payments position if fiscal discipline is imposed. We also found out that improper allocation and misuse of domestic credit, fiscal indiscipline, and lack of appropriate expenditure control policies due to centralization of power in government are some of the causes of persistent balance of payments deficits in Nigeria. They recommend that appropriate monitoring machineries be set up to ensure judicious use of credit and available foreign exchange. Exchange rate policies have to be used along with the fiscal and monetary instruments to get meaningful results. This implies that our balance of payments problems can *be solved* simultaneously from two angles, namely, boosting supply and managing demand. Export diversification and promotion, import substitution and frivolous import restriction cannot be over emphasized.

 Azeez, Kolapo and Ajayi (2012) also examine the effect of exchange rate volatility on macroeconomic performance in Nigeria from 1986 to 2010. The model formulated depicts Real GDP as the dependent variable while Exchange Rate (EXR), Balance of Payment (BOP) and Oil Revenue (OREV) are proxied as independent variables. It employs the Ordinary Least Square (OLS) and Johansen co-integration estimation techniques to test for the short and long runs effects respectively. The results show that oil revenue and balance of payment exert negative effects while exchange rate volatility contributes positively to GDP in the long run. They recommended that the monetary authorities should pursue policies that would curb inflation and ensure stability of exchange rate.

 Nawaz Ahmad et al (2014) conducted a study aimed at determining the impact of exchange rate on Balance of Payment, through investigation of Pakistan Economy. Thus in order to ascertain the volatility of exchange rates & its tendency on balance of payment, monthly data was collected of Exchange rate and Balance of Payment from the official website of State Bank of Pakistan. The data comprised of seven year time period from January 2007 to October 2013. In order to achieve the purpose various test such as unit root, ARDL and Granger causality test are employed which helped us reached to the conclusion that there is a significant and positive relation between Exchange rate and BOP, therefore we could conclude that Stability of exchange rates may create a positive environment by encouraging the investment, and this can improves balance of payment.

 Martins Iyoboyi (2014) investigated the impact of exchange rate depreciation on the balance of payments (BOP) in Nigeria over the period 1961–2012. The analysis is based on a multivariate vector error correction framework. A long-term equilibrium relationship was found between BOP, exchange rate and other associated variables. The empirical results are in favour of bidirectional causality between BOP and other variables employed. Results of the generalized impulse response functions suggest that one standard deviation innovation on exchange rate reduces positive BOP in the medium and long term, while results of the variance decomposition indicate that a significant variation in Nigeria’s BOP is not due to changes in exchange rate movements. The 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.

 Anthony Ilegbinosa Imoisi (2015) examined the impact of exchange rate variations and balance of payments position in Nigeria under regulated and deregulated periods. Over the years, attaining a realistic exchange rate and improving the balance of payments position in Nigeria. The main objective of this study was to analyse policies initiated by the Federal Government of Nigeria in attaining a realistic exchange rate and improving the balance of payments position. To achieve this objective, the econometric techniques of ordinary least squares, co-integration and error correction mechanism were used to analyze the sourced data. The results showed that exchange rate had more impact on the balance of payments position during the deregulated period than the regulated period in Nigeria. Based on the results, the study recommends that to improve the balance of payments position in the country, governments should increase their capital expenditure; exports should be stimulated and diversified in the non-oil sector such as agriculture and manufacturing sector; a contractionary monetary policy should be implemented to discourage importation of luxurious goods and the Naira should be devalued to make exports cheaper in the international market.

 Okwuchukwu Odili (2014) carried out a study to examine 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 recommends policies that will discourage excessive importation and promote incentive based export promotion programmes. It further recommends diversification of the economy and the promotion of entrepreneurial development in Nigeria.

**2.4 Limitations of previous Studies**

One notable limitation observed from previous studies reviewed is the fact the researchers failed to state the statistical package used in conducting their analysis.

**CHAPTER THREE**

**RESEARCH DESIGN AND METHODOLOGY**

**3.1 Theoretical Framework**

The elasticity theory of balance of payment is the best suited theory for this research work; it focuses on the trade balance. It studies the responsiveness of the variables in the trade and services account, constituting of imports and exports of merchandise and services relative price changes induced by devaluation. The elasticity approach to balance of payments is built on the Marshall Learner condition (Sodersten, 1980);

 This approach essentially detects the condition under which changes in exchange rate would restore balance of payments (BOP) equilibrium. It focuses on the current account of the balance of payment and requires that the demand elasticity be calculated, specifying the conditions under which a devaluation would improve the balance of payments.

**3.2 Methodology**

Our estimation technique is the Ordinary Least Squares Method of estimation, for single equation model. The OLS method is chosen because of the considerable advantages associated with it (Wallace and Silver,1988). These advantages include: Best Linear Unbiased quality (BLUE), minimum variance, efficiency, Least mean square-error (MSE) and sufficiency. The summary statistics such as R2, t- value, F- Statistics, DW- statistics and so on are computed to enable us test the statistical and econometric reliability of the regression results obtained.

**3.3 Model Specification**

The specification of the econometric model is usually based on economic theory and on any available information relating to the phenomenon being studied (Koutsoyiannis, 1977).

This study shall build a multiple regression model and make use of econometrics procedure in estimating the relationship between my economic variables

The fundamental relationships between the dependent variable and independent variables are specified as follows:

The functional form of the model is specified as:

BOP= f (EXR, IMPT, EXPT, TOP)…………………………………………………….. (3.1)

The mathematical form of the model is specified as:

BOPt = β0 + β1EXRt + β2IMPTt + β3EXPTt + β4TOPt …..……………………. (3.2)

This econometric form of the model is specified as:

BOPt = β0 + β1EXRt+ β2 IMPTt + β3EXPTt + β4TOPt + µt…………………………. (3.3)

 β1< 0, β2 < 0, β3 > 0, β4<0

Where

BOP= Balance of Payment

f= functional relationship

EXR= Nigeria’s exchange rate to US dollar

IMPT = Import

EXPT= Export

TOP = Trade Openness

β0= Constant

β1, β2, β3, β4 are the relative slope coefficients and partial elasticity of the parameters.

µt = stochastic error term

**3.3 Method of Evaluation**

The estimated result will be evaluated subject to the following tests:

1. Preliminary Test
2. Economic Test of Significance (A Priori Test)
3. Statistical Test of Significance ( First Order Test)
4. Econometric Test of Significance ( Second Order Test)

**3.3.1 Preliminary Tests**

**3.3.1.1 Stationarity (Unit Root) Test:** The importance of this test cannot be over emphasized since the data to be used in the estimation are time-series data. In order not to run a spurious regression, it is worthwhile to carry out a stationary test to make sure that all the variables are mean reverting, that is, they have constant mean, constant variance and constant covariance. In other words, that they are stationary. The Augmented Dickey-Fuller (ADF) test would be used for this analysis since it adjusts for serial correlation. The model is specified as follows:

ΔBOPt-1 = β0 + β1EXRt-1 + β2IMPTt-2 + β3EXPTt-3 + β4TOPt-4 +µt

**Decision Rule:** If the ADF test statistic is greater than the MacKinnon critical value at 5% (all in absolute term), the variable is said to be stationary. Otherwise it is non stationary.

**3.3.1.2 Co-integration Test:** Econometrically speaking, two variables will be co-integrated if they have a long-term, or equilibrium relationship between them. Co-integration can be thought of as a pre-test to avoid spurious regressions situations (Granger, 1986). As recommended by Gujarati (2004), the ADF test statistic will be employed on the residual. The model is specified as follows:

 µt = β2 + β1BOPt + β2EXR + β3IMPT + β4EXPT + β5TOP

**Decision Rule:** If the ADF test statistic is greater than the critical value at 5%, then the variables are co-integrated (values are checked in absolute term).

**3.3.1.3 Error Correction Mechanism:** If there exist a long run relationship (co-integration) among the time series variables, the Error correction mechanism will be estimated to know the rate at which the dependent variable returns to equilibrium to the independent variable after some levels of variations i.e to derive the numerical value of the magnitude of the short run dynamics or disequilibrium. Error correction models are theoretically driven approach useful for estimating both short-term and long-term effects of one time series on another. The term error-correction relates to the fact that last-periods deviation from long-run equilibrium, the error, influences its short-run dynamics. The model is specified as follows:

∆BOP∊t = $∝$0 + $∝$1 ∆EXRt +$∝$2 ∆IMPTt +$∝$3 ∆EXPTt +$∝$4 ∆TOPt +$∝$a 2ut-1 +∊t

**Decision Rule:** In conducting ECM, the expected sign of the result should be negative. A positive ECM implies a model misspecification or an indication of structural changes and will not give us the rate of these change in the dependent and independent variables.

**3.3.2 Economic Test of Significance (A Priori Test)**

These are determined by the principles of economic theory and refer to the sign and size of the parameters of economic relationship.

The expected signs for the parameters associated with the various variables are shown below

**Table 3.1 A priori Expectation**

|  |  |
| --- | --- |
| **VARIABLES** | **EXPECTED SIGNS** |
| BOP | +VE |
| EXR | -VE |
| IMPT | -VE |
| EXPT | +VE |
| TOP | -VE |

The a-priori signs come from economic theory, as exchange rate (EXR) depreciates (falls), BOP position will improve since net export balance is increased. An increase in Imports (IMPT) worsens balance of payments (BOP). With increase in exports (EXPT), there will be more credit available for investment and increased production of domestic products.

**3.3.3 Statistical Test of Significance (First Order Test)**

These are determined by the statistical theory and aimed at evaluating the statistical reliability of the estimates of the parameters of the model, the most widely used statistical criteria is the square of correlation coefficient (coefficient of determination R2), T-Test and F-Test of significance.

**3.3.3.1 Test for Goodness of Fit**

The coefficient of multiple determinations (R2) is used to determine the proportion of variation dependent variable that is attributable to variation in explanatory variable. The value of R2 ranges between 1 and 0 (ie 0≤R2≤1). The closer to 1 the better the fit, otherwise the worse the fit.

**3.3.3.2 t-Test of Significance**

The student t-ratio will be used to test the individual statistical significance of the regression co-efficient. A two-tail test is conducted at 5% level of significance and n-k degree of freedom (df), where n is the number of observation and K is the number of parameter(s) estimated.

**Decision Rule:**

The computed (t\*) will be compared with the critical t-value (t0.025). If **t\*>t0.025**, the Ho will be rejected and H1 will be accepted. Otherwise, Ho is accepted and H1 rejected.

**3.3.3.3 f-Test of Significance**

f-test statistics is used to test the overall statistical significance of the independent variables. A one-tail test will be conducted at 5% level of significance and (V1/V2) degrees of freedom. Where;

V1= degree of freedom (df) for the numerator: v1=k-1.

V2= degree of freedom (df) for the denominator: v2=n-k.

**Decision Rule:**

If the computed f-ratio(f\*) is compared with the critical f-ratio **(f0.05** ). If **f**\*>**f**0.05, we will reject the null hypothesis and accept the alternative, otherwise, the alternative hypothesis H1 will be rejected and null hypothesis H0 be accepted.

**3.3.4 Econometric Test of Significance (Second Order Test)**

**3.3.4.1 Autocorrelation Test:** The aim of this test is to examine whether the errors corresponding to different observations are serially correlated or not. Uncorrelated errors are desirable. The Durbin – Watson (D-W) statistics at 5% will be used to test for the presence of autocorrelation problem. The region of no autocorrelation remains:

du< d\* < (4-du)

 Where:

du = Upper Durbin – Watson

d\* = Computed Durbin-Watson

**Decision Rule:**

If the computed value of Durbin-Watson lies within the no autocorrelation region, it means there is no presence of autocorrelation problem. But if the Durbin-Watson computed value lies outside the regions there is the presence of autocorrelation problem. If it occurs, to avoid the spurious regression associated with it, we will employ the Durbin Watson Autocorrelation Correction to remove its influence in the model.

**3.3.4.2 Normality Test:** This study will carry out a normality test to check if the residuals, a proxy for stochastic error term follows normal distribution or not.

Symbolically, u*i*~ N (0, δ2). The normality test that would be used in this study is Jarque-Bera (JB) test of normality.

**Decision Rule:**

If JBtab(2)df is greater than JBcal in absolute values then the residual is normally distributed

**3.3.4.3 Granger Causality Test:** Although regression analysis deals with the dependence of one variable on the other, it does not necessarily imply causation. In other words, the existence of a relationship between variables does not prove causality or the direction of influence (Gujarati, 2004). The essence of causality analysis, using the granger causality test, is to actually ascertain whether a causal relationship exists between two variables of interest. Below is the Granger specification model:

$$BOP\_{t}=B\_{o}+\sum\_{i=1}^{i=n}B\_{1}EXR\_{t-1}+\sum\_{i=2}^{i=n}B\_{2}IMPT\_{t-2}+\sum\_{i=3}^{i=n}B\_{3}EXPT\_{i=3}+\sum\_{i=4}^{i=n}B\_{4}TOP\_{i=4}+\sum\_{i=4}^{i=n}B\_{4}BOP\_{i=4}+µ$$

$$EXR\_{t}=ʎ\_{o}+\sum\_{i=1}^{i=p}ʎ\_{1}EXR\_{t-1}+\sum\_{i=2}^{i=p}ʎ\_{2}IMPT\_{t-2}+\sum\_{i=3}^{i=p}ʎ\_{3}EXPT\_{i=3}+\sum\_{i=4}^{i=n}B\_{4}TOP\_{i=4}+\sum\_{i=4}^{i=p}ʎ\_{4}BOP\_{i=4}+µ$$

$$IMPT\_{t}=α\_{o}+\sum\_{i=1}^{i=k}α\_{1}IMPT\_{t-1}+\sum\_{i=2}^{i=k}α\_{2}EXR\_{t-2}+\sum\_{i=3}^{i=k}α\_{3}EXPT\_{i=3}+\sum\_{i=4}^{i=n}B\_{4}TOP\_{i=4}+\sum\_{i=4}^{i=k}α\_{4}BOP\_{i=4}+µ$$

$$EXPT\_{t}=β\_{o}+\sum\_{i=1}^{i=z}β\_{1}EXPT\_{t-1}+\sum\_{i=2}^{i=z}β\_{2}EXR\_{t-2}+\sum\_{i=3}^{i=z}β\_{3}IMPT\_{i=3}+\sum\_{i=4}^{i=n}B\_{4}TOP\_{i=4}+\sum\_{i=4}^{i=z}β\_{4}BOP\_{i=4}+µ$$

$$TOP\_{t}=β\_{o}+\sum\_{i=1}^{i=z}β\_{1}TOP\_{t-1}+\sum\_{i=2}^{i=z}β\_{2}EXR\_{t-2}+\sum\_{i=3}^{i=z}β\_{3}IMPT\_{i=3}+\sum\_{i=4}^{i=n}B\_{4}EXPT\_{i=4}+\sum\_{i=4}^{i=z}β\_{4}BOP\_{i=4}+µ$$

**Decision Rule:**

If the probability value is less than 0.05, the alternative hypothesis is accepted otherwise the null hypothesis is accepted.

**3**.**4 Data Required and Sources**

The data required for this study are secondary time series data on imports (IMPT) exports (EXPT), Exchange rate (EXR), Trade Openness and balance of payment (BOP) ranging from 1980-2015. The data employed in this study were obtained from the publications of the Central Bank of Nigeria (CBN), particularly the 2016 statistical Bulletin, Annual report and other official publications.

**3.5 Statistical Package Used**

The statistical package used in this study is the 8th version of econometric view (Eviews)

**CHAPTER FOUR**

**PRESENTATION AND ANALYSES OF DATA**

**4.1 Empirical Results**

This section of the study presents the empirical results of the various analysis stated in the chapter three as well as their interpretations.

**4.1.1 Unit Root Result**

As a preliminary step in testing the impact of poverty rate on economic growth in Nigeria, unit root test was conducted on our focus variables. An augmented Dickey Fuller (ADF) test unit root test was employed for this purpose. The results of the tests are presented in Tables 4.1.

Table 4.1: Unit Root Test Analyses Result

|  |  |  |  |
| --- | --- | --- | --- |
| **VARIABLES** | **ADF test** **Statistics** | **5% critical** **Value** | **Order of** **Integration** |
| **BOP** | -9.285614 | -1.952473 | I(1) |
| **EXR** | -5.291382 |

|  |  |
| --- | --- |
| -3.552973 |  |

 | I(1) |
| **IMPT** | -8.049353 | -2.954021 | I(1) |
| **EXPT** | -8.490995 | -2.954021 | I(1) |
| **TOP** | -6.499466 | -3.548490 | I(0) |

From the unit root result summarized in the table above, Balance of Payment (BOP), exchange rate (EXR), import (IMPT) and export (EXPT) are all stationary at first difference while trade openness is stationary at level form judging from our decision rule since the ADF statistics is greater than the 5% level of significance in absolute. Not having a stationarity time series data indicates not having a short run relationship among the individual time series data. Therefore, since the entire variables are not stationary at level form, there is a need to conduct a conintegration test to test for the long run relationship of the variables.

**4.1.2 Cointegration Test**

Economically speaking, two variables will be cointegrated if they have a long-run or an equilibrium relationship between them (Gujarati, 2004:822). The Augmented Dickey Fuller (ADF) test was utilized for this purpose, a unit root test was conducted on the residuals. The results of the tests are presented in Tables 4.2.

**Table 4.2: Cointegration Analyses Result**

|  |  |
| --- | --- |
| Null Hypothesis: D(ECT) has a unit root |  |
| Exogenous: None |  |  |
| Lag Length: 0 (Automatic based on SIC, MAXLAG=8) |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  | t-Statistic |   Prob.\* |
|  |  |  |  |  |
|  |  |  |  |  |
| Augmented Dickey-Fuller test statistic | -3.949536 |  0.0003 |
| Test critical values: | 1% level |  | -2.644302 |  |
|  | 5% level |  | -1.952473 |  |
|  | 10% level |  | -1.610211 |  |
|  |  |  |  |  |
|  |  |  |  |  |
| \*MacKinnon (1996) one-sided p-values. |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Augmented Dickey-Fuller Test Equation |  |
| Dependent Variable: D(ECT,2) |  |  |
| Method: Least Squares |  |  |
| Date: 07/21/18 Time: 11:49 |  |  |
| Sample (adjusted): 1983 2015 |  |  |
| Included observations: 30 after adjustments |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | t-Statistic | Prob.   |
|  |  |  |  |  |
|  |  |  |  |  |
| D(ECT(-1)) | -1.078869 | 0.273163 | -3.949536 | 0.0005 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.347284 |     Mean dependent var | -79.84850 |
| Adjusted R-squared | 0.347284 |     S.D. dependent var | 1316.301 |
| S.E. of regression | 1063.451 |     Akaike info criterion | 16.80919 |
| Sum squared resid | 32796933 |     Schwarz criterion | 16.85590 |
| Log likelihood | -251.1379 |     Hannan-Quinn criter. | 16.82413 |
| Durbin-Watson stat | 0.965893 |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

The ADF statistics is greater than the 5% level of significance in absolute term, that is -3.949536 > -1.952473. This reveal the rejection of the null hypotheses at 5% level of significance based on our decision rule. This implies that there is a cointegrating equations or vectors among the variables of interest. Therefore, there is a long run relationship between the variables. That is, the linear combination of these variables cancels out the stochastic trend in the series. This will prevent the generation of spurious (i.e., non-meaningful) regression results.

**4.1.3 Error Correction Mechanism Test (ECM)**

**Table 4.3: ECM Analyses Result**

|  |  |  |
| --- | --- | --- |
| Dependent Variable: D(BOP) |  |  |
| Method: Least Squares |  |  |
| Date: 07/21/18 Time: 11:52 |  |  |
| Sample (adjusted): 1982 2015 |  |  |
| Included observations: 32 after adjustments |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | t-Statistic | Prob.   |
|  |  |  |  |  |
|  |  |  |  |  |
| C | 73.67864 | 161.2575 | 0.456901 | 0.6515 |
| D(EXR) | 3.808731 | 11.51577 | 0.330740 | 0.7435 |
| D(IMPT) | -9.164401 | 20.22465 | -0.453130 | 0.6542 |
| D(EXPT) | 6.023324 | 17.20431 | 0.350105 | 0.7291 |
| TOP | -51.35890 | 10.73046 | -4.786274 | 0.0001 |
| ECT(-1) | -0.176147 | 0.166263 | -1.059449 | 0.2991 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.532172 |     Mean dependent var | 72.15313 |
| Adjusted R-squared | 0.442205 |     S.D. dependent var | 1093.336 |
| S.E. of regression | 816.5650 |     Akaike info criterion | 16.41545 |
| Sum squared resid | 17336239 |     Schwarz criterion | 16.69028 |
| Log likelihood | -256.6472 |     Hannan-Quinn criter. | 16.50655 |
| F-statistic | 5.915199 |     Durbin-Watson stat | 1.073969 |
| Prob(F-statistic) | 0.000886 |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

From table above, the magnitude of the short run disparity is -0.176147, that is to say the degree of the short run dynamics is 17.6147. This shows a relatively low speed of adjustment to equilibrium after a shock.

**4.2 Regression Result**

Here the relationship that exists between the variables under consideration are been evaluated.

**Table 4.4: The Regression Analyses Result**

|  |  |  |
| --- | --- | --- |
| Dependent Variable: D(BOP) |  |  |
| Method: Least Squares |  |  |
| Date: 07/21/18 Time: 11:55 |  |  |
| Sample (adjusted): 1982 2015 |  |  |
| Included observations: 32 after adjustments |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | t-Statistic | Prob.   |
|  |  |  |  |  |
|  |  |  |  |  |
| C | 397.2507 | 186.3469 | 2.131781 | 0.0423 |
| D(EXR) | 20.04132 | 10.38387 | 1.930043 | 0.0642 |
| D(IMPT) | -8.468477 | 20.46380 | -0.413827 | 0.6823 |
| D(EXPT) | 3.287908 | 17.62093 | 0.186591 | 0.8534 |
| TOP | -63.00991 | 13.86366 | -4.544968 | 0.0001 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.501289 |     Mean dependent var | 72.15313 |
| Adjusted R-squared | 0.427406 |     S.D. dependent var | 1093.336 |
| S.E. of regression | 827.3267 |     Akaike info criterion | 16.41688 |
| Sum squared resid | 18480675 |     Schwarz criterion | 16.64590 |
| Log likelihood | -257.6700 |     Hannan-Quinn criter. | 16.49279 |
| F-statistic | 6.784890 |     Durbin-Watson stat | 1.221997 |
| Prob(F-statistic) | 0.000647 |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

In the regression result, the variables under consideration are Balance of payment (dependent variable), exchange rate, import, export and Trade Openness from the result the estimated coefficient value of bo, b1, and b2 are 397.2507, 20.04132, -8.468477, 3.287908 and -63.00991 respectively.

**TABLE 4.4: Result of A prior Test**:

|  |  |  |  |
| --- | --- | --- | --- |
| **VARIABLES** | **EXPECTED SIGNS** | **OBSERVED SIGNS** | **RESULTS** |
| EXR | -VE | +VE | DCWES |
| IMPT | -VE | -VE | CWES |
| EXPT | +VE | +VE | CWES |
| TOP | -VE | -VE | CWES |

CWES – conform with expected sign

DCWES – Does not conform with expected sign

**4.3 Evaluation of Regression Results**

**4.3.1 Evaluation Based on Economic Criterion**

The signs and magnitude of each variable coefficient is evaluated against theoretical expectations in this section.

The signs of two of the variables (import and export) coefficient are in line with prior expectations while that of exchange rate is not in line with our prior expectation. Exchange rate and export has a positive relationship with balance of payment, while import has a negative relationship with balance of payment in Nigeria.

The constant term is estimated at 397.2507 which mean that the model passes through the point 397.2507 mechanically, if the independent variables are zero, Real Gross Domestic Product would be 397.2507.

 The estimated coefficient for exchange rate and export is 20.04132 and 3.287908 respectively; this implies that if other variables affecting balance of payment are held constant, a unit increase in exchange rate and export will lead to a 20.04132 and 3.287908 increase in balance of payment respectively on the average. Likewise, the estimated coefficient of import and trade openness are -8.468477 and -63.00991, this means that holding every other variables affecting balance of payment constant, a unit increase in import and trade openness will bring about an 8.66277 and 63.00991 decrease in balance of payment of Nigeria.

**4.3.2 Evaluation Based On Statistical Criterion**

This segment tests the R2, the t-test and the f-test to determine the statistical reliability of the estimated parameters. These tests are performed as follows;

**4.3.2.1 R2 –Result and Interpretation**

The coefficient of determination R2 from the regression result, the R2 is given as 0.501289 this implies that 50.1289% of the variation in balance of payment is being explained by the variation in exchange rate, import, export and trade openness. This implies that over 50% of the variations in balance of payment is been explained by other macroeconomic variables besides the independent variables under consideration in this study.

**4.3.2.2 t–Test Result and Interpretation**

From the distribution table, t0.025,33= 2.457

The result of the t-test of significance is shown in table 4.5 below:

The result of the t-test is presented below and evaluated based on the critical value (2.457) and the value of calculated t-statistics for each variable.

**Table 4.5: t-Test of Significance analyses result**

|  |  |  |  |
| --- | --- | --- | --- |
| **VARIABLES** | **t-computed (t\*)** | **t-tabulated (ta/2)** | **Conclusion** |
| EXR | 1.930043 | 2.042 | insignificant |
| IMPT | -0.413827 | 2.042 | Insignificant |
| EXPT | 0.186591 | 2.042 | Insignificant |
| TOP | -4.544968 | 2.042 | Significant |

Significant (Reject Ho; accept H1),

Insignificant (Accept Ho).

From the t- test result above, For EXR, t\*<ta/2, therefore we accept the null hypothesis. Hence exchange rate is statistically insignificant thus exchange rate has an insignificant impact on balance of payment.

For IMPT, t\*<ta/2 therefore we accept null hypothesis. Hence import is not statistically significant thus import has no significant impact on balance of payment.

For EXPT, t\*< ta/2 therefore we accept null hypothesis. Hence export is not statistically significant thus export has no significant impact on the balance of payment.

For TOP, t\*> ta/2 therefore we accept the alternative hypothesis. Hence trade openness is statistically significant thus trade openness has a significant impact on the balance of payment.

**4.3.2.3 Result and Interpretation of F–Test of Significance**

v1=5-1=4, V2=34-4=31, df=(4,31) at 5% level of significance and df=(4,31), f0.05= 2.69 and F\*=6.784890. Since f\*< f0.05, we reject the alternative hypothesis and conclude that the variables exchange rate, import, export and trade openness have no joint inference on balance of payment. This implies that the entire regression plain is insignificant.

**4.3.3 Evaluation Based on Econometric Criterion**

 In this subsection, the following econometric test is used to evaluate the result obtained from our model: autocorrelation, normality, granger causality test.

**4.3.3.1 Result and Interpretation of Autocorrelation Test**

Using the durbin-watson statistics, the region of no autocorrelation (positive or negative) is given as follows

du< d\*< (4-du)

du= 1.74

d\*= 1.221997

(4-du)= 4 – 1.74= 2.26

By substitution, the region becomes:

1.74 >1.221997< 2.26

The result shows that there is the presence of autocorrelation problem in the model as the computed durbin Watson statistics did not fall within the zero autocorrelation regions.

**4.3.3.2 Normality Test Result and Interpretation**

The Normality test will be done using the Jaque-Berra test of normalityJaque-Berra test of normality is hinged on the hypothesis that K is close to or exactly 3 and S is close to or exactly o, thus making the JB value close to or equal to O, which is the condition for normal distribution.

**Table 4.6 Normality Test analyses Result**



**Conclusion:**

From the normality table, the Jaque-Berra does not draw close to zero (0) as stated in our decision rule, in order words the residual are not normally distributed.

**4.3.3.3 Granger Causality Test: Result and Interpretation**

**Table 4.7: Causality Test analyses result:**

|  |
| --- |
| Pairwise Granger Causality Tests |
| Date: 07/21/18 Time: 12:13 |
| Sample: 1981 2015 |  |
| Lags: 2 |  |  |
|  |  |  |  |
|  |  |  |  |
|  Null Hypothesis: | Obs | F-Statistic | Prob.  |
|  |  |  |  |
|  |  |  |  |
|  EXR does not Granger Cause BOP |  30 |  10.0690 | 0.0006 |
|  BOP does not Granger Cause EXR |  2.53453 | 0.0995 |
|  |  |  |  |
|  |  |  |  |
|  IMPT does not Granger Cause BOP |  30 |  1.65351 | 0.2116 |
|  BOP does not Granger Cause IMPT |  0.01712 | 0.9830 |
|  |  |  |  |
|  |  |  |  |
|  EXPT does not Granger Cause BOP |  30 |  3.83894 | 0.0352 |
|  BOP does not Granger Cause EXPT |  0.02014 | 0.9801 |
|  |  |  |  |
|  |  |  |  |
|  TOP does not Granger Cause BOP |  30 |  4.57047 | 0.0203 |
|  BOP does not Granger Cause TOP |  1.67873 | 0.2070 |
|  |  |  |  |
|  |  |  |  |
|  IMPT does not Granger Cause EXR |  33 |  2.07578 | 0.1443 |
|  EXR does not Granger Cause IMPT |  0.22847 | 0.7972 |
|  |  |  |  |
|  |  |  |  |
|  EXPT does not Granger Cause EXR |  33 |  0.45577 | 0.6386 |
|  EXR does not Granger Cause EXPT |  0.09132 | 0.9130 |
|  |  |  |  |
|  |  |  |  |
|  TOP does not Granger Cause EXR |  33 |  1.95081 | 0.1610 |
|  EXR does not Granger Cause TOP |  3.15444 | 0.0581 |
|  |  |  |  |
|  |  |  |  |
|  EXPT does not Granger Cause IMPT |  33 |  8.28916 | 0.0015 |
|  IMPT does not Granger Cause EXPT |  1.21864 | 0.3108 |
|  |  |  |  |
|  |  |  |  |
|  TOP does not Granger Cause IMPT |  33 |  0.22062 | 0.8034 |
|  IMPT does not Granger Cause TOP |  0.45208 | 0.6409 |
|  |  |  |  |
|  |  |  |  |
|  TOP does not Granger Cause EXPT |  33 |  0.37507 | 0.6906 |
|  EXPT does not Granger Cause TOP |  0.67700 | 0.5163 |
|  |  |  |  |
|  |  |  |  |

A unidirectional relationship exists between exchange rate and balance of payment flowing from exchange rate. Zero causality relationship is seen to exist between import and balance of payment; also, a unidirectional causality relationship flowing from export exists between export and balance of payment in Nigeria and a unidirectional causal relationship exists between trade openness and balance of payment.

**4.4 Evaluation of Research Hypotheses**

**4.4.1 Hypotheses one**- from the t-Test result we accept the null hypothesis which states that exchange rate does not have a significant impact on balance of payment in Nigeria.

**4.4.2 Hypothesis two-** from the regression result, exchange rate has a positive relationship with balance of payment in Nigeria. Hence, we accept the alternative hypothesis which states that; exchange rate has a significant relationship with balance of payment in Nigeria.

**4.4.3 Hypotheses three-** from the granger causality test result, exchange rate has a unidirectional causality relationship with balance of payment in Nigeria; we therefore accept the alternative hypothesis which implies that exchange rate has a causality relationship with balance of payment in Nigeria.

**4.5 Implication of the Results**

The results from the entire analyses in this chapter indicates that exchange rate, import and export has insignificant impact on the balance of payment in Nigeria while trade openness has a significant impact on the balance of payment in Nigeria; this means that exchange rate, import and export are insignificant variables for determining the balance of payment in Nigeria while trade openness is a significant variables for determining the balance of payment in Nigeria. Also, exchange rate and export has a positive relationship with balance of payment in Nigeria; this implies that an increase in the values of the exchange rate and export of Nigeria will bring about an increase in the balance of payment of Nigeria. On the other hand import and trade openness has a negative relationship with balance of payment in Nigeria; this implies that an in increase in the values of import and trade openness will bring about a decrease in the balance of payment of Nigeria.

 Furthermore, the result indicates that, a unidirectional causal relationship exists between exchange rate and balance of payment in Nigeria, also zero causal relationship exists between import and balance of payment, export granger cause balance of payment as well and a unidirectional causality relationship exists between trade openness and balance of payments in Nigeria.

 This implies that the past values of exchange rate can be used in forecasting the future values of balance of payment in Nigeria, also the past values of balance of payment cannot be used in forecasting the future values of exchange rate in Nigeria. However, past values of balance of payment cannot be used in forecasting the future value of import in Nigeria also past values of import cannot be used in forecasting the future values of balance of payment in Nigeria. The past values of balance of payment cannot be used in forecasting the future values of export but the past values of export can be used in forecasting the future value of balance of payment in Nigeria. Lastly, past values of balance of payment cannot be used in forecasting the future values of trade openness but the past values of trade openness can be used in forecasting the future value of balance of payment in Nigeria.

**CHAPTER FIVE**

**SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATION**

**5.1 Summary of Findings**

The research result shows that exchange rate, import and export have insignificant impact on the balance of payment in Nigeria.

 The result of this study indicates that exchange rate and export has positive relationships with balance of payment in Nigeria; the result also indicated that import and trade openness has negative relationships with balance of payment in Nigeria.

 The granger casuality result shows a unidirectional causality relationship exists between exchange rate and balance of payment, also no causal relationship exists between balance of payment and import, however, export granger cause balance of payment but balance of payment does not granger cause export in Nigeria.

**5.2 Conclusion**

We therefore conclude that exchange rate, import and export has insignificant impact on balance of payment in Nigeria and are therefore not suitable variables for capturing balance of payment, we also conclude that exchange rate and export has positive relationships with balance of payment in Nigeria while import has a negative relationship with balance of payment.

**5.3 Recommendations**

Owing to the findings of this study, the following policy recommendations have been given;

1. Haven seen that import has a negative impact on the balance of payment as a result of continuous loss of foreign exchange, the government should as much as possible encourage the production of most of the imported goods in the country by the local industries as well as encourage import substitutions.
2. The government should encourage the export promotion strategies in order to maintain a surplus balance of trade which will bring a solution to our findings.
3. The government should adopt the protectionism policy so as the close the level of trade openness of the country which is seen from our findings to have a negative impact on the balance of payment of Nigeria.

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**APPENDIX I**

**TIME SERIES DATA ON BALANCE OF PAYMENT, EXCHANGE RATE, import (IN BILLIONS), EXPORT (IN BILLIONS) AND TRADE OPENNESS FROM 1981 TO 2015**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| YEAR | BOP | EXR | IMPT | EXPT | TOP |
| 1981 |  (2.6) | 0.62 | 19.2 | 29.38 | 0.09118 |
| 1982 |  (1.4) | 0.67 | 26.11 | 22.19 | 0.065898 |
| 1983 |  1.9  | 0.72 | 19.91 | 17.83 | 0.119323 |
| 1984 |  4.7  | 0.77 | 12.5 | 14.54 | 0.176721 |
| 1985 |  2.9  | 0.89 | 7.9 | 15.71 | 0.220528 |
| 1986 |  12.5  | 1.75 | 8.51 | 17.39 | 0.225082 |
| 1987 |  9.7  | 4.02 | 10.4 | 13.32 | 0.339324 |
| 1988 |  27.1  | 4.54 | 14.7 | 26.94 | 0.671747 |
| 1989 |  64.2  | 7.36 | 12.46 | 22.85 | 0.764526 |
| 1990 |  32.0  | 8.04 | 16.41 | 43.98 | 1.089841 |
| 1991 |  62.5  | 9.91 | 17.69 | 35.34 | 1.430415 |
| 1992 |  53.1  | 17.3 | 23.18 | 41.7 | 1.675537 |
| 1993 |  43.3  | 22.07 | 23.52 | 37.51 | 20.7122 |
| 1994 |  195.5  | 22 | 24.28 | 33.83 | 3.300112 |
| 1995 |  746.9  | 21.9 | 18 | 24.31 | 3.835155 |
| 1996 |  395.9  | 21.88 | 24.01 | 35.76 | 4.245089 |
| 1997 |  (85.6) | 21.89 | 25.45 | 32.24 | 3.531274 |
| 1998 |  326.5  | 21.89 | 35.09 | 41.77 | 3.634441 |
| 1999 |  960.7  | 92.34 | 36.48 | 29.69 | 3.840094 |
| 2000 |  509.8  | 101.7 | 21.98 | 33.87 | 10.80192 |
| 2001 |  231.5  | 111.23 | 19.65 | 51.73 | 12.1382 |
| 2002 |  1,007.7  | 120.58 | 36.36 | 45.45 | 11.74603 |
| 2003 |  2,615.7  | 129.22 | 27.42 | 35.97 | 11.77019 |
| 2004 |  4,445.7  | 132.89 | 35.43 | 39.79 | 12.16253 |
| 2005 |  4,216.2  | 131.27 | 18.29 | 30.16 | 11.86672 |
| 2006 |  4,397.8  | 128.65 | 19.09 | 31.66 | 7.511556 |
| 2007 |  4,794.5  | 125.81 | 21.5 | 43.11 | 5.332819 |
| 2008 |  3,125.7  | 118.55 | 30.73 | 33.73 | 7.18809 |
| 2009 |  3,847.5  | 148.9 | 25.09 | 39.88 | 4.185479 |
| 2010 |  4,240.8  | 150.3 | 31.03 | 30.77 | 5.297067 |
| 2011 |  5,372.8  | 153.86 | 17.39 | 25.26 | 6.758857 |
| 2012 |  5.822.6  | 157.5 | 21.46 | 31.33 | 5.292117 |
| 2013 |  2,421.7  | 157.31 | 12.94 | 31.44 | 5.950525 |
| 2014 |  (2,230.9) | 158.55 | 13 | 18.05 | 61.77248 |
| 2015 |  (644.8) | 192.44 | 12.54 | 18.44 | 6.011536 |

**SOURCE: CBN STATISTICAL BULLETIN 2016 VERSION AND INDEXMUNDI**

**APPENDIX II**

**BALANCE OF PAYMENT UNIT ROOT TEST RESULT**

|  |  |
| --- | --- |
| Null Hypothesis: D(BOP) has a unit root |  |
| Exogenous: None |  |  |
| Lag Length: 0 (Automatic based on SIC, MAXLAG=8) |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  | t-Statistic |   Prob.\* |
|  |  |  |  |  |
|  |  |  |  |  |
| Augmented Dickey-Fuller test statistic | -9.285614 |  0.0000 |
| Test critical values: | 1% level |  | -2.644302 |  |
|  | 5% level |  | -1.952473 |  |
|  | 10% level |  | -1.610211 |  |
|  |  |  |  |  |
|  |  |  |  |  |
| \*MacKinnon (1996) one-sided p-values. |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Augmented Dickey-Fuller Test Equation |  |
| Dependent Variable: D(BOP,2) |  |  |
| Method: Least Squares |  |  |
| Date: 05/30/18 Time: 13:22 |  |  |
| Sample (adjusted): 1983 2015 |  |  |
| Included observations: 30 after adjustments |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | t-Statistic | Prob.   |
|  |  |  |  |  |
|  |  |  |  |  |
| D(BOP(-1)) | -1.148783 | 0.123716 | -9.285614 | 0.0000 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.740339 |     Mean dependent var | 245.6500 |
| Adjusted R-squared | 0.740339 |     S.D. dependent var | 1403.682 |
| S.E. of regression | 715.2729 |     Akaike info criterion | 16.01597 |
| Sum squared resid | 14836843 |     Schwarz criterion | 16.06268 |
| Log likelihood | -239.2396 |     Hannan-Quinn criter. | 16.03091 |
| Durbin-Watson stat | 1.283067 |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

**APPENDIX III**

**EXCHANGE RATE UNIT ROOT TEST RESULT**

|  |  |
| --- | --- |
| Null Hypothesis: D(EXR) has a unit root |  |
| Exogenous: Constant, Linear Trend |  |
| Lag Length: 0 (Automatic based on SIC, MAXLAG=8) |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  | t-Statistic |   Prob.\* |
|  |  |  |  |  |
|  |  |  |  |  |
| Augmented Dickey-Fuller test statistic | -5.291382 |  0.0007 |
| Test critical values: | 1% level |  | -4.262735 |  |
|  | 5% level |  | -3.552973 |  |
|  | 10% level |  | -3.209642 |  |
|  |  |  |  |  |
|  |  |  |  |  |
| \*MacKinnon (1996) one-sided p-values. |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Augmented Dickey-Fuller Test Equation |  |
| Dependent Variable: D(EXR,2) |  |  |
| Method: Least Squares |  |  |
| Date: 05/30/18 Time: 12:58 |  |  |
| Sample (adjusted): 1983 2015 |  |  |
| Included observations: 33 after adjustments |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | t-Statistic | Prob.   |
|  |  |  |  |  |
|  |  |  |  |  |
| D(EXR(-1)) | -1.019191 | 0.192613 | -5.291382 | 0.0000 |
| C | 1.139387 | 5.397280 | 0.211104 | 0.8342 |
| @TREND(1981) | 0.264648 | 0.265333 | 0.997420 | 0.3265 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.484858 |     Mean dependent var | 1.025455 |
| Adjusted R-squared | 0.450515 |     S.D. dependent var | 19.48718 |
| S.E. of regression | 14.44531 |     Akaike info criterion | 8.265125 |
| Sum squared resid | 6260.012 |     Schwarz criterion | 8.401171 |
| Log likelihood | -133.3746 |     Hannan-Quinn criter. | 8.310900 |
| F-statistic | 14.11817 |     Durbin-Watson stat | 1.910796 |
| Prob(F-statistic) | 0.000048 |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

**APPENDIX IV**

**IMPORT UNIT ROOT TEST RESULT**

|  |  |
| --- | --- |
| Null Hypothesis: D(IMPT) has a unit root |  |
| Exogenous: Constant |  |  |
| Lag Length: 0 (Automatic based on SIC, MAXLAG=8) |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  | t-Statistic |   Prob.\* |
|  |  |  |  |  |
|  |  |  |  |  |
| Augmented Dickey-Fuller test statistic | -8.049353 |  0.0000 |
| Test critical values: | 1% level |  | -3.646342 |  |
|  | 5% level |  | -2.954021 |  |
|  | 10% level |  | -2.615817 |  |
|  |  |  |  |  |
|  |  |  |  |  |
| \*MacKinnon (1996) one-sided p-values. |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Augmented Dickey-Fuller Test Equation |  |
| Dependent Variable: D(IMPT,2) |  |  |
| Method: Least Squares |  |  |
| Date: 05/30/18 Time: 13:01 |  |  |
| Sample (adjusted): 1983 2015 |  |  |
| Included observations: 33 after adjustments |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | t-Statistic | Prob.   |
|  |  |  |  |  |
|  |  |  |  |  |
| D(IMPT(-1)) | -1.337976 | 0.166222 | -8.049353 | 0.0000 |
| C | -0.474711 | 1.219754 | -0.389186 | 0.6998 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.676382 |     Mean dependent var | -0.223333 |
| Adjusted R-squared | 0.665943 |     S.D. dependent var | 12.11927 |
| S.E. of regression | 7.004655 |     Akaike info criterion | 6.789719 |
| Sum squared resid | 1521.021 |     Schwarz criterion | 6.880416 |
| Log likelihood | -110.0304 |     Hannan-Quinn criter. | 6.820235 |
| F-statistic | 64.79209 |     Durbin-Watson stat | 1.955494 |
| Prob(F-statistic) | 0.000000 |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

**APPENDIX V**

**EXPORT UNIT ROOT TEST RESULT**

|  |  |
| --- | --- |
| Null Hypothesis: D(EXPT) has a unit root |  |
| Exogenous: Constant |  |  |
| Lag Length: 0 (Automatic based on SIC, MAXLAG=8) |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  | t-Statistic |   Prob.\* |
|  |  |  |  |  |
|  |  |  |  |  |
| Augmented Dickey-Fuller test statistic | -8.490995 |  0.0000 |
| Test critical values: | 1% level |  | -3.646342 |  |
|  | 5% level |  | -2.954021 |  |
|  | 10% level |  | -2.615817 |  |
|  |  |  |  |  |
|  |  |  |  |  |
| \*MacKinnon (1996) one-sided p-values. |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Augmented Dickey-Fuller Test Equation |  |
| Dependent Variable: D(EXPT,2) |  |  |
| Method: Least Squares |  |  |
| Date: 05/30/18 Time: 13:03 |  |  |
| Sample (adjusted): 1983 2015 |  |  |
| Included observations: 33 after adjustments |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | t-Statistic | Prob.   |
|  |  |  |  |  |
|  |  |  |  |  |
| D(EXPT(-1)) | -1.389042 | 0.163590 | -8.490995 | 0.0000 |
| C | -0.247207 | 1.432333 | -0.172591 | 0.8641 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.699312 |     Mean dependent var | 0.229697 |
| Adjusted R-squared | 0.689613 |     S.D. dependent var | 14.75757 |
| S.E. of regression | 8.221799 |     Akaike info criterion | 7.110147 |
| Sum squared resid | 2095.537 |     Schwarz criterion | 7.200844 |
| Log likelihood | -115.3174 |     Hannan-Quinn criter. | 7.140664 |
| F-statistic | 72.09700 |     Durbin-Watson stat | 2.056169 |
| Prob(F-statistic) | 0.000000 |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

**APPENDIX VI**

**TOP UNIT ROOT TEST RESULT**

|  |  |
| --- | --- |
| Null Hypothesis: TOP has a unit root |  |
| Exogenous: Constant, Linear Trend |  |
| Lag Length: 0 (Automatic based on SIC, MAXLAG=8) |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  | t-Statistic |   Prob.\* |
|  |  |  |  |  |
|  |  |  |  |  |
| Augmented Dickey-Fuller test statistic | -6.499466 |  0.0000 |
| Test critical values: | 1% level |  | -4.252879 |  |
|  | 5% level |  | -3.548490 |  |
|  | 10% level |  | -3.207094 |  |
|  |  |  |  |  |
|  |  |  |  |  |
| \*MacKinnon (1996) one-sided p-values. |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Augmented Dickey-Fuller Test Equation |  |
| Dependent Variable: D(TOP) |  |  |
| Method: Least Squares |  |  |
| Date: 07/21/18 Time: 11:42 |  |  |
| Sample (adjusted): 1982 2015 |  |  |
| Included observations: 34 after adjustments |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | t-Statistic | Prob.   |
|  |  |  |  |  |
|  |  |  |  |  |
| TOP(-1) | -1.168475 | 0.179780 | -6.499466 | 0.0000 |
| C | -2.293808 | 3.457703 | -0.663391 | 0.5120 |
| @TREND(1981) | 0.592200 | 0.196369 | 3.015747 | 0.0051 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.577060 |     Mean dependent var | 0.174128 |
| Adjusted R-squared | 0.549773 |     S.D. dependent var | 14.54787 |
| S.E. of regression | 9.761465 |     Akaike info criterion | 7.478859 |
| Sum squared resid | 2953.872 |     Schwarz criterion | 7.613538 |
| Log likelihood | -124.1406 |     Hannan-Quinn criter. | 7.524789 |
| F-statistic | 21.14820 |     Durbin-Watson stat | 2.010899 |
| Prob(F-statistic) | 0.000002 |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

**APPENDIX VII**

**COINTEGRATION TEST RESULT**

|  |  |
| --- | --- |
| Null Hypothesis: D(ECT) has a unit root |  |
| Exogenous: None |  |  |
| Lag Length: 0 (Automatic based on SIC, MAXLAG=8) |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  | t-Statistic |   Prob.\* |
|  |  |  |  |  |
|  |  |  |  |  |
| Augmented Dickey-Fuller test statistic | -3.949536 |  0.0003 |
| Test critical values: | 1% level |  | -2.644302 |  |
|  | 5% level |  | -1.952473 |  |
|  | 10% level |  | -1.610211 |  |
|  |  |  |  |  |
|  |  |  |  |  |
| \*MacKinnon (1996) one-sided p-values. |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Augmented Dickey-Fuller Test Equation |  |
| Dependent Variable: D(ECT,2) |  |  |
| Method: Least Squares |  |  |
| Date: 07/21/18 Time: 11:49 |  |  |
| Sample (adjusted): 1983 2015 |  |  |
| Included observations: 30 after adjustments |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | t-Statistic | Prob.   |
|  |  |  |  |  |
|  |  |  |  |  |
| D(ECT(-1)) | -1.078869 | 0.273163 | -3.949536 | 0.0005 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.347284 |     Mean dependent var | -79.84850 |
| Adjusted R-squared | 0.347284 |     S.D. dependent var | 1316.301 |
| S.E. of regression | 1063.451 |     Akaike info criterion | 16.80919 |
| Sum squared resid | 32796933 |     Schwarz criterion | 16.85590 |
| Log likelihood | -251.1379 |     Hannan-Quinn criter. | 16.82413 |
| Durbin-Watson stat | 0.965893 |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

**APPENDIX VIII**

**ERROR CORRECTION MECHANISM TEST RESULT**

|  |  |
| --- | --- |
| Null Hypothesis: D(ECT) has a unit root |  |
| Exogenous: None |  |  |
| Lag Length: 0 (Automatic based on SIC, MAXLAG=8) |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  | t-Statistic |   Prob.\* |
|  |  |  |  |  |
|  |  |  |  |  |
| Augmented Dickey-Fuller test statistic | -3.949536 |  0.0003 |
| Test critical values: | 1% level |  | -2.644302 |  |
|  | 5% level |  | -1.952473 |  |
|  | 10% level |  | -1.610211 |  |
|  |  |  |  |  |
|  |  |  |  |  |
| \*MacKinnon (1996) one-sided p-values. |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Augmented Dickey-Fuller Test Equation |  |
| Dependent Variable: D(ECT,2) |  |  |
| Method: Least Squares |  |  |
| Date: 07/21/18 Time: 11:49 |  |  |
| Sample (adjusted): 1983 2015 |  |  |
| Included observations: 30 after adjustments |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | t-Statistic | Prob.   |
|  |  |  |  |  |
|  |  |  |  |  |
| D(ECT(-1)) | -1.078869 | 0.273163 | -3.949536 | 0.0005 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.347284 |     Mean dependent var | -79.84850 |
| Adjusted R-squared | 0.347284 |     S.D. dependent var | 1316.301 |
| S.E. of regression | 1063.451 |     Akaike info criterion | 16.80919 |
| Sum squared resid | 32796933 |     Schwarz criterion | 16.85590 |
| Log likelihood | -251.1379 |     Hannan-Quinn criter. | 16.82413 |
| Durbin-Watson stat | 0.965893 |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

**APPENDIX IX**

**REGRESSION RESULT**

|  |  |  |
| --- | --- | --- |
| Dependent Variable: D(BOP) |  |  |
| Method: Least Squares |  |  |
| Date: 07/21/18 Time: 11:55 |  |  |
| Sample (adjusted): 1982 2015 |  |  |
| Included observations: 32 after adjustments |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | t-Statistic | Prob.   |
|  |  |  |  |  |
|  |  |  |  |  |
| C | 397.2507 | 186.3469 | 2.131781 | 0.0423 |
| D(EXR) | 20.04132 | 10.38387 | 1.930043 | 0.0642 |
| D(IMPT) | -8.468477 | 20.46380 | -0.413827 | 0.6823 |
| D(EXPT) | 3.287908 | 17.62093 | 0.186591 | 0.8534 |
| TOP | -63.00991 | 13.86366 | -4.544968 | 0.0001 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.501289 |     Mean dependent var | 72.15313 |
| Adjusted R-squared | 0.427406 |     S.D. dependent var | 1093.336 |
| S.E. of regression | 827.3267 |     Akaike info criterion | 16.41688 |
| Sum squared resid | 18480675 |     Schwarz criterion | 16.64590 |
| Log likelihood | -257.6700 |     Hannan-Quinn criter. | 16.49279 |
| F-statistic | 6.784890 |     Durbin-Watson stat | 1.221997 |
| Prob(F-statistic) | 0.000647 |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

**APPENDIX X**

**NORMALITY TEST RESULT**



**APPENDIX XI**

**GRANGER CAUSALITY TEST RESULT**

|  |
| --- |
| Pairwise Granger Causality Tests |
| Date: 07/21/18 Time: 12:13 |
| Sample: 1981 2015 |  |
| Lags: 2 |  |  |
|  |  |  |  |
|  |  |  |  |
|  Null Hypothesis: | Obs | F-Statistic | Prob.  |
|  |  |  |  |
|  |  |  |  |
|  EXR does not Granger Cause BOP |  30 |  10.0690 | 0.0006 |
|  BOP does not Granger Cause EXR |  2.53453 | 0.0995 |
|  |  |  |  |
|  |  |  |  |
|  IMPT does not Granger Cause BOP |  30 |  1.65351 | 0.2116 |
|  BOP does not Granger Cause IMPT |  0.01712 | 0.9830 |
|  |  |  |  |
|  |  |  |  |
|  EXPT does not Granger Cause BOP |  30 |  3.83894 | 0.0352 |
|  BOP does not Granger Cause EXPT |  0.02014 | 0.9801 |
|  |  |  |  |
|  |  |  |  |
|  TOP does not Granger Cause BOP |  30 |  4.57047 | 0.0203 |
|  BOP does not Granger Cause TOP |  1.67873 | 0.2070 |
|  |  |  |  |
|  |  |  |  |
|  IMPT does not Granger Cause EXR |  33 |  2.07578 | 0.1443 |
|  EXR does not Granger Cause IMPT |  0.22847 | 0.7972 |
|  |  |  |  |
|  |  |  |  |
|  EXPT does not Granger Cause EXR |  33 |  0.45577 | 0.6386 |
|  EXR does not Granger Cause EXPT |  0.09132 | 0.9130 |
|  |  |  |  |
|  |  |  |  |
|  TOP does not Granger Cause EXR |  33 |  1.95081 | 0.1610 |
|  EXR does not Granger Cause TOP |  3.15444 | 0.0581 |
|  |  |  |  |
|  |  |  |  |
|  EXPT does not Granger Cause IMPT |  33 |  8.28916 | 0.0015 |
|  IMPT does not Granger Cause EXPT |  1.21864 | 0.3108 |
|  |  |  |  |
|  |  |  |  |
|  TOP does not Granger Cause IMPT |  33 |  0.22062 | 0.8034 |
|  IMPT does not Granger Cause TOP |  0.45208 | 0.6409 |
|  |  |  |  |
|  |  |  |  |
|  TOP does not Granger Cause EXPT |  33 |  0.37507 | 0.6906 |
|  EXPT does not Granger Cause TOP |  0.67700 | 0.5163 |
|  |  |  |  |
|  |  |  |  |