**TITLE PAGE**

**THE IMPACT OF IMPORT GROWTH ON THE DEVELOPMENT OF INDUSTRIAL SECTOR IN NIGERIA**

**BY**

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**U13/MSS/ECO/006**

**A PROJECT SUBMITTED TO THE DEPARTMENT OF ECONOMICS IN PARTIAL FULFILMENT OF THE REQUIREMENTS OF THE AWARD OF BACHELOR OF SCIENCE (B.Sc) DEGREE IN ECONOMICS**

**PROJECT SUPERVISOR**

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**JULY 2017**

**DECLARATION**

I, Chukwuorji, Nnamdi Innocent, and an undergraduate student in the department of Economics with registration number U13/MSS/ECO/006 have satisfactorily completed the requirements for the research work for the award of Bachelor of Science (B.Sc) in Economics.

This work is original and to the best of my knowledge has not been submitted in part or in full for the award of any other degree or diploma of this or any other tertiary institutions

**……………………………………………….**

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**U13/MSS/ECO/006**

**APPROVAL PAGE**

This is to certify that this research work “Import growth on the development on industrial sector in Nigeria” by Chukwuorji, Nnamdi Innocent in the Department of Economics has been examined and approved to have met the requirements for the award of Bachelor Science (B.Sc) Degree in Economics, Faculty of Management and Social Sciences, Godfrey Okoye University, Enugu.

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**External Examiner** **Date**

**DEDICATION**

This project is dedicated to the holy trinity and my able parents, and also to allmyfriends. They can be assured that their labour have not been in vain

**ACKNOWLEDGEMENT**

My thanks and gratitude goes to the almighty God whom through his immeasurable support i was able to present this work.

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**ABSTRACT**

The study was undertaken to find out the impact of import growth on the development of industrial sector in Nigeria. The study adopted simple regression on the ordinary least square (OLS) regression technique. The sample size was taken from 1981 to 2015 (34 years). Consequently, secondary sources of data from the central bank of Nigeria (CBN) were used. The use of students’-test, f-ratio and Durbin western statistic was employed in finding out the empirical variability of the regression plans and testing the presence of autocorrelation respectively. In addition the coefficient of determination (r2) was used to test for goodness of fit. The researcher made the findings that the result shows a significant positive relationship between import growth and industrial sector output. A significant relationship is shown between exchange rate and industrial sector output, though positive and contrary to a priori expectation. the lag value of the dependent variable (indp (-1) is shown to have a significant positive relationship with economic growth. this also meets the priori expectation. the r2 value of 57.51% shows normal goodness of fit implying that the explanatory variables adequately explained the behaviour of the dependent variables. the study recommends as follows: the monetary authority should ensure stability of exchange rate in order to bring low cost of importation of essential raw-material for industries, policies are to be redirected by the policy maker in order to avoid the import of super-furious in the industrial sector. the financial authorities in Nigeria should specify guidelines that will increase credit accessibility for investment in the financial sector.

**CHAPTER ONE**

**INTRODUCTION**

**1.1 Background to the study**

The Nigerian industrial sector has largely been dominated by the use of raw materials that are imported and that has made the industrial sector more capital intensive rather than labour intensive. The industrialization strategy aims at achieving greater global competitiveness in the production of processed and manufactured goods by linking industrial activity with primary sector activity, domestic, foreign trade, and service activity. Industrial development is generally believed to be a catalyst for rapid growth and development of any economy, be it developed, developing or under-developed. It is usually argued that industrialization is capable of increasing the pace of growth and ensuring swift structural transformation of the economy. The Bank of Industry (BOI) established in 2000, was introduced as a development institution to accelerate industrial development through the provision of long-term loans, equity finances and technical assistance to industrial enterprises.

Most of the raw materials used by industries in Nigeria are imported, the growth in Nigeria’s imports has an upward trend from 1981 till date.

Looking at the trend of development of Nigerian’s industrial sector with respect to growth in Nigerian’s import, it becomes necessary to examine the impact of import growth on industrial sector development. Therefore, the study is set to ascertain the impact of import growth in the development of industrial sector in Nigeria.

**1.2 Statement of problem**

Industrial development with its gains which ranges from increased employment opportunities, abundance of goods and services more favorable balance of trade , better income etc. to improve standard of living is not fully utilized in the Nigerian economy and as such as the growth and development suffers a huge set back. Although the government has developed different policies and programs in the past that are aimed at boosting industrial development in the country, most of these policies though magnificent on paper have failed woefully in the area of implementation while some of them did not see the light of the day, others were abandoned halfway and funds meant for the programs were misappropriated therefore this study was designed to investigate the impact of import growth on development of industrial sector in Nigeria.

**1.3 Research questions**

The following question were posed to guide the study

1. How does import growth impact on the industrial development in Nigeria?

**1.4 Objectives of the study**

The broad objective of the study is to determine the impact of import growth on the development of industrial sector in Nigeria.

In specific terms, the objective of this study is to:

1. Estimate the impact of import growth on industrial output in Nigeria.
   1. **Research hypothesis**

1. Import growth does not impact on the industrial development in Nigeria.

**1.6 Significance of the study**

This study aims at investigating the impact of industrial sector development on Nigeria import growth at large and hence, its impact cannot be over-emphasized. The study will be of great importance to policy makers, government and its agencies, private individuals and firms at large. The study will be also of great importance to students of economics and other researchers who may have interest in industrial sector or industrialization and its impact on Nigeria economy. Finally, the findings of this study would add to the stock of economics literature of Nigeria.

**1.7 Scope of the study**

The scope of this study will be centered on the Nigerian economy with particular emphasis on the industrial sector between 1981 -2015. The industrial sector as used in this context refers to the sector of the economy that involves deliberate and sustained application and combination of suitable technology, management techniques and other resources to move the economy from the traditional low level of production to a more automated and efficient system of mass production of goods and services (Ayodele and Falokun, 2003).

**CHAPTER TWO**

**REVIEW OF RELATED LITERATURE**

This chapter looks at various works and opinions of different Writes on

Import growth and industrial development. The researcher intends to do this based on the following headings.

**Conceptual Framework**

* Concept of import
* Concept of import growth
* Concept of industrialization
* Concept of industrial Development.
* Economic development

**Theoretical Framework**

- Structuralism theory

- Development theory

- International trade policy

- Trade policies

**Empirical Studies**

* Developing through importation
* Sustainable industrial development and its measures
* Performance and structure of the industry
* Import of capital goods
* Determinants of import

**2.1 Conceptual Framework**

**Imports** are foreign goods and services bought by residents of a country. Residents include citizens, businesses and the government. It doesn't matter what the imports are or how they are sent. They can be shipped, sent by email or even hand-carried in personal luggage on a plane. If they are produced in a foreign country and sold to domestic residents, they are imports. Even tourism products and services are imports.

An import is a good or service brought into one country from another. ... Along with exports, imports form the backbone of international trade; the higher the value of imports entering a country, compared to the value of exports, the more negative that country's balance of trade becomes.

Import growth is the increase in the level of a countries import. This happens when there is an increase in the quantity of goods and services that a country imports.

Industrialization is a deliberate act of establishing many new industries in a country. This also can be seen as the conscious effort by the government in creating new industries in a country.

**Industrial Development** is a sustained increase in the both the productive rate, size and number of industries in a country. Industrial development can occur when there are both internal and external economies of scale. It is achieved through a continuous growth of industries by a way of steady raw materials, protection, tax exemption, conscious expansionary plans etc.

**Economic development** is the process by which a nation improves the economic, political, and social well-being of its people. The term has been used frequently by economists, politicians, and others in the 20th and 21st centuries. The concept, however, has been in existence in the West for centuries. Modernization, [Westernization](https://en.wikipedia.org/wiki/Westernization), and especially [Industrialization](https://en.wikipedia.org/wiki/Industrialization) are other terms people have used while discussing economic development. Economic development has a direct relationship with the [environment](https://en.wikipedia.org/wiki/Environment_(biophysical)) and [environmental issues](https://en.wikipedia.org/wiki/Environmental_issues).

**2.2 Theoretical Framework**

**2.2.1 Structuralism theory**

**Structuralism** is a development theory which focuses on structural aspects which impede the economic growth of developing countries. The unit of analysis is the transformation of a country's economy from, mainly, subsistence producers to mainly commercial industrial producers. This theory centers on the adjustment of some development theories to facilitate more developmental opportunities in the country

## 2.2.2 Development theory

**Development theory** economic development theory is a policy intervention endeavor with aims of economic and social [well-being](https://en.wikipedia.org/wiki/Well-being) of people, [economic growth](https://en.wikipedia.org/wiki/Economic_growth) is a phenomenon of market [productivity](https://en.wikipedia.org/wiki/Productivity) and rise in [GDP](https://en.wikipedia.org/wiki/GDP). Consequently, as economist [Amartya Sen](https://en.wikipedia.org/wiki/Amartya_Sen) (2001) points out, "economic growth is one aspect of the process of economic development".

Development theory centers on those principles and practice which brings about sustainable increase in all the aspects of the economy. Industrial development is a key development theory which cuts across many aspects of the economy like industrialization, increase in productivity which increases the GDP of a country, employment, revenue generation, rise in standard or welfare etc.

**2.2.3 Trade policies**

As demonstrated by Adenikinju (2005), Nigeria’s trade policy has been somewhat inconsistent in the period after independence but recent economic policy reforms (from NEEDS to date) have sought to drastically reduce the unpredictability of the trade policy regime, establish a schedule to fully adopt ECOWAS common external tariff, and respect obligations under multilateral trading systems. The review of Nigeria’s macroeconomic policies in the previous subsection indicates that trade policies in Nigeria can be broadly classified into pre- and post-SAP trade policy regimes. The pre-SAP economy was extremely dependent on oil exports for foreign exchange and the shocks in the oil market created considerable balance of payment deficits. Import controls through import licensing, customs tariff, and outright bans were major instruments of trade policy. Trade and industrial policies was used to achieve the expected industrialization projections under the national development plans that characterized the pre-SAP regime.

The post-SAP trade policies witnessed considerable trade liberalization, principally motivated by the neo-liberal economic policies dictated by SAP. Emphasis was on loosening controls, and allowing the market forces of demand and supply to prevail in the allocation of foreign exchange and the direction of investment in the productive sectors. The marketing boards that enable control of the marketing of agricultural commodities were scrapped, and commodity exports became directly subjected to the dictates of the international commodity markets. Import licensing was also banned, and except for the short period of a dual foreign exchange regime in the mid-1990s, foreign exchange supply and demand were carried out through diverse market mechanisms that included SFEM, AFEM, IFEM, etc. This resulted in progressive devaluations of the national currency (naira), in a bid to make imports dearer and thus discourage excessive importation of non-essential goods and services. It is also noteworthy that the post-SAP trade policy regime allowed exporters to retain 100 per cent of their export earnings in their domiciliary accounts from which they could freely draw to meet their eligible foreign exchange transactions. The duty drawback/suspension scheme for exporters/producers was also revised to enable producers import raw materials and intermediate products free from import duty and other indirect taxes and charges. The Nigerian Export Credit Guarantee and Insurance.

Corporation was established in 1988, and was later renamed Nigerian Export-Import Bank (NEXIM). NEXIM provides credit and risk bearing facilities to banks in order to enable them to support exports. This notwithstanding, the pressure on balance of payment persisted, and was compounded by debt service obligations until 2005 when Nigeria was granted debt relief by the

Paris Club of creditors.

As rightly observed by Bevan et al. (1999), Nigeria has made very little use of quantitative restrictions. The Nigerian trade policies have generally been short-term in nature; customs tariff for the control of imports are often short-lived or subject to frequent revisions, and the import and export prohibition lists are revised sporadically.

According to Sandrey et al. (2007), by WTO standards Nigeria’s applied tariffs are relatively high, with a reported most favoured nation applied average rate of 15.6 per cent on agricultural imports and 11.4per cent on non-agricultural imports during 2006. For Nigeria, the final bound tariffs range from a minimum of 40 per cent to a maximum of 150 per cent, with an average of 118.4 per cent in 2006. There is presently no evidence that there has been significant change to this scenario. Conversely, for its exports Nigeria is eligible for non-reciprocal trade preferences under the generalized system of preferences schemes of several WTO Members, the Cotonou agreement with the European Communities (EC), and the US African Growth and Opportunity Act. Utilization of these opportunities with non-oil exports remains low, as oil still largely dominates exports from Nigeria.

Presently, Nigeria has several incentives for export promotion but still uses import prohibition to protect its manufacturing and agricultural sectors. This is understandable because the production base is relatively weak, import-dependent, and highly limited in technological capability. The import prohibition list includes a wide range of manufactured consumer goods that were often dumped in Nigeria’s relatively large market. A few agricultural products (e.g., fresh fruits, pork and pork products, beef and beef products, mutton, lamb and goat meat, frozen poultry) that are produced locally in large quantities are also included in the import prohibition list to protect the local industry and encourage job creation. On the export prohibition list are either staple foods/crops that are important for food security, commodities that could serve as raw materials to local industries and living organisms that are becoming rare. Such commodities include maize, timber, raw hides and skin, scrap metals, unprocessed rubber latex and rubber lumps, artefacts and antiquities, and wildlife animals classified as endangered species and their products.

As indicated by the Nigerian Investment Promotion Commission (NIPC), the Nigerian trade policy currently has elaborate export incentives aimed at encouraging and assisting exporters to increase and diversify the total value and volume of non-oil exports from Nigeria. These incentives are designed to address the major problems of supply, demand, and price competitiveness of Nigeria’s exports. Some of the incentives take the form of negotiable duty credit certificate. A few of these incentives are described below:

Manufacture-in-bond scheme: the manufacture-in-bond scheme is designed to encourage manufacturers to import raw material inputs and other intermediate products duty-free for the production of exportable goods, backed by a bond issued by any recognized financial institution.

The bond will be discharged after evidence of exportation and repatriation of foreign exchange has been produced.

Duty drawback scheme: the duty drawback scheme provides for refunds of duties/surcharges on raw materials including packing and packaging materials used for the manufacture of products upon effective exportation of the final products. The new duty drawback scheme gives automatic refunds (60 per cent) on initial screening by the duty drawback committee and upon the presentation of a bond from a recognized bank, insurance company or other financial institution.

The bond will cover 60 per cent of the refund to be made to the exporter and will only be discharged after final processing of the application has been made. At the end of the processing of exporters claims, the duty drawback committee shall grant any balance where applicable or request for refunds for any over payment made.

2.3 **Empirical framework**

**2.3.1 Developing through the importation or the market**

A review of development literature shows that the market-led developmental paradigm, which draws quite simplistically from the tenets of neoclassical economics, argues for minimizing the role of importation and allowing the market to allocate resources. The paradigm is rooted in the belief that the market is the best mechanism for resource allocation and has been reinforced time and again through a variety of international agencies, in particular the World Bank (see Stein, and numerous other authors). Market proponents believe that it is in fact the economic crises, primarily those of the 1970s, and their impact on widespread unemployment, inflation and trade deficits that allowed for market-led solutions to development, which relied on deregulation of markets and competitive industrial growth as longer term solutions to labour and finance (see Chang [2002](http://www.tandfonline.com/doi/full/10.1080/20421338.2014.970438) Chang, H.J. (2002), Kicking away the ladder: an unofficial history of capitalism, especially in Britain and the United States. Challenge 45(5): 63–97. [[Google Scholar]](http://scholar.google.com/scholar_lookup?publication_year=2002&pages=63-97&issue=5&author=H.J.+Chang&title=Kicking+away+the+ladder:+an+unofficial+history+of+capitalism,+especially+in+Britain+and+the+United+States&), Among others). Market proponents are keen to stress established shortcomings of the state, such as import substitution, the difficulties of engaging the private sector, creation of undue expectations regarding employment conditions (Olowu 2003), high transaction costs, undue coordination costs and information asymmetries. Several donor agencies, following the World Bank, have promoted a market-driven developmental approach in Africa, and advocate approaches that includes import promotion of industrial materials as a key to drive the sector.

Despite this, the past decade has seen increasing emphasis on importation of industrial materials, particularly through industrial policy. This is so to boost the industrial sector through the technology of other developed countries and the use of there more efficient industrial materials as to bring about more industrial development in Nigeria

Such approaches build firmly on much of the rest of economic theory, which steers away clearly from an enunciation of market led strategies. Institutional economics, for instance, breaks away from the theoretical assumption of rational, welfare maximizing individuals, operating in an unreal environment where all choices can be predetermined accurately, to a more realistic world where institutions are essential to bring about industrial development in Nigeria.

**2.3.2 Sustainable Industrial Development and its Measures**

This is a strategy to meet the present needs of industry and other stakeholders without comprising the ability of future generations to meet their own needs

Sustainable industrial development should be considered as a process of continuous improvement of environmental, economic and social performance in industry. Such process approach enables the identification of particular performance parameters that could be managed.

The key sustainable industrial development measures

* + Cleaner production
  + Environmental and integrated management systems
  + Product oriented measures based on life cycle approach
  + Sustainability reporting based on performance evaluation
  + Efficiency in resource allocation and management system
  + Maintenance of efficient material and human resources

**Performance and structure of Nigerian industry**

The Nigerian economy experienced respectable growth in the first decade of political independence. In the period 1960-70, real gross domestic product (GDP) recorded 3.1 per cent annual growth. Similarly, real GDP grew by 6.2 per cent annually between 1970 and 1978. Negative growth, however, surfaced in the early 1980s, but this was reversed with the introduction of SAP with real GDP registering annual growth of 4 per cent in the period 1988- 97. Overall, annual growth averaged less than 3 per cent for most of the three decades following the discovery and exploitation of oil (NPC 2004). More recently, the Nigerian economy has recorded considerable acceleration in growth as real GDP grew by 6.27 per cent, 7.57 per cent, and 7.38 per cent, in 2009, 2010, and 2011, respectively. Correspondingly, growth in real per capita income was 2.78 per cent, 3.76 per cent, and 4.78 per cent in 2008, 2009, and 2010, respectively. the dominance of the primary sector, comprising agriculture and mining and quarrying (including crude oil and gas) and manufacturing. At independence, the contribution of the primary sector to GDP was about 70 per cent. This share, however, dwindled in subsequent years to 62.10 per cent and 55.68 percent in 1977 and 1990, respectively; indicating a sluggish transition from primary production to secondary and tertiary activities. Although the primary sector’s contribution to GDP climbed in 2003 to 68 per cent, it declined progressively to 55.3 per cent in 2011, revealing that more than half of Nigeria’s output is still generated by the primary sector. The secondary sector comprising manufacturing, building, and construction contributes least to the GDP in Nigeria. The introduction of importation of industrial material and human resources brings about more efficiency in production as well as higher output which led to the growth of the industry overtime.

**2.3.3 Import of capital goods**

Nigeria imports are a key part of international trade and the import of capital goods in particular is vital to economic growth. Imported capital goods directly affect investment, which in turns constitutes the motor of economic expansion mostly in the industrial sector of the economy. The importance of international trade in the development process has been of interest to development of a country. In recent years, because of the popularity of the globalization, the interdependence among countries at world level has increased. Every country want to achieve rapid pace of economic development through getting the maximum benefit from the international trade and the use of modern methods in the production process. With the implementation of the world trade organization (WTO) rules and substantial reduction in trade restrictions, most of the developing countries import has increased rapidly, Nigeria’s economy is not an exception

The investigation of import demand function has important implications for macroeconomic policy issues (Tang, 2003). Some of what are the impact of expenditure switching through exchange rate management and commercial policy on a county’s trade balance; the international transmission of domestic disturbances where import demand elasticity’s which is a crucial link between economies; and the degree to which the external balance constraint affects a county’s growth and development .

Egwaikhide (2009) reliance on imports for domestic production simultaneously reveals the role played by foreign exchange availability in the growth process.

This study examines the determinants of aggregate imports and its major components in Nigeria, covering the period between 1990 and 2016.

**2.3.4 DETERMINANTS OF IMPORT**

1. Interest rate
2. exchange rate
3. purchasing power parity
4. quota set on imports
5. trade policies
6. external economies of scale
7. Demand and degree of necessity for the good

**Interest rate**, is the amount of interest due per period, as a proportion of the amount lent, deposited or borrowed (called the [principal sum](https://en.wikipedia.org/wiki/Principal_sum)). The total interest on an amount lent or borrowed depends on the principal sum, the interest rate, the compounding frequency, and the length of time over which it is lent, deposited or borrowed.

It is defined as the proportion of an amount loaned which a lender charges as interest to the borrower, normally expressed as an annual percentage. It is the rate a bank or other lender charges to borrow its money, or the rate a bank pays its savers for keeping money in an account

**Factors Influencing Interest Rates**

Interest rates vary according to:

* the government's directives to the central bank to accomplish the government's goals
* the currency of the principal sum lent or borrowed
* the term to maturity of the investment
* the perceived default probability of the borrower
* supply and demand in the market

**Exchange rate** (also known as a foreign-exchange rate, forex rate, ER, FX rate) between two currencies is the rate at which one currency will be exchanged for another. It is also regarded as the value of one country’s currency in relation to another currency. For example, an interbank exchange rate of 119 [Japanese yen](https://en.wikipedia.org/wiki/Japanese_yen) (JPY, ¥) to the [United States dollar](https://en.wikipedia.org/wiki/United_States_dollar) (US$) means that ¥119 will be exchanged for each US$1 or that US$1 will be exchanged for each ¥119. In this case it is said that the price of a dollar in relation to yen is ¥119, or equivalently that the price of a yen in relation to dollars is $1/119.

* Exchange rates are determined in the [foreign exchange market](https://en.wikipedia.org/wiki/Foreign_exchange_market), which is open to a wide range of different types of buyers and sellers, and where currency trading is continuous: 24 hours a day except weekends, i.e. trading from 20:15 [GMT](https://en.wikipedia.org/wiki/GMT) on Sunday until 22:00 GMT Friday. The [spot exchange rate](https://en.wikipedia.org/wiki/Spot_exchange_rate) refers to the current exchange rate. The [forward exchange rate](https://en.wikipedia.org/wiki/Forward_exchange_rate) refers to an exchange rate that is quoted and traded today but for delivery and payment on a specific future date.
* In the retail currency exchange market, different buying and selling rates will be quoted by money dealers. Most trades are to or from the local currency. The buying rate is the rate at which money dealers will buy foreign currency, and the selling rate is the rate at which they will sell that currency. The quoted rates will incorporate an allowance for a dealer's margin (or profit) in trading, or else the margin may be recovered in the form of a [commission](https://en.wikipedia.org/wiki/Commission_%28remuneration%29) or in some other way. Different rates may also be quoted for cash (usually notes only), a documentary form (such as [traveler's cheques](https://en.wikipedia.org/wiki/Traveler%27s_cheque)) or electronically (such as a [credit card](https://en.wikipedia.org/wiki/Credit_card) purchase). The higher rate on documentary transactions has been justified as compensating for the additional time and cost of clearing the document. On the other hand, cash is available for resale immediately, but brings security, storage, and transportation costs, and the cost of tying up capital in a stock of banknotes (bills).

**CHAPTER THREE**

**THEORETICAL FRAMEWORK AND METHODOLOGY**

**THEORETICAL FRAMEWORK**

## 3.1 Development theory

Development theory centers on those principles and practice which brings about sustainable increase in all the aspects of the economy. Industrial development is a key development theory which cuts across many aspects of the economy like industrialization, increase in productivity which increases the GDP of a country, employment, revenue generation, rise in standard or welfare etc.

**3.2 Methodology**

To verify the impact of import growth on industrial development on the Nigeria economy, simple regression on the ordinary least square (OLS) regression technique shall be employed. The researcher uses E- view Statistical Analysis software to run the secondary information gotten from the statistical bulletin.

**3.3 Model specification**

Given the theoretical exposition of the study we specify the model that would capture the effect of import growth on industrial development. The import growth and industrial growth shall be used as independent variable and interest rate (IR) as the dependent variable as a proxy for economic development.

We therefore specify the model as

Y=Output of Industrial Sector, = (x) =Import growth, exchange rate

Where y represent Industrial Sector (dependent variable)

X1 represent import growth

X2 represent exchange rate and specifically we can represent the above model.

using the economic form thus:

IND = b0 + b1 IMP + b2 ER + U1

where IMP = Import growth

ER= Exchange Rate

IND = Industrial production (manufacturing industry)

U1 = Error term

**3.4 Justification of the model:** The regression model fitting procedure described above can be used for data analysis as it will help us find the contributions of each explanatory variable. Data of the study will be drawn from CBN statistical bulletin.

Furthermore, the ordinary linear model (OLS) is the best model to measure the impact analysis. As this study is going to measure the impact of import growth on industrial development it is therefore qualified for this study.

**3.5 Method of data analysis**

To verify the impact of import growth on industrial development on the Nigeria economy, simple regression on the ordinary least square (OLS) regression technique shall be employed. The data are quantitative in nature, they include data variable on interest rate (IR) as development since it gives over view of the development of the economy.

Other variables are import expenditure and industrial growth as the independent variables. The sample size shall be taken from 1981 to 2016 (35 years). Consequently, secondary sources of data from the Central Bank of Nigeria (CBN) were used.

**3.6 Method of evaluation**

Since the research work is a time series regression estimate, we therefore employed the use of simple regression method, following one dependent and three independent variable using the ordinary least square (OLS) analytical techniques. The use of students test, F-ratio and Durbin western statistic shall be employed in finding out the empirical variability of the regression plans and testing the presence of autocorrelation respectively. In addition the coefficient of determination (r2) shall be used to test for goodness of fit.

Finally, at the end of the study, a conclusion shall be reached on whether the test-statistic is statistically significant or not using five percent (5%) level of significant.

**3.7 Data requirement and source**

The data of this study shall be secondary in nature and be sourced from the Central bank of Nigeria Statistically Bulletin, Central Bank of Nigeria Annual report and statement of Account.

Finally, at the end of the study, a conclusion shall be reached on whether the test-statistic is statistically significant or not using five percent (5%) level of significant.

**CHAPTER FOUR**

**4.1 PRESENTATION AND ANALYSIS OF RESULT**

The presentation of regression results will base on various economic, statistical and econometric tests. And, the hypothesis posed earlier in this study will be tested based on these empirical results.

**4.2 The empirical results**

**4.2.1 Stationary (Unit Root) Test**

The Augmented Dickey Fuller unit root test was conducted to investigate if the variables in the model are stationary. This test is highly required because it is the major means of ensuring the absence of spurious regression results. The summary of the stationarity test results are stated below:

**Table 4.2: Unit root on variables and residuals of all the regression**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Variable** | **T- statistic** | **Critical value 5%** | **probability** | **Order of integration** | **No of lag** |
| LnINDP | -3.701246 | 3.552973 | 0.0364 | I(1) | 0 |
| LnEXR | -4.954852 | -2.954021 | 0.0003 | I(1) | 0 |
| LnMG | -5.221828 | -2.957110 | 0.0002 | I(1) | 0 |

From the table 4.1 above, it can be seen that the variables: log of industrial output (lnINDP) and log of exchange rate (lnEXR), and log of import growth are all stationary at first difference. That is, they are integrated at order I (1). Thus, this evidence (stationarity) is an essential condition for co-integration.

**4.2.2 Co-integration Test for OLS result**

This test makes use of residual to estimate the co-integration that is to find out if there exists a long run relationship between the variables. Thus, it takes into consideration the individual order of integration and then the error term was generated and tested for unit root. The co-integration result is shown below:

**4.1.2 Co-integration Test for OLS result**

This test makes use of residual to estimate the co-integration that is to find out if there exists a long run relationship between the variables. Thus, it takes into consideration the individual order of integration and then the error term was generated and tested for unit root. The co-integration result is shown below:

**4.2: ADF Co-integration Result**

|  |  |  |  |
| --- | --- | --- | --- |
| **ADFstatisticof residual** | **ADF residual value** | **Critical value 5%** | **Order of Integration** |
| **Residual** | -2.999388 | -1.951332 | **Stationary** |

The above result is an evidence of co-integration between the independent and dependant variable as unit root for residual is revealed to be stationary at 5% with Dickey Fuller unit root test at level. Thus, the problem of inconsistent and spurious regression can be avoided.

**4.3.1 The Interpretation of the Parsimonious Short-run Error Correction Model**

**4.4: Table: Parsimonious error correction estimates of the impact of import growth on the industrial output.**

|  |  |  |  |
| --- | --- | --- | --- |
| Variable | Coefficient | t-Statistic | Prob. |
| **Constant** | 0.001813 | 0.168139 | 0.8681 |
| DlnMG(-4) | 0.034474 | 2.344915 | 0.0289 |
| DlnEXR(-2) | 0.043454 | 2.033716 | 0.0548 |
| DlnINDP(-1) | 0.775603 | 4.458154 | 0.0002 |
| U(-1) | -0.289340 | -2.918063 | 0.0082 |

R2=0.575147, Adjusted R2= 0.413299, F-statistic=3.553612, Prob (F-statistic) = 0.00

The results of the parsimonious error correction model (ECM) above indicate that the error term is significant at 5 percent level as its coefficient is -0.289340. This reveals how the movement from the long-run equilibrium is corrected by an adjustment in the short-run that is, about 28.9 percent disequilibria in the industrial sector output in the previous year are corrected for in the current year. This is indeed a very low adjustment speed.

The result based of the variable is discussed below:

The result of the lag value of import growth (log(mg(-4))) reveals a coefficient of 0.034474 which implies that a percentage increase MG(-4) will increase industrial sector by 0.034474 percent.

The coefficient of the pass value of exchange change also reveals that a percentage increase in exchange rate will lead to 0.043454 percent increase in the industrial sector.

Furthermore, coefficient of 0.775603 of the pass value of the dependent variable (INDP) implies that a percentage increase of the one period lag INGP (-1) will increase industrialsector by 0.775603percent.

**4.4 Evaluation Based On Economic Criteria**

The economic apiori expectation will evaluate the parameter in terms of their meeting the standard economic theory expectations.

The result established a positive and significant relationship between four period lag of import growth and industrial sector output. This has been found to be consistent with the theoretical expectation.

The result also revealed a positive and significant relationship between two period lag of exchange rate and industrial sector output. This is not in conformity with the theoretical expectation.

The result also indicted a positive and significant relationship between one period lag of industrial output and industrial sector output. This has been found to be consistent with the theoretical expectation.

**Table 4.5: Summary of the Signs**

|  |  |  |  |
| --- | --- | --- | --- |
| **Variable** | **Expected Sign** | **Realized Sign** | **Remark** |
| lnMG | Positive | Positive | Conforms |
| lnEXR | Negative | Positive | Not in conformity |

**4.5 ANALYSIS BASED ON STATISTICAL CRITERIA (1ST ORDER TEST)**

Statistical tests are done to evaluate the reliability of the estimated parameter in accordance with statistical theory and expectation.

**The coefficient of multiple determinations (R2**)

This measures the goodness of fit of the regression model. It shows how the variation in the dependent variable is explained by the explanatory variables, from the table, R2 = 0.575147**.** This implies that about 57% variation in the industrial output is explained by the explanatory variables.

**Test of significance of the parameter (Student t-Test)**

This test explains the explanatory power of the Independent variables:

The result shows that the variable import growth has a significant impact on industrial sector output. This is because the t-cal 2.344915 is greater than 5% level of significance.

The result also shows that exchange rate has a significant impact on industrial sector output. This is because its absolute t-statistic of 2.033716 is greater than the critical t-statistics at 5% level of significance.

Lastly, the result reveals that one lag period of industrial output has a significant impact on industrial sector output. This is because its absolute t-statistic of 4.458154 is greater than the critical t-statistics at 5% level of significance.

**The F-Statistic**

This test is conducted to determine if the independent variables in the model are simultaneously significant or not.

The F-statistic is used to determine the overall significance of the entire variable in the model. Thus, the P-value of F-statistics is 0.00 which is less than the 5% level of significance. This implies that the entire variables joined together are significantly different from zero.

**4.6 Econometrics Test (Diagnostic Checking)**

This study conducted several diagnostic tests in order to get valid results which are Breush-Godfrey Serial Correlation LM Test (test for Autocorrelation problem), Breush-Pagan Godfrey test (test for Heteroskedasticity problem) and Jarque –Bera normality test (test for normality of model)

1. **Test for Autocorrelation**

The Breush-Pagan Godfrey serial correlation LM test is used to ascertain if our model has autocorrelation or not.

H0: there is no autocorrelation in the model

H1: there is autocorrelation in the model

|  |  |  |
| --- | --- | --- |
|  | F-statistics | probability |
| **Serial Correlation LM test** | 1.510924 | 0.2461 |

The f-statistics is not significant and the p-value of 0.2461 is greater than the significant level at 5%. Therefore, we would not reject the null hypothesis which implies that there is no auto correction.

**2. Heterosedasticity Test**

|  |  |  |
| --- | --- | --- |
|  | F-statistics | probability |
| **Breush Pagan Godfrey test** | 1.660606 | 0.1674 |

The test is basically on the variance of the error term. It helps to ascertain if the variance of the error term is constant or not.

Ho = Homoscedasticity

H1 = Heteroscedasticity

Decision Rule

The result reveals that the *f-*statistic (1.660606) is not significant and the *p*-value 0.1674 is greater than the significant level at 5%. Therefore, we not reject the null hypothesis and it is sufficient evidence that there is no heteroscedasticity problem in the model. Therefore, the conditional variances of the error term are equal (homoscedasticity).

**3. Normality Test result**

The normality test of the residuals will be carried out to ascertain if the residuals of the model follow a normal distribution.

H0: The error term is normally distributed

H1: The error is not normally distributed

The Jarque-Bera statistic *p*-value of 0.050197 is less than the 5% level of significance, we reject the null hypothesis. Therefore, we conclude that error term is not normally distributed.

**CHAPTER FIVE**

**SUMMARY, CONCLUSION AND RECOMMENDATIONS**

**5.1 SUMMARY OF FINDINGS**

This research work seeks to assess the impact of import growth on Industrial sector in Nigeria. The dependent variable is log of industrial output (lnINDP). The explanatory variables are log of import growth (lnMG) and log of exchange rate (lnEXR). In line with the a priori expectation, the result shows a significant positive relationship between import growth and industrial sector output. A significant relationship is shown between exchange rate and industrial sector output, though positive and contrary to a priori expectation. The lag value of the dependent variable (INDP (-1) is shown to have a significant positive relationship with economic growth. This also meets the a priori expectation. The R2 value of 57.51% shows normal goodness of fit implying that the explanatory variables adequately explained the behaviour of the dependent variables.

**5.2 RECOMMENDATION**

The study recommends as follows:

-The monetary authority should ensure stability of exchange rate in order to bring low cost of importation of essential raw-material for industries.

- Policies are to be redirected by the policy maker in order to avoid the import of super-furious in the industrial sector.

-The financial authorities in Nigeria should specify guidelines that will increase credit accessibility for investment in the financial sector.

- More emphasis should be placed on technical education in Nigeria so as to strengthen the country’s industrial base thereby enhancing industrial sector output.

- More importantly, industrial policy implementation are to guild the industries toward importation of essential materials that will yield greater output when transformed, and also be made consistent enough to impact appropriately on industrial development in Nigeria.

**5.3 CONCLUSION**

This study has analyzed the impact of import growth on the development of the industrial sector output over the period of 1981-2015. It has added a fresh knowledge into the challenge faced in the course of import growth on the development of the industrial sector. From our finding, it is obvious that import growth has lead to industrial sector development. Therefore, we conclude that in order to ensure greater development in the industrial sector, industrial policy implementation should gear toward the import of essential and necessary industrial raw-materials that will yield a potential output: thereby, stimulating development of the industrial sector.

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APPENDICES

**APPENDIX 1:**

**Long run regression model**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Dependent Variable: LOG(INDP) | | |  |  |
| Method: Least Squares | | |  |  |
| Date: 07/14/17 Time: 10:23 | | |  |  |
| Sample: 1981 2015 | | |  |  |
| Included observations: 35 | | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| C | 4.598321 | 0.285739 | 16.09276 | 0.0000 |
| LOG(EXR) | -0.000433 | 0.020311 | -0.021340 | 0.9831 |
| LOG(MG) | 0.018101 | 0.015842 | 1.142650 | 0.2617 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.290119 | Mean dependent var | | 4.993554 |
| Adjusted R-squared | 0.245752 | S.D. dependent var | | 0.081991 |
| S.E. of regression | 0.071207 | Akaike info criterion | | -2.364635 |
| Sum squared resid | 0.162254 | Schwarz criterion | | -2.231320 |
| Log likelihood | 44.38112 | Hannan-Quinn criter. | | -2.318615 |
| F-statistic | 6.539002 | Durbin-Watson stat | | 0.387836 |
| Prob(F-statistic) | 0.004159 |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

SHORT RUN OVERPARAMERTERIZED ERROR CORRECTION MODEL

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Dependent Variable: D(LOG(INDP)) | | | |  |
| Method: Least Squares | | |  |  |
| Date: 07/14/17 Time: 10:41 | | |  |  |
| Sample (adjusted): 1986 2015 | | |  |  |
| Included observations: 30 after adjustments | | | |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| C | 0.001813 | 0.010785 | 0.168139 | 0.8681 |
| D(LOG(EXR)) | -0.029606 | 0.021751 | -1.361135 | 0.1879 |
| D(LOG(MG)) | -0.026756 | 0.020565 | -1.301066 | 0.2073 |
| U(-1) | -0.289340 | 0.099155 | -2.918063 | 0.0082 |
| D(LOG(EXR(-4))) | 0.018190 | 0.022796 | 0.797974 | 0.4338 |
| D(LOG(MG(-4))) | 0.034474 | 0.014701 | 2.344915 | 0.0289 |
| D(LOG(EXR(-2))) | 0.043454 | 0.021367 | 2.033716 | 0.0548 |
| D(LOG(MG(-1))) | -0.033915 | 0.016805 | -2.018194 | 0.0565 |
| D(LOG(INDP(-1))) | 0.775603 | 0.173974 | 4.458154 | 0.0002 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.575147 | Mean dependent var | | 0.006219 |
| Adjusted R-squared | 0.413299 | S.D. dependent var | | 0.046710 |
| S.E. of regression | 0.035779 | Akaike info criterion | | -3.579613 |
| Sum squared resid | 0.026882 | Schwarz criterion | | -3.159254 |
| Log likelihood | 62.69420 | Hannan-Quinn criter. | | -3.445137 |
| F-statistic | 3.553612 | Durbin-Watson stat | | 2.068965 |
| Prob(F-statistic) | 0.009350 |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

**APPENDIX 2: UNIT ROOT**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Null Hypothesis: D(LNEXR) has a unit root | | | |  |
| Exogenous: Constant | | |  |  |
| Lag Length: 0 (Automatic - based on SIC, maxlag=8) | | | | |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  | t-Statistic | Prob.\* |
|  |  |  |  |  |
|  |  |  |  |  |
| Augmented Dickey-Fuller test statistic | | | -4.954852 | 0.0003 |
| 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(LNEXR,2) | | | |  |
| Method: Least Squares | | |  |  |
| Date: 07/14/17 Time: 10:29 | | |  |  |
| Sample (adjusted): 1983 2015 | | |  |  |
| Included observations: 33 after adjustments | | | |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| D(LNEXR(-1)) | -0.883188 | 0.178247 | -4.954852 | 0.0000 |
| C | 0.151843 | 0.062245 | 2.439463 | 0.0206 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.441950 | Mean dependent var | | 0.003030 |
| Adjusted R-squared | 0.423948 | S.D. dependent var | | 0.412645 |
| S.E. of regression | 0.313190 | Akaike info criterion | | 0.574676 |
| Sum squared resid | 3.040721 | Schwarz criterion | | 0.665374 |
| Log likelihood | -7.482157 | Hannan-Quinn criter. | | 0.605193 |
| F-statistic | 24.55056 | Durbin-Watson stat | | 1.996881 |
| Prob(F-statistic) | 0.000024 |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Null Hypothesis: D(LNINDP) 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 | | | -3.701246 | 0.0364 |
| 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(LNINDP,2) | | | |  |
| Method: Least Squares | | |  |  |
| Date: 07/14/17 Time: 10:30 | | |  |  |
| Sample (adjusted): 1983 2015 | | |  |  |
| Included observations: 33 after adjustments | | | |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| D(LNINDP(-1)) | -0.627289 | 0.169480 | -3.701246 | 0.0009 |
| C | 0.001875 | 0.015871 | 0.118174 | 0.9067 |
| @TREND("1981") | 0.000100 | 0.000780 | 0.128258 | 0.8988 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.313495 | Mean dependent var | | -0.000250 |
| Adjusted R-squared | 0.267728 | S.D. dependent var | | 0.049793 |
| S.E. of regression | 0.042610 | Akaike info criterion | | -3.386962 |
| Sum squared resid | 0.054468 | Schwarz criterion | | -3.250916 |
| Log likelihood | 58.88488 | Hannan-Quinn criter. | | -3.341187 |
| F-statistic | 6.849805 | Durbin-Watson stat | | 1.902738 |
| Prob(F-statistic) | 0.003545 |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Null Hypothesis: D(LNMG) has a unit root | | | |  |
| Exogenous: Constant | | |  |  |
| Lag Length: 1 (Automatic - based on SIC, maxlag=8) | | | | |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  | t-Statistic | Prob.\* |
|  |  |  |  |  |
|  |  |  |  |  |
| Augmented Dickey-Fuller test statistic | | | -5.221828 | 0.0002 |
| Test critical values: | 1% level |  | -3.653730 |  |
|  | 5% level |  | -2.957110 |  |
|  | 10% level |  | -2.617434 |  |
|  |  |  |  |  |
|  |  |  |  |  |
| \*MacKinnon (1996) one-sided p-values. | | | |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Augmented Dickey-Fuller Test Equation | | | |  |
| Dependent Variable: D(LNMG,2) | | |  |  |
| Method: Least Squares | | |  |  |
| Date: 07/14/17 Time: 10:32 | | |  |  |
| Sample (adjusted): 1984 2015 | | |  |  |
| Included observations: 32 after adjustments | | | |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| D(LNMG(-1)) | -1.524415 | 0.291931 | -5.221828 | 0.0000 |
| D(LNMG(-1),2) | 0.095898 | 0.175962 | 0.544991 | 0.5899 |
| C | 0.324770 | 0.100949 | 3.217172 | 0.0032 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.708837 | Mean dependent var | | 0.011146 |
| Adjusted R-squared | 0.688756 | S.D. dependent var | | 0.831762 |
| S.E. of regression | 0.464034 | Akaike info criterion | | 1.391340 |
| Sum squared resid | 6.244486 | Schwarz criterion | | 1.528753 |
| Log likelihood | -19.26144 | Hannan-Quinn criter. | | 1.436888 |
| F-statistic | 35.30021 | Durbin-Watson stat | | 2.090505 |
| Prob(F-statistic) | 0.000000 |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

UNIT ROOT AT LEVEL FORM

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Null Hypothesis: LNMG has a unit root | | | |  |
| Exogenous: Constant | | |  |  |
| Lag Length: 2 (Automatic - based on SIC, maxlag=8) | | | | |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  | t-Statistic | Prob.\* |
|  |  |  |  |  |
|  |  |  |  |  |
| Augmented Dickey-Fuller test statistic | | | -1.074071 | 0.7137 |
| Test critical values: | 1% level |  | -3.653730 |  |
|  | 5% level |  | -2.957110 |  |
|  | 10% level |  | -2.617434 |  |
|  |  |  |  |  |
|  |  |  |  |  |
| \*MacKinnon (1996) one-sided p-values. | | | |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Augmented Dickey-Fuller Test Equation | | | |  |
| Dependent Variable: D(LNMG) | | |  |  |
| Method: Least Squares | | |  |  |
| Date: 07/16/17 Time: 09:53 | | |  |  |
| Sample (adjusted): 1984 2015 | | |  |  |
| Included observations: 32 after adjustments | | | |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| LNMG(-1) | -0.037568 | 0.034977 | -1.074071 | 0.2920 |
| D(LNMG(-1)) | -0.410608 | 0.178429 | -2.301242 | 0.0290 |
| D(LNMG(-2)) | -0.080882 | 0.176054 | -0.459417 | 0.6495 |
| C | 1.145533 | 0.770765 | 1.486230 | 0.1484 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.202060 | Mean dependent var | | 0.217494 |
| Adjusted R-squared | 0.116566 | S.D. dependent var | | 0.492397 |
| S.E. of regression | 0.462809 | Akaike info criterion | | 1.413465 |
| Sum squared resid | 5.997387 | Schwarz criterion | | 1.596682 |
| Log likelihood | -18.61544 | Hannan-Quinn criter. | | 1.474196 |
| F-statistic | 2.363448 | Durbin-Watson stat | | 2.131422 |
| Prob(F-statistic) | 0.092493 |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Null Hypothesis: LNEXR has a unit root | | | |  |
| Exogenous: Constant | | |  |  |
| Lag Length: 0 (Automatic - based on SIC, maxlag=8) | | | | |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  | t-Statistic | Prob.\* |
|  |  |  |  |  |
|  |  |  |  |  |
| Augmented Dickey-Fuller test statistic | | | -2.016060 | 0.2789 |
| Test critical values: | 1% level |  | -3.639407 |  |
|  | 5% level |  | -2.951125 |  |
|  | 10% level |  | -2.614300 |  |
|  |  |  |  |  |
|  |  |  |  |  |
| \*MacKinnon (1996) one-sided p-values. | | | |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Augmented Dickey-Fuller Test Equation | | | |  |
| Dependent Variable: D(LNEXR) | | |  |  |
| Method: Least Squares | | |  |  |
| Date: 07/16/17 Time: 09:55 | | |  |  |
| Sample (adjusted): 1982 2015 | | |  |  |
| Included observations: 34 after adjustments | | | |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| LNEXR(-1) | -0.053120 | 0.026348 | -2.016060 | 0.0523 |
| C | 0.337749 | 0.097439 | 3.466272 | 0.0015 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.112701 | Mean dependent var | | 0.169364 |
| Adjusted R-squared | 0.084973 | S.D. dependent var | | 0.305906 |
| S.E. of regression | 0.292621 | Akaike info criterion | | 0.437142 |
| Sum squared resid | 2.740057 | Schwarz criterion | | 0.526928 |
| Log likelihood | -5.431419 | Hannan-Quinn criter. | | 0.467762 |
| F-statistic | 4.064497 | Durbin-Watson stat | | 1.887772 |
| Prob(F-statistic) | 0.052254 |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Null Hypothesis: LNINDP has a unit root | | | |  |
| Exogenous: Constant | | |  |  |
| Lag Length: 1 (Automatic - based on SIC, maxlag=8) | | | | |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  | t-Statistic | Prob.\* |
|  |  |  |  |  |
|  |  |  |  |  |
| Augmented Dickey-Fuller test statistic | | | -2.485550 | 0.1280 |
| 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(LNINDP) | | |  |  |
| Method: Least Squares | | |  |  |
| Date: 07/16/17 Time: 09:56 | | |  |  |
| Sample (adjusted): 1983 2015 | | |  |  |
| Included observations: 33 after adjustments | | | |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| LNINDP(-1) | -0.222909 | 0.089682 | -2.485550 | 0.0187 |
| D(LNINDP(-1)) | 0.497163 | 0.162067 | 3.067642 | 0.0045 |
| C | 1.115830 | 0.447502 | 2.493462 | 0.0184 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.286454 | Mean dependent var | | 0.006008 |
| Adjusted R-squared | 0.238884 | S.D. dependent var | | 0.044488 |
| S.E. of regression | 0.038812 | Akaike info criterion | | -3.573667 |
| Sum squared resid | 0.045191 | Schwarz criterion | | -3.437621 |
| Log likelihood | 61.96550 | Hannan-Quinn criter. | | -3.527891 |
| F-statistic | 6.021757 | Durbin-Watson stat | | 2.067987 |
| Prob(F-statistic) | 0.006329 |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

COINTEGRATION

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Null Hypothesis: U has a unit root | | | |  |
| Exogenous: None | | |  |  |
| Lag Length: 1 (Automatic - based on SIC, maxlag=8) | | | | |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  | t-Statistic | Prob.\* |
|  |  |  |  |  |
|  |  |  |  |  |
| Augmented Dickey-Fuller test statistic | | | -2.999388 | 0.0039 |
| Test critical values: | 1% level |  | -2.636901 |  |
|  | 5% level |  | -1.951332 |  |
|  | 10% level |  | -1.610747 |  |
|  |  |  |  |  |
|  |  |  |  |  |
| \*MacKinnon (1996) one-sided p-values. | | | |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Augmented Dickey-Fuller Test Equation | | | |  |
| Dependent Variable: D(U) | | |  |  |
| Method: Least Squares | | |  |  |
| Date: 07/14/17 Time: 10:25 | | |  |  |
| Sample (adjusted): 1983 2015 | | |  |  |
| Included observations: 33 after adjustments | | | |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| U(-1) | -0.295685 | 0.098582 | -2.999388 | 0.0053 |
| D(U(-1)) | 0.514409 | 0.155901 | 3.299592 | 0.0024 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.323879 | Mean dependent var | | 0.002460 |
| Adjusted R-squared | 0.302069 | S.D. dependent var | | 0.044209 |
| S.E. of regression | 0.036933 | Akaike info criterion | | -3.700727 |
| Sum squared resid | 0.042286 | Schwarz criterion | | -3.610030 |
| Log likelihood | 63.06200 | Hannan-Quinn criter. | | -3.670210 |
| Durbin-Watson stat | 2.154233 |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

ECONOMETRICS TEST RESULTS

NORMALITY TEST



AUTOCORRELATION

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Breusch-Godfrey Serial Correlation LM Test: | | | |  |
|  |  |  |  |  |
|  |  |  |  |  |
| F-statistic | 1.510924 | Prob. F(2,19) | | 0.2461 |
| Obs\*R-squared | 4.116614 | Prob. Chi-Square(2) | | 0.1277 |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Test Equation: | |  |  |  |
| Dependent Variable: RESID | | |  |  |
| Method: Least Squares | | |  |  |
| Date: 07/14/17 Time: 10:52 | | |  |  |
| Sample: 1986 2015 | | |  |  |
| Included observations: 30 | | |  |  |
| Presample missing value lagged residuals set to zero. | | | | |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| C | -7.97E-05 | 0.011027 | -0.007227 | 0.9943 |
| D(LOG(EXR)) | 0.002058 | 0.023616 | 0.087165 | 0.9315 |
| D(LOG(MG)) | 0.002893 | 0.020170 | 0.143414 | 0.8875 |
| U(-1) | -0.098893 | 0.118665 | -0.833383 | 0.4150 |
| D(LOG(EXR(-4))) | 0.003695 | 0.022367 | 0.165180 | 0.8705 |
| D(LOG(MG(-4))) | -0.002060 | 0.014508 | -0.142021 | 0.8886 |
| D(LOG(EXR(-2))) | -0.000751 | 0.021520 | -0.034911 | 0.9725 |
| D(LOG(MG(-1))) | -0.002355 | 0.016540 | -0.142392 | 0.8883 |
| D(LOG(INDP(-1))) | -0.032627 | 0.209299 | -0.155888 | 0.8778 |
| RESID(-1) | 0.073677 | 0.355406 | 0.207303 | 0.8380 |
| RESID(-2) | 0.452049 | 0.265347 | 1.703616 | 0.1048 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.137220 | Mean dependent var | | 4.39E-18 |
| Adjusted R-squared | -0.316874 | S.D. dependent var | | 0.030446 |
| S.E. of regression | 0.034939 | Akaike info criterion | | -3.593876 |
| Sum squared resid | 0.023193 | Schwarz criterion | | -3.080104 |
| Log likelihood | 64.90814 | Hannan-Quinn criter. | | -3.429516 |
| F-statistic | 0.302185 | Durbin-Watson stat | | 2.013296 |
| Prob(F-statistic) | 0.971592 |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

HETEROSCEDASTICITY

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Heteroskedasticity Test: Breusch-Pagan-Godfrey | | | | |
|  |  |  |  |  |
|  |  |  |  |  |
| F-statistic | 1.660606 | Prob. F(8,21) | | 0.1674 |
| Obs\*R-squared | 11.62453 | Prob. Chi-Square(8) | | 0.1688 |
| Scaled explained SS | 5.125310 | Prob. Chi-Square(8) | | 0.7441 |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Test Equation: | |  |  |  |
| Dependent Variable: RESID^2 | | |  |  |
| Method: Least Squares | | |  |  |
| Date: 07/14/17 Time: 10:54 | | |  |  |
| Sample: 1986 2015 | | |  |  |
| Included observations: 30 | | |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| C | 0.000233 | 0.000339 | 0.687133 | 0.4995 |
| D(LOG(EXR)) | 0.000640 | 0.000684 | 0.936589 | 0.3596 |
| D(LOG(MG)) | -8.72E-05 | 0.000646 | -0.134861 | 0.8940 |
| U(-1) | 0.000763 | 0.003116 | 0.244837 | 0.8090 |
| D(LOG(EXR(-4))) | 0.000458 | 0.000716 | 0.639075 | 0.5297 |
| D(LOG(MG(-4))) | 0.000830 | 0.000462 | 1.796783 | 0.0868 |
| D(LOG(EXR(-2))) | 0.001632 | 0.000672 | 2.430930 | 0.0241 |
| D(LOG(MG(-1))) | 5.29E-05 | 0.000528 | 0.100165 | 0.9212 |
| D(LOG(INDP(-1))) | -0.001244 | 0.005468 | -0.227553 | 0.8222 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.387484 | Mean dependent var | | 0.000896 |
| Adjusted R-squared | 0.154145 | S.D. dependent var | | 0.001223 |
| S.E. of regression | 0.001124 | Akaike info criterion | | -10.49971 |
| Sum squared resid | 2.66E-05 | Schwarz criterion | | -10.07936 |
| Log likelihood | 166.4957 | Hannan-Quinn criter. | | -10.36524 |
| F-statistic | 1.660606 | Durbin-Watson stat | | 2.344784 |
| Prob(F-statistic) | 0.167361 |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

DATA USED

MG: Import growth

INDP: Industrial Output

EXR: Official exchange

|  |  |  |  |
| --- | --- | --- | --- |
| YEARS | MG | INDP | EXR |
| 1981 | 130000000 | 134.7 | **0.6100** |
| 1982 | 100000000 | 135.9 | **0.6729** |
| 1983 | 70000000 | 135.7 | **0.7241** |
| 1984 | 40000000 | 136.7 | **0.7649** |
| 1985 | 160000000 | 137.5 | **0.8938** |
| 1986 | 60000000 | 134.8 | **2.0206** |
| 1987 | 160000000 | 135.1 | **4.0179** |
| 1988 | 180000000 | 135.2 | **4.5367** |
| 1989 | 250000000 | 154.3 | **7.3916** |
| 1990 | 350000000 | 162.9 | **8.0378** |
| 1991 | 700000000 | 178.1 | **9.9095** |
| 1992 | 1530000000 | 169.5 | **17.2984** |
| 1993 | 1820000000 | 145.5 | **22.0511** |
| 1994 | 990000000 | 138.7 | **21.8861** |
| 1995 | 2550000000 | 136.2 | **21.8861** |
| 1996 | 3750000000 | 136.7 | **21.8861** |
| 1997 | 4480000000 | 133.1 | **21.8861** |
| 1998 | 4060000000 | 137.7 | **21.8861** |
| 1999 | 4070000000 | 138.2 | **92.6934** |
| 2000 | 5910000000 | 142.2 | **102.1052** |
| 2001 | 8850000000 | 146.2 | **111.9433** |
| 2002 | 10540000000 | 146.3 | **120.9702** |
| 2003 | 19330000000 | 148 | **129.3565** |
| 2004 | 15760000000 | 145.7 | **133.5004** |
| 2005 | 17800000000 | 145.8 | **132.1470** |
| 2006 | 29220000000 | 145.9 | **128.6516** |
| 2007 | 41280000000 | 152.2 | **125.8331** |
| 2008 | 32990000000 | 156.3 | **118.5669** |
| 2009 | 45340000000 | 156.4 | **148.8802** |
| 2010 | 84660000000 | 157 | **150.2980** |
| 2011 | 98930000000 | 160.3 | **153.8616** |
| 2012 | 56250000000 | 162.7 | **157.4994** |
| 2013 | 70160000000 | 165.4 | **157.3112** |
| 2014 | 73740000000 | 165.6 | **158.5526** |
| 2015 | 73740000000 | 165.7 | **193.2792** |