**THE ROLE OF REMITTANCES IN THE FINANCIAL DEVELOPMENT OF NIGERIA**

**CHAPTER ONE**

**INTRODUCTION**

**Background of the Study**

Remittances refer to monetary transfers made by individuals residing in foreign nations to their family and acquaintances in their countries of origin. They represent a significant contributor to the financial development inside a specific country. Remittances refer to monetary transfers made by individuals residing abroad to their home countries. Remittances in numerous economically disadvantaged nations are quantified in billions of dollars, occasionally constituting a substantial proportion of the gross domestic product (GDP). According to Coppola (2015), the financial resources of individual households experience a significant augmentation, and the functioning of local economies relies heavily on this influx of funds. According to Adams and Page (2003), Harrison (2003), and the Migration Policy Institute (2003), remittances refer to specific transactions that are initiated by individuals who reside or work outside their place of birth or origin and are directly associated with their migration. According to a publication by Jens Reinke from the Statistics Department of the International Monetary Fund in 2007,In contrast, financial growth is commonly characterised as the enhancement of quantity, quality, and efficiency in the provision of financial intermediary services (Choong and Chan, 2014). According to the Global Financial Development Report (GFDR) published by the World Bank in 2016, the concept of financial development revolves around the mitigation of various expenses associated with the functioning of the financial system. According to the Global Financial Development Report (GFDR) of 2016, the establishment of financial contracts, markets, and intermediaries can be attributed to the process of reducing the costs associated with information acquisition, contract enforcement, and transactional activities. Extensive research has established that the advancement of financial systems plays a pivotal role in driving economic development within a certain nation. According to the Global Financial Development Report (GFDR) of 2016, it has been highlighted that the process of capital accumulation and technological advancement is facilitated by an increase in the savings rate. This is achieved through the mobilisation and pooling of savings, the generation of investment-related information, the facilitation and encouragement of foreign capital inflows, and the optimisation of capital allocation.According to Yiheyis and Woldemariam (2016), remittances are gaining significance as crucial income sources and possible investment capital for households, while also serving as a reliable external financial resource for governments in developing nations. According to the findings of Yiheyis and Woldemariam (2016), it was verified that in the year 1990, the documented inflow of personal remittances to developing economies amounted to $29 billion, which accounted for 1.1% of the respective countries' gross domestic product (GDP). In order to provide context, it is noteworthy to mention that during the same year, the net official development assistance (ODA) amounted to approximately $56 billion, or 1.8% of the relevant numbers. According to Yiheyis and Woldemariam (2016), the amount of remittances sent to poor countries had experienced a significant increase by 2012, reaching over $350 billion. This sum was more than double the net official development assistance (ODA) received by these countries, indicating the growing significance of remittances.According to Yaseen's (2012) empirical documentation, there exists a positive correlation between remittances and financial development. This correlation is observed through the flow of remittances received from overseas, which are deposited into domestic banks. The discontinuation of remittances would have a severe impact on both families and the economic progress of the specific nation, particularly in the immediate term. According to research conducted by the World Bank and World Economic Forum, it has been shown that remittances have a positive impact on both the living conditions of individual beneficiaries and the overall well-being of communities (Allison, 2019). Similarly, Allison (2019) highlighted the challenges faced by economists in quantifying the comprehensive influence of remittances due to restricted data availability. Furthermore, the positive effects of remittances are somewhat mitigated by negative factors such as inflation, complacency, and brain drain. It is probable that the aggregate value of remittances, encompassing both formal and informal routes, exceeds the sum of remittance flows just through official channels by a factor of at least two. When effectively utilised, these remittance flows can have favourable outcomes for the economy of the migrants' nation of origin. As stated by Boafo (2011), the remittance flows have the potential to be directed towards various purposes such as savings, investment, business establishment, or community development initiatives.

**Statement of the Problem**

The role of remittances in financial development and economic growth has been a subject of numerous empirical studies. Aside from the recognition of the short-run multiplier effects and the favourable impact of remittances on the welfare of the receiving households, their aggregate long-run effect on economic growth is theoretically ambiguous, and the empirical evidence on it remains inconclusive. “One of the channels through which remittances are expected to influence long-run economic growth is domestic capital formation through, among others, induced rise in savings and easing of financial constraints. The empirical evidence on this is rather thin, especially in the context of Africa, at the country level” (Yiheyis and Woldemariam, 2016).

In spite of the empirical works and studies carried out by researchers, a lot more needs to be done because gathering accurate data on international remittances is quite tasking. The concept of remittances in Nigeria is still a complex unexplored issue and its impact has not yet been fully captured or explained empirically. “The lack of systematic means to record transactions, lack of details about the sender among others are some of the issues that lead to the complexity” (Global Partnership for Financial Inclusion GPFI Report on Remittances, 2015). It is therefore significant to understand and outline the role of remittances and financial development in the long and short run of Nigeria.

**Objectives of the Study**

The objective of this study is to establish both short and long run impacts of remittances in the financial development of Nigeria.

**Specific Objectives;**

1. To outline experiences of Nigeria in relations to remittances and financial development.
2. To determine the impact of remittances in the financial development of Nigeria.
3. To investigate by comparing the results from Ghana and Nigeria if there are significant differences between these impact in Ghana and Nigeria.

**Research Objectives**

The following questions capture the objective of the research:

1. What experiences link remittances and financial development in Nigeria?
2. What is the impact of remittances in financial development of Nigeria?
3. What is the relationship between remittances and financial development in Ghana and Nigeria?

**Methodology**

To establish the relationship between the variables, a descriptive survey method will be used as the research design. The study will focus on developing country, Nigeria. The data used will be secondarily sourced. The study will employ data span of 1978 to 2018. This study will also use the quantitative approach for data analysis.

**Significance of the Study**

This study seeks to shed more light on the relevant impacts of remittances in communities, households and most especially on the financial development of selected country; Nigeria. The findings will provide more information in relation to the two variables; remittance and financial development. This study would also serve as a secondary source of information to researchers looking to study these areas.

**Limitation of the Study**

1. The study has a small scope as it covers just one country; Nigeria.
2. Difficulty in accessing information such as record transactions of remittances that would be of relevance to the study.

**Organisation of the Study**

The study is categorized into five (5) main chapters. Chapter one focuses on the background and introduction of the study, the objectives and the problem statement as well as the significance of the study. Chapter two focuses on the review of relevant literature which provides insight into all relevant literature on the topic under study. Chapter three deals the methodology used for the study; research designs, variables used, model specifications, estimation techniques. Chapter four deals with analysis of data and results of the empirical findings. Chapter five outlines the summaries, conclusions, recommendations and suggestions on the study.

**CHAPTER TWO**

**LITERATURE REVIEW**

**Introduction**

Financial development and remittances have been identified as major drivers of growth in most developing countries. Existing literature has revealed the relationship between these variables and how they may impact economic growth. This chapter of the study analyzes the theoretical framework and reviews the various literatures on the relationship between financial development and remittances.

**Financial Development**

According to Levine (2004), financial development involves improvements in the (i) production of ex anteinformation about possible investments, (ii) monitoring of investments and implementation of corporate governance, (iii) trading, diversification, and management of risk, (iv) mobilization and pooling of savings, and (v) exchange of goods and services. Each of these financial functions may influence savings and investment decisions. Financial development involves well-functioning financial institutions and markets, such as commercial and investment banks, and bond and stock exchanges. Economists have found empirical evidence that countries with developed financial systems tend to grow faster. King and Levine (1993) found that growth is positively related to the level of financial development. The link between financial development and economic growth was first reported by Schumpeter (1911) and this has been an issue of controversy in both developed and developing economies. According to Schumpeter (1911), economic growth is reliant on how well the financial sector is deepened or developed.

**Does Financial Development Cause Growth?**

Financial development is said to be associated with higher economic growth from economic literature documented till date. Valderrama (2003) revealed that there is evidence that financial development causes growth through increases in the rate of capital accumulation and through the allocation of funds to more productive firms, leading to overall improvement in productivity. General agreement by economists and policy makers tells us that financial development (that is, well-functioning financial institutions and markets) contributes to economic growth. With confirmation from World Bank (2012), countries with better-developed financial systems tend to grow faster over long periods of time, and a large body of evidence suggests that this effect is causal: financial development is not simply an outcome of economic growth; it contributes to this growth. Understanding how financial development promotes growth is important for designing financial policies and regulations as financial development, if accompanied by well-designed regulations and enforcement, plays an important role in channelling savers’ resources to more productive firms, thus resulting in sustainable long-run growth (Diego Valderrama, 2003).

**Financial Development as An Economic Growth Tool**

The role that financial markets and financial intermediaries play in the growth process varies significantly, from country to country, depending on the level of political freedoms, rule of law and property rights protection. As pointed out by Aghion and Howitt (2009), people are willing to save more, and hence free-up resources to investors in a country with efficient and trustworthy banks than in a country where banks are likely to waste depositors’ wealth through bad loans or even swindle them. Aghion and Howitt (2009) also showed with instances that financial institutions and markets also help by pooling risks as well as optimal allocation of risk and returns. For instance, by collecting savings from many people and investing them in a large diversified range of projects, a depository institution allows even small savers to take advantage of the law of large numbers and get a reasonably safe rate of return. Well-functioning financial institutions can also help to alleviate agency problems by monitoring investors and making sure that they are making productive use of their loans rather than spending them on private consumption or otherwise defrauding the ultimate lenders (Aghion and Howitt, 2009). Conclusion from Giuliano & Ruiz-Arranz (2009) states that a well-functioning financial market can help direct remittances to projects that yield the highest return and therefore enhance economic growth by lowering the costs of accessing credit.

There are two major theories which explain the causal relationship between financial development and economic growth: the demand-following theory (Robinson, 1952) and the supply-leading theory (Schumpeter, 1934 and Patrick, 1966). The first suggests that financial development will follow economic growth, because when the economy grows, it generates new demands for financial services, and thus, the financial system will grow. On the other hand, the supply-leading theory suggests that financial development promotes economic growth, and thus, financial development has a positive effect on economic growth (Chow, Vieito, Wong, 2018).

**The Supply-Leading and Demand-Following Hypotheses**

The supply-leading hypothesi**s** suggests that causality flows from finance to economic growth with no feedback response from economic growth (Adeyeye, Fapetu, Aluko, Migiro, 2015). A well-developed financial sector is necessary for economic growth as it implies that money related advancement is the driver of financial development. The supply-leading hypothesi**s** has two functions: to transfer resources from the traditional, low-growth sectors to the modern high-growth sectors and to promote and stimulate an entrepreneurial response in these modern sectors (Patrick, 1966; Chow, Vieito, Wong, 2018). This implies that the deliberate creation of financial institutions and their services occurs before there is an actual demand for them which increases supply of financial services; leading to growth in the real sector.

On the other hand, the demand-following hypothesis postulates a causal relationship from real to financial growth: as the real sector develops, increased demand for financial services induces growth. Chow, Vieito, Wong (2018) concluded that productive and successful utilization of economy leads to financial development. To support the demand-following hypothesis, Robinson (1952) argues that "where venture drives, finance follows" and suggests that financial development is simply a response to the greater demand for financial services as the real economy grows. It is fundamental for policy makers to be ready to inject funds into some factors that could be equipped as components of monetary strategy, as indicated by (Banerjee and Ghosh, 1998), on the grounds that national financial strategies will support a supply-driven analysis as a budgetary reconstruction is being well planned.

**Remittances**

According to Olayungbo and Quadri (2019), remittances naturally come from migration as basic gains and compensations to the emigrant countries for losing part of their labour force (Blouchoutzi and Nikas, 2014). “It has been adjudged as a faster, easier and cheaper mode of transferring money around the world” (Imai et al., 2014; World Bank, 2014). Remittances make up a large part of most developing countries’ funds. “Remittances are important in enhancing households’ financial inclusion” (Ajefu and Ogebe, 2019). Their study explored the use of formal savings instrument in remittance receiving households and non-remittance receiving households and they proved that remittance receiving households constitute a large amount of bank account users that use mobile/internet services for financial transactions. The study was conducted within 8 out of 36 states in Nigeria with data from the World Bank’s Migration and Remittances Household Survey of the Africa Migration Project for Nigeria and data span from 1974 to 2016. In the same light, after observing income of non-migrant households excluding remittances, Odozi, Awoyemi and Omonoma (2010) evaluated the nature and net effect of migrant remittances on household income inequality and poverty in Nigeria and showed that the presence of remittances led to reduction in poverty and income inequality “comparing actual income of some households, including remittances, with the econometrically derived counterfactual income.”

**Reasons for Remittance**

According to United Nations (2006), for Africa, migrant remittance is linked to the continent’s struggle to develop and improve the welfare, peace and stability of its growing population. Studies have shown that remittances are pulled both by micro and macro factors. Migrants may remit money to home country for two possible motives. The first motive may be for altruistic reason, i.e. money is sent as compensatory transfer between family members when the economic condition in the migrant’s home country is bad, and they are motivated by welfare and insurance considerations (Lueth and Ruiz- Arranz, 2006). Chami et al. (2009) found that migrants consider remittances as an obligation to the household and send it home out of affection and responsibility towards the family. This means that as long as there is migration, there will be remittance. The second motive is to take advantage of investment opportunities when the economic condition in the home country is healthy. Giuliano and Ruiz- Arranz, (2006) proved that in about two-thirds of developing countries, remittances are mostly profit-driven and increase when economic conditions improve back home.

**Channels for Remittances**

Migrant workers generally transfer their remittances either through formal or informal channels. The formal channel includes drafts, telegraphic transfers and postal orders, through banks or post offices. Informal channel involves methods that bypasses the banking system to transfer money or goods through friends, relatives or trusted agents, in other words, as Mensah (2011) stated, informal channels refer to various means and ways of sending remittances in cash or kind into a migrant’s home country with no official approval or record. These secret flows do not appear in government statistics nor do they in government policy making (Mensah, 2011).With the formal channel, the sender in the host country demands a draft from a bank or an exchange house and sends it to the receiving party in home country through regular postal service or other means. The bank or the exchange house in the destination country charges a commission, which varies from bank to bank for their service. The transaction cost of the sender is the service charge plus the postal expenses. The receiving party deposits the draft received in a bank where he/she has an account; the bank makes payment to the holder of the draft. Clearance of the draft can take between 1-14 days depending on whether the draft was made in an exchange house or a bank (Economic and Social Research Council, ESRC, 2005).

Transfer of migrant remittances through informal channel is more pronounced in countries with relatively underdeveloped financial systems (ESRC, 2005). Examples of developing countries that have a similar channel of informal transfer system is Ghana and it is more prevalent especially where the sender wants the beneficiary to receive the remittance in foreign currency. This has made many researchers agree to the view that a large chunk of migrant remittances to Ghana are sent informally. Anarfi et al (2000) suggested that only 5% of total remittances to Ghana are sent through official channels. Van de Boom and Nsowah- Nuamah (2004) suggested that as much as 65% of total remittances may be sent informally. Tiemoko (2004) wrote that migrants who remit less frequently are more likely to use informal channels.

**Remittances, Financial Development and Economic Growth**

The importance of remittances to developing countries has been studied both at the micro and macro level. Inward remittances have a vital role and growing impact in most developing countries on poverty, income distribution, and economic development, especially in rural areas. It improves human capital, affects labour supply, reduces inequality. Odozi, Awoyemi and Omonona (2010) with data from The Nigeria Living Standard Survey (NLSS) database conducted a research from 2003 to 2004 evaluating the nature and net effect of migrant remittances on household income inequality and poverty in Nigeria. They examined the hypothesis that access to migrants’ remittances can alleviate poverty and reduce inequality and concluded that remittances alleviated poverty and reduced income inequality. In addition, comparing the actual income, including remittances, with the econometrically derived counterfactual income, remittances resulted in a higher poverty reduction.

Ajaegbu (2017) examined challenges of sending remittances and factors that motivate migrants to send remittances to 6 villages in Isiekenesi, Imo State, Nigeria from 1985 to 2016 using the Enlightened Altruism Model and found that remittances continue to flow to Isiekenesi because it is typically altruistic, as the migrants see it as a means of providing economic support to individual recipients at home to improve their living standards regardless of the societal structures. Bald´e (2011) revealed after investigating the macroeconomic impact of remittances and foreign aid on savings and investment from 1980 to 2004, that contrary to most conclusions found in the literature, migrant remittances are not only and entirely spent in basic consumption needs but positively and significantly influence savings and investment. Remittances into Nigeria provides foreign exchange and contributes to raising national savings and investment.

In some cases, remittances have become an important and stable source of external finance: they have allowed some countries to gain international credit worthiness or maintain macroeconomic stability (Organisation for Security and Co-operation in Europe, International Organisation of Migration and International Labour Organisation, 2006). Eggoh, Bangake & Semedo (2019)’s study suggest that some countries enjoy much greater growth from remittances than others. The main policy recommendation is that public authorities in recipient economies might implement policies that take into account the reality of each recipient economy given findings. Naive recommendations in favour of important remittances in all situations must be taken with caution.

Remittances have also been found to promote financial development (Aggarwal, Demirgüç-Kunt, and Peria 2011), economic growth and reduce output and consumption volatility (Combes and Ebeke 2011) (Eggoh, Bangake & Semedo, 2019).The Bank of Ghana pointed out that remittances place second after export as the major source of resource inflow into the country. Ebeke (2014) examined whether international remittance inflows expand fiscal space in receiving through their positive effects on the level and the stability of government tax revenues. The study investigated whether the effects of remittances are conditional on the presence of a value added tax (VAT). With tax revenue data from the International Monetary Fund (IMF) and migrants’ remittances from the World Development indicators of World bank, the paper showed robustly that in presence of a VAT, remittance inflows can increase both the level and the stability of government tax revenue in receiving countries.

On the other hand, Acosta, Lartey, and Mandelman (2009) argued that remittances may also have a detrimental impact on recipient economies. After trying to provide further insights into understanding the finance-growth nexus by verifying the hypothesis that financial development promotes economic growth through its capacity to attract increased international migrant remittances to Ghana between 1987 and 2007 using Estimated Cointegrating Model and Estimated Equilibrium-Correction Mechanism Model. Adenutsi (2011) also suggested that although financial development is directly detrimental to endogenous growth, it is crucial for mobilising remittances from international migrants. Peprah, Ofori, and Asomani (2019) also concluded that the joint effect of financial sector could have negative consequences on growth after collecting data from the International Monetary Fund (IMF) database and Global Financial Development database of the World Bank from 1984 to 2015 and employing the Autoregressive Distributed Lag technique to examine the linkages between financial development, remittances and economic growth.

Barajas et al. (2009) identified three main channels through which remittances can affect economic growth. The first one is by directly affecting the rate of capital accumulation. Barajas et al. stated that “if domestic households face financial restrictions that constrain their investment activities, remittances can contribute to economic growth by relieving households’ financial constraints, and by increasing the investment level of the economy”. The second channel Barajas et al. stated is the labour force growth. “The recipients may consider the remitted funds as a substitute for labour income and increase their leisure activities. They can decrease their labour force participation, limit their job searches, reduce labour effort, or invest in riskier projects, among other actions” (Barajas et al. 2009). The third channel is the total factor productivity through Dutch disease effects and operates through the influence of remittances on the real exchange rate (Chami et al. 2008). Since remittance receipts result in an appreciation of the economy’s real exchange, it renders the traded goods sector suboptimal, the addition of remittances reduces the rate of growth of the economy’s technological capacity and total factor productivity.

**Conclusion**

The review of the various relevant literature on financial development and remittances show the different views of various researchers and it can be noted that the results arising from the different arguments show reliably that there is a positive long-run (short-run) relationship (causality) between financial development, remittances and economic growth. This study seeks to further show the impact of remittances and financial development in the selected developing country using the theories discussed.

# CHAPTER THREE

# METHODOLOGY

## Introduction

This chapter presents the methods that were used in this study to determine the impact of remittances on financial development in Nigeria. The chapter focuses on the research design, population and sample of the study, data collection, model specification, estimation technique, validity and reliability of the study and analysis of the data.

## Research Design

This study used a descriptive survey method to investigate the impacts of remittances in the financial development of Nigeria. “Descriptive research is a purposive process of data gathering, analysing, classifying and tabulating data about prevailing conditions, practices, beliefs, processes, trends and cause-effect relationships and then adequate and accurate interpretation about such data with or without aid of statistical treatment.” (Estrellado, 2012). It is combined with comparison or contrast, which involves measurement, classiﬁcation, interpretation and evaluation to show the signiﬁcance of what is described. The method is used to describe the level of relationship among research variables (independent and dependent) of the study.

## Data Collection

As read in existing literature, the way data collection for this study has been set up has been used before and was successful. The data sets were put together and compared to be able to effectively find answers to the objectives for the study. Data for the variables under study was obtained from various secondary sources like the World Bank, World Development Indicators database (WDI), Government Financial Statistics database and International Monetary Fund (IMF) reports. Overall data span was from the period 1978-2018. The choice of this period is due to the availability of data of the choice variables.

## Model Specification

This study will be adapting the work of Ebeke (2014) and the specified model used is given as:

DCP = β0 + β1 PREM + β2 INFL + β3FDI + β4POP + β5 GDP +Ut

The specified model for this research on the long-run and short-run experiences of Remittances and Financial Development of Ghana And Nigeria is given below.

DCP = Domestic credit to private sector (%of GDP),

PREM = Personal remittances, received (% of GDP),

INFL = Inflation, GDP deflator (annual %),

FDI = Foreign direct investment,

POP = Population growth (annual %),

GDP= Gross Domestic Product (annual %),

μ = Error Term.

**A-priori Expectation**

This shows the expected outcome the independent variables used in the model will have on the dependent variable based on the economic theories.

Domestic credit to private sector is the dependent variable and it is expected to have a positive relationship with the independent variable. Personal remmitance is an independent variable and it is expected to have a postive relationship with the dependent variable. Gross domestic product is an independent variable that is expected to have a positive relationship with the dependent variable. Inflation rate is an independent variable and is expected to have a negative relationship with the dependent variable. Foreign direct investment is an independent variable which is expected to have a positive relationship with the dependent variable. Population growth is also an independent variable which is expected to have a positive relationship with the dependent variable.

## Estimation Technique

The process of estimation begun by ensuring the behaviours of the variables in the model align with the assumptions of the model. The first step in this estimation was a unit root test to test for the stationarity of the variables, the Augumented Dickey Fuller was used to test for this stationarity. At point where the variables were stationary at levels I(0) from the result of the test, in analysing the data, the Ordinary Least Square estimation technique was employed.

### Descriptive Statistics

To simplify and summarise the data meaningfully, this statistics employed the use of tables and graphs for easy understanding. It also helped to determine if the data is normally distributed or not. Personal remittances (PREM) are the sum of personal transfers and compensation of employees - seasonal, and other short-term workers who are employed in an economy where they are not resident. It is the dependent variable while the other variables are independent. Gross domestic product (GDP) in the previous year measures the growth in an economy. Inflation rate (INF) shows the sustained rise in the general price level. Foreign direct investment (FDI) is an investment made by a firm or individual in one country into business interests located in another country.

### Unit-root test

This test was conducted for the time series data in this study to validate the result from the findings empirically. In estimating the data used in this study, the first step was to test the stationarity of the data. With the assumption of multiple regression which states that all the time series are stationary at levels, that is, the order of integration series are at levels , the Unit-root test was conducted. The test was essential to show the trends in the data and report if the time series variables are stationary or not. The test adopted and conducted for the time seies variables are the Augumented Dickey-Fuller (ADF) test which was propounded by Dickey and Fuller (1979, 1981) and Phillip Perron’s test.

## Validity and Reliability

All necessary measures were taken to ensure that the results of this study were highly valid and reliable. Validity is the most important quality of a test. It refers to the degree to which a test measures what it is supposed to measure. Content validity is the degree to which a test measures an intended content area. There is also Criterion -Related Validity that is divided into two forms: Concurrent validity is the degree to which scores on a test are related to scores on another test administered at the same time and Predictive validity which refers to the degree to which scores on a test are related to scores on another test to be administered in the future. Reliability refers to the degree to which a test consistently measures whatever it is supposed to measure. The five general approaches to reliability are stability, equivalence, equivalence and stability, internal consistency, and score rater.

## Data Analysis

The study used quantitative data analysis at the end of each section, the data was summarized in major appropriate standards. The use of the most up to date statistical application software. Calculated table and percentages as statistical approaches were used to analyse the data collected. The methods of analysing the research strongly showed descriptive relationship between the variables of the study.

**CHAPTER 4**

**EMPIRICAL ANALYSIS AND DISCUSSION OF RESULTS**

**4.1 INTRODUCTION**

This chapter focuses on the empirical analysis on the role of remittances in the financial development of Nigeria for a 41-year period spanning between 1978 and 2018. This chapter present and analyze the time series data used for estimation. The study employed descriptive statistics and ordinary least square to access the impact of remittances in the financial development of Nigeria. It needs to be stated that 5 percent significance level was used for Janalysis due to its reliability in econometric research.

**4.2 DATA PRESENTATION**

The variables used in this analysis are Domestic credit to private sector (% of GDP), Personal remittances received (% of GDP), Inflation (annual %), Foreign direct investment, Population growth (annual %), Gross Domestic Product (annual %) for the period of 41 years between 1978 and 2018. The data was sourced from Central Bank of Nigeria (CBN) Statistical Bulletin 2018. Below is a tabular presentation of the data;

**Table 4.1: Tabular presentation of data set**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Year** | **DCP (% of GDP)** | **PREM (% of GDP)** | **GDP growth (annual %)** | **INFL (annual %)** | **FDI (% of GDP)** | **POP (annual %)** |
| **1978** | 10.992 | 0.009 | -5.7642 | 13.9147 | 0.5775 | 3.032 |
| **1979** | 10.39 | 0.018 | 6.75943 | 11.4888 | 0.6551 | 2.971 |
| **1980** | 12.227 | 0.034 | 4.20483 | 12.4197 | -1.151 | 2.849 |
| **1981** | 5.8021 | 0.01 | -13.128 | 219.003 | 0.3297 | 2.71 |
| **1982** | 6.4506 | 0.012 | -6.8034 | 14.8026 | 0.3016 | 2.6 |
| **1983** | 6.2086 | 0.014 | -10.924 | 19.5689 | 0.3753 | 2.534 |
| **1984** | 6.266 | 0.016 | -1.1156 | 5.65366 | 0.2574 | 2.529 |
| **1985** | 6.0398 | 0.014 | 5.91303 | 6.92777 | 0.6585 | 2.562 |
| **1986** | 7.575 | 0.007 | 0.06095 | 5.41545 | 0.3525 | 2.603 |
| **1987** | 6.603 | 0.005 | 3.20013 | 19.6695 | 1.1591 | 2.626 |
| **1988** | 6.066 | 0.005 | 7.33403 | 20.1771 | 0.7627 | 2.631 |
| **1989** | 5.0903 | 0.023 | 1.91938 | 28.9697 | 4.2821 | 2.613 |
| **1990** | 4.9575 | 0.019 | 11.7769 | 6.66894 | 1.088 | 2.579 |
| **1991** | 5.2411 | 0.133 | 0.35835 | 18.8639 | 1.4503 | 2.546 |
| **1992** | 8.2345 | 0.118 | 4.63119 | 46.7524 | 1.876 | 2.522 |
| **1993** | 7.0077 | 2.858 | -2.0351 | 41.6391 | 4.8478 | 2.503 |
| **1994** | 8.0373 | 1.625 | -1.8149 | 43.2965 | 5.7908 | 2.493 |
| **1995** | 6.5087 | 0.567 | -0.0727 | 75.4017 | 0.7622 | 2.49 |
| **1996** | 6.1744 | 0.581 | 4.19592 | 26.4911 | 0.9775 | 2.489 |
| **1997** | 7.0306 | 1.076 | 2.9371 | 5.05535 | 0.8623 | 2.489 |
| **1998** | 7.6195 | 0.821 | 2.58125 | 6.00934 | 0.5486 | 2.491 |
| **1999** | 8.1688 | 2.191 | 0.58413 | 13.4306 | 1.6926 | 2.496 |
| **2000** | 8.249 | 2.004 | 5.01593 | 22.6737 | 1.6417 | 2.504 |
| **2001** | 9.8808 | 1.576 | 5.91768 | 10.0765 | 1.6083 | 2.512 |
| **2002** | 8.0843 | 1.267 | 15.3292 | 21.1091 | 1.9647 | 2.522 |
| **2003** | 8.9095 | 1.013 | 7.34719 | 9.80432 | 1.9115 | 2.537 |
| **2004** | 8.4617 | 1.666 | 9.25056 | 22.3683 | 1.3741 | 2.56 |
| **2005** | 8.4351 | 8.312 | 6.43852 | 19.8585 | 2.8288 | 2.586 |
| **2006** | 8.1204 | 7.171 | 6.05943 | 23.8644 | 2.056 | 2.611 |
| **2007** | 13.797 | 6.536 | 6.59113 | 7.09973 | 2.1899 | 2.632 |
| **2008** | 18.633 | 5.698 | 6.76447 | 7.92139 | 2.4316 | 2.65 |
| **2009** | 19.626 | 6.293 | 8.03693 | 0.6861 | 2.9309 | 2.663 |
| **2010** | 13.491 | 5.434 | 8.00566 | 16.3428 | 1.6585 | 2.671 |
| **2011** | 11.044 | 5.024 | 5.30792 | 9.77846 | 2.1546 | 2.678 |
| **2012** | 10.605 | 4.472 | 4.23006 | 9.94764 | 1.539 | 2.681 |
| **2013** | 11.533 | 4.039 | 6.67134 | 4.96475 | 1.0802 | 2.677 |
| **2014** | 13.297 | 3.694 | 6.30972 | 4.66262 | 0.8257 | 2.665 |
| **2015** | 13.079 | 4.17 | 2.65269 | 2.86367 | 0.6195 | 2.647 |
| **2016** | 14.608 | 4.868 | 9.54367 | 6.68623 | 2.6277 | 2.66 |
| **2017** | 12.852 | 5.865 | 11.1189 | 5.79057 | 2.6077 | 2.64 |
| **2018** | 10.247 | 6.12 | 10.2348 | 6.04995 | 2.5865 | 2.62 |

**SOURCE:** CBN Statistical Bulletin, 2018.

**4.3 DATA ANALYSIS**

**Figure 4.1** Trend of Domestic credit to private sector (% of GDP) between 1978 to 2018.

Figure 4.1 represents the trend of Domestic credit to private sector (% of GDP) between 1978 to 2018.. The values of DCP had an irregular trend during the period chosen for study. In the year 1978, DCP was 10.99%, and reduced to 4.95% in year 1990. It further increased to 8.24% in year 2000, and stood at 13.49% and 10.24% in year 2010 and 2018 respectively..

**Figure 4.2** Trend of Personal remittances received (% of GDP) between 1978 to 2018.

Figure 4.2 represents the trend of Personal remittances received (% of GDP) between 1978 to 2018.. The values of PREM maintained a relatively stable trend during the period chosen for study. In the year 1978, PREM was 0.0009%, and increased to 0.019% in year 1990. It further increased to 2.004% in year 2000, and stood at 5.433% and 6.12%% in year 2010 and 2018 respectively.

**Figure 4.3** Trend of Gross Domestic Product (annual %) between 1978 to 2018.

**Figure 4.3**; represents the trend of Gross Domestic Product (annual %) between the year 1978 to 2018. The values of GDPGR had an irregular trend during the period chosen for study, in the year 1978 GDPGR was -5.76% and it increased to 11.77% in year 1990. It further decreased to 5.015% in year 2000, and it stood at 8.005% and 10.23% in year 2010 and 2018 respectively.

**Figure 4.4** Trend of Inflation (annual %) between 1978 to 2018.

Figure 4.4 represent the trend of inflation rate between 1978 to 2018.. The values of INFL had an irregular trend during the period chosen for study. In the year 1978, INFL was 13.91%, and decreased to 6.66% in year 1990. It further increased to 22.67% in year 2000, and stood at 16.34% and 6.04% in year 2010 and 2018 respectively

**Figure 4.5** Trend of Foreign direct investment between 1978 to 2018.

Figure 4.5; represents the trend of Foreign direct investment annual percentage change rate between 1978 to 2018. The values of FDI had an increasing trend during the period chosen for study. In the year 1978, FDI was 0.577%, and increased to 1.088% in year 1990. It further increased to 1.641% in year 2000, and stood at 1.658% and 2.586% in year 2010 and 2018 respectively

**Figure 4.6** Trend of Population growth (annual %) between 1978 to 2018.

Figure 4.6; represents the trend of Population growth rate between 1978 to 2018. The values of POP maintained a stable trend during the period chosen for study. In the year 1978, POP was 3.032%, and reduced to 2.579% in year 1990. It further declined to 2.504% in year 2000, and stood at 2.67% and 2.62% in year 2010 and 2018 respectively

**4.4 DESCRIPTIVE STATISTICS**

**Table 4.2: Descriptive Statistics**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | **DCP** | **PREM** | **INFL** | **FDI** | **POP** | **GDP** |
| **Mean** | 9.308332 | 2.326315 | 21.32117 | 1.587655 | 2.611552 | 3.795719 |
| **Median** | 8.234514 | 1.267441 | 12.41966 | 1.450318 | 2.602904 | 5.015935 |
| **Maximum** | 19.62560 | 8.311897 | 219.0028 | 5.790847 | 3.031979 | 15.32916 |
| **Minimum** | 4.957522 | 0.004883 | 0.686099 | -1.150856 | 2.488785 | -13.12788 |
| **Std. Dev.** | 3.500061 | 2.555018 | 34.76292 | 1.302450 | 0.119131 | 5.780100 |
| **Skewness** | 1.120356 | 0.743099 | 4.728743 | 1.137953 | 1.789469 | -0.960104 |
| **Kurtosis** | 3.925336 | 2.147839 | 26.97971 | 5.013575 | 6.780069 | 4.203151 |
|  |  |  |  |  |  |  |
| **Jarque-Bera** | 10.03993 | 5.013898 | 1135.138 | 15.77514 | 46.29193 | 8.771896 |
| **Probability** | 0.006605 | 0.081517 | 0.000000 | 0.000375 | 0.000000 | 0.012451 |
|  |  |  |  |  |  |  |
| **Sum** | 381.6416 | 95.37892 | 874.1681 | 65.09387 | 107.0736 | 155.6245 |
| **Sum Sq. Dev.** | 490.0171 | 261.1246 | 48338.42 | 67.85505 | 0.567686 | 1336.382 |
|  |  |  |  |  |  |  |
| **Observations** | 41 | 41 | 41 | 41 | 41 | 41 |

**Source:** Author’s computation using E-views

The table above shows the summary of the descriptive statistics of the variables; DCP, PREM, GDP, INFL, FDI and POP whose mean is 9.308, 2.326, 21.321, 1.587, 2.611, and 3.795 respectively and this shows the average value of the variables over the period of years covered, while the median values are 8.234, 1.267, 12.419, 1.450, 2.602, and 5.015. The difference between the maximum and the minimum of all the variables indicates that there is evidence of significant variation in the data set. From the statistical distribution of the series, the results show that all the series are positively skewed, except GDP. The values of kurtosis explains in relation to the normal distribution; the flatness or peakness of values of a variable over time. These values fall in the range of less than 3, greater than 3 or equal to 3 depending on the flatness of the values of the variable over time. If the kurtosis value is exactly 3 (k=3), it is mesokurtic meaning it is normally distributed. If it is less than 3(k<3), it is platykurtic which implies they are flat relative to the normal distribution. If the value is greater than 3(k>3), it is leptokurtic which implies that the variables are peaked relative to the normal distribution. The kurtosis values as shown in the descriptive statistics for DCP, PREM, GDP, INFL, FDI and POP are 3.925, 2.147, 26.979, 5.013, 6.780 and 4.203  respectively, and this indicates that all the variables are leptokurtic, except PREM which is platykurtic.. The Jacque-Bera statistics is a goodness of fit to check whether the sample data have the skewness and kurtosis matching a normal distribution. It is used to check if the variables follow a normal distribution and confirms the skewness and kurtosis value. From the probability of the Jarque-Bera, all the variables are normally distributed or they follow the normal distribution because they are greater than 0.05 i.e. 5%.

4.3 STATISTICAL PROPERTIES OF DATA SERIES

To examine the existence of stochastic non stationary in the series, the study establishes the order of integration of individual time series through the unit root test. We subjected the entire variable in the model to stationary test. Granger (1986) have demonstrated that if time series variables are non stationary, all regression results with these time series will differ from the conventional theory of regression with stationary series. That is, the regression coefficients with non-stationary variables will be spurious and misleading.

To get over this problem, we test for stationary of the time series. Augmented Dickey Fuller (ADF) test is to investigate whether the variables used in the study have unit root or not.

The results of the unit root test are presented in the table below

TABLE 4.2:

AUGMENTED DICKEY FULLER (ADF) TEST FOR STATIONARY

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Variable | ADF Calculated Value at level | ADF calculated value at 1st diff. | ADF calculated value at 2nd difference | Order of Integration |
| DCP | -2.3146 | -5.8367\* |  | 1(1) |
| PREM | -1.3533 | -6.5444\* |  | 1(1) |
| INFL | -5.8548\* |  |  | 1(0) |
| FDI | -3.8823\* |  |  | 1(0) |
| POP | -3.2222\*\* |  |  | 1(0) |
| GDP | -2.2282 | -9.7924\* |  | 1(1) |

\* Significant at 1 percent

\*\* Significant at 5 percent

\*\*\* Significant at 10 percent

Critical value at 1 percent is -3.6055

Critical value at 5 percent is -2.9369

Critical value at 10 percent is -2.6068

In the table 4.2 above, Domestic credit to private sector (% of GDP), Personal remittances received (% of GDP), and Gross Domestic Product (annual %) were stationary at level, while Inflation (annual %), Foreign direct investment, and Population growth (annual %), were stationary at first difference.

4.3.1 COINTEGRATION

Having tested the stationarity for each time series the next step is to conduct the search for the co-integration between the variable

Economically speaking, two variables will be co-integrated if they have a long term, or equilibrium relationship between them. In doing this co-integration test was conducted using the reduced rank procedure developed by Johansen in 1988, and the result of the test shows that shows that both Trace test and Max-eigenvalue indicate that four (4) variables were cointegrating equations at 0.05 level, implying there is no long-term, or equilibrium relationship between the variables, of course, in the short-run there may be disequilibrium. The error correction mechanism (ECM) first used by Sargan and later popularized by Engle and Granger corrects for disequilibrium.

4.4 ERROR CORRECTION MECHANISM OR MODEL (ECM) RESULT INTERPRETATION

|  |  |  |  |
| --- | --- | --- | --- |
| Variable | Coefficient | Std. Error | t-Statistic |
| C | -16.491 | 8.947 | -1.843 |
| PREM(1) | 0.817 | 0.171 | 4.769 |
| INFL | -0.008 | 0.012 | -0.703 |
| FDI | 0.0002 | 0.340 | 0.0006 |
| POP | 9.031 | 3.374 | 2.676 |
| GDP(1) | 0.101 | 0.082 | 1.219 |

R2 = 0.5907

R-2 = 0.5306

F-Stat = 9.815

D.W = 1.106

Source: Author’s computation

**MODEL EVALUATION**

The estimate of a0 is -16.491. This means that if the independent variables are zero, the dependent variable DCP will autonomously become -16.491.

The estimate of a1 is 0.817. This means that there is a direct relationship between PREM and DCP. It also implies that a unit change in PREM will lead to 0.817 increase in DCP.

The estimate if a2 is -0.008. This means that there is a negative relationship between INFL and DCP. This implies that a unit change in INFL will lead to 0.008 decrease in DCP.

The estimate if a3 is 0.0002. This means that there is a positive relationship between FDI and DCP. This implies that a unit change in FDI will lead to 0.0002 rise in DCP.

The estimate if a4 is 9.031. This means that there is a positive relationship between POP and DCP. This implies that a unit change in POP will lead to 9.031 increases in DCP.

The estimate if a5 is 0.101. This means that there is a direct relationship between GFP and DCP. This implies that a unit change in GDP will lead to 0.101 increase in 0.101.

**T-Test**

The t-ratio for the estimate of a0 is -1.843. At 5% level of significance with a degree of freedom of N – 2 = 41 – 2 = 39). The critical t-ratio from the statistical table is 2.021. The empirical t-ratio is lesser than the critical t-ratio (i.e. -1.843 < 2.021). This implies that the estimate of a0 is not statistically significant.

The t-ratio for the estimate of a1 is 4.769. The empirical t-ratio is greater than the critical t-ratio (i.e. 4.769 > 2.021). This implies that the estimate of a1 is statistically significant. This implies that personal remittances received had a significant role in the financial development of Nigerian economy. This can be seen in the amount of funds avail to the private sector as credit with an increasing value over time.

The t-ratio for the estimate of a2 is -0.703. The empirical t-ratio is lesser than the critical t-ratio (i.e. -0.703 < 2.021). This implies that the estimate of a2 is not statistically significant. This implies that inflation had not played a positive role in the development of the financial sector. This can be seen in the continuous loss of monetary value of Nara in the last 41 years.

The t-ratio for the estimate of a3 is 0.0006. The empirical t-ratio is lesser than the critical t-ratio (i.e. 0.0006 < 2.021). This implies that the estimate of a3 is not statistically significant, meaning the incremental increase in the value of foreign direct investment annually, has not been able to appropriately contribute to the development of the financial sector in Nigeria.

The t-ratio for the estimate of a4 is 2.676. The empirical t-ratio is greater than the critical t-ratio (i.e. 2.676 > 2.021). This implies that the estimate of a4 is statistically significant. This implies that the growing number of Nigerian population in diaspora has contributed in the same vein in the amount of funds remitted to the Nigerian economy..

The t-ratio for the estimate of a5 is 1.219. The empirical t-ratio is lesser than the critical t-ratio (i.e. 1.219 < 2.021). This implies that the estimate of a5 is not statistically significant. This implies that the annual growth rate in gross domestic product has not reflected in the development of the financial sector in Nigeria.

**Coefficient of Determination**

The coefficient of determination (R2) is 0.5907. This means that the independent variables were able to explain 59.07% of the total variations in the dependent variable, while the 40.93% unexplained was due to the error term.

**Adjusted Coefficient of Determination**

The adjusted coefficient of determination (R-2) is 0.5306. This implies that the explanatory variables were able to explain 53.06% of the total variation in the dependent variable while 46.94% unexplained was captured by the error term after taking cognisance of the degree of freedom.

**F-Statistics**

The value of F-statistic is 9.815. At 5% level of significance with a degree of freedom of v1 = 4, v2 = 36, (where degree of freedom is v1 = K – 1 = 5 – 1 =4, v2 = N – K = 41 – 5= 36). The critical f-ratio from the statistical table is 2.61. The empirical f-ratio is greater than the critical f-ratio (i.e. 9.815 > 2.61). This implies that the coefficient of determination is statistically significant; It also does confirm the goodness fit of the model.

**Durbin-Watson Test**

This test was performed to determine the level of auto-correlation. The null hypothesis stated that there is no auto correlation while the alternative hypothesis stated that there is auto correlation. The value for Durbin Watson statistics is 1.106. At 5% level of significance, fourty one observations, and five independent variables:

**Table 4.4 Results of the Durbin Watson Test Results**

|  |  |  |  |
| --- | --- | --- | --- |
| D\* | D-UPPER | D-LOWER | DECISION |
| 1.106 | 1.786 | 1.230 | Positive autocorrelation |

Source: Authors computation using E-views

0< d\* < (4 - dU), that is, 0 < 1.106 < 2.214. We therefore reject the null hypothesis and accept that there is presence of positive autocorrelation in the model.

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**APPENDIX**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **DCP AT LEVEL**  Null Hypothesis: DCP has a unit root | | | |  |
| Exogenous: Constant | | |  |  |
| Lag Length: 1 (Automatic - based on SIC, maxlag=9) | | | | |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  | t-Statistic | Prob.\* |
|  |  |  |  |  |
|  |  |  |  |  |
| Augmented Dickey-Fuller test statistic | | | -2.314614 | 0.1726 |
| Test critical values: | 1% level |  | -3.610453 |  |
|  | 5% level |  | -2.938987 |  |
|  | 10% level |  | -2.607932 |  |
|  |  |  |  |  |
|  |  |  |  |  |
| \*MacKinnon (1996) one-sided p-values. | | | |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Augmented Dickey-Fuller Test Equation | | | |  |
| Dependent Variable: D(DCP) | | |  |  |
| Method: Least Squares | | |  |  |
| Date: 08/09/20 Time: 08:31 | | |  |  |
| Sample (adjusted): 1980 2018 | | |  |  |
| Included observations: 39 after adjustments | | | |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| DCP(-1) | -0.236093 | 0.102001 | -2.314614 | 0.0265 |
| D(DCP(-1)) | 0.210792 | 0.166614 | 1.265151 | 0.2139 |
| C | 2.168042 | 0.999941 | 2.168171 | 0.0368 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.135788 | Mean dependent var | | -0.003668 |
| Adjusted R-squared | 0.087777 | S.D. dependent var | | 2.228447 |
| S.E. of regression | 2.128398 | Akaike info criterion | | 4.422420 |
| Sum squared resid | 163.0829 | Schwarz criterion | | 4.550386 |
| Log likelihood | -83.23719 | Hannan-Quinn criter. | | 4.468333 |
| F-statistic | 2.828234 | Durbin-Watson stat | | 1.972720 |
| Prob(F-statistic) | 0.072304 |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

**DCP AT 1ST DIFFERENCE**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Null Hypothesis: D(DCP) has a unit root | | | |  |
| Exogenous: Constant | | |  |  |
| Lag Length: 2 (Automatic - based on SIC, maxlag=9) | | | | |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  | t-Statistic | Prob.\* |
|  |  |  |  |  |
|  |  |  |  |  |
| Augmented Dickey-Fuller test statistic | | | -5.836711 | 0.0000 |
| Test critical values: | 1% level |  | -3.621023 |  |
|  | 5% level |  | -2.943427 |  |
|  | 10% level |  | -2.610263 |  |
|  |  |  |  |  |
|  |  |  |  |  |
| \*MacKinnon (1996) one-sided p-values. | | | |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Augmented Dickey-Fuller Test Equation | | | |  |
| Dependent Variable: D(DCP,2) | | |  |  |
| Method: Least Squares | | |  |  |
| Date: 08/09/20 Time: 08:33 | | |  |  |
| Sample (adjusted): 1982 2018 | | |  |  |
| Included observations: 37 after adjustments | | | |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| D(DCP(-1)) | -1.350606 | 0.231399 | -5.836711 | 0.0000 |
| D(DCP(-1),2) | 0.489116 | 0.186144 | 2.627629 | 0.0129 |
| D(DCP(-2),2) | 0.390924 | 0.137690 | 2.839156 | 0.0077 |
| C | 0.151019 | 0.299626 | 0.504025 | 0.6176 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.587631 | Mean dependent var | | 0.103228 |
| Adjusted R-squared | 0.550143 | S.D. dependent var | | 2.712987 |
| S.E. of regression | 1.819637 | Akaike info criterion | | 4.136957 |
| Sum squared resid | 109.2656 | Schwarz criterion | | 4.311110 |
| Log likelihood | -72.53370 | Hannan-Quinn criter. | | 4.198354 |
| F-statistic | 15.67517 | Durbin-Watson stat | | 1.855951 |
| Prob(F-statistic) | 0.000002 |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |
| **PREM AT LEVEL**  Null Hypothesis: PREM has a unit root | | | |  |
| Exogenous: Constant | | |  |  |
| Lag Length: 0 (Automatic - based on SIC, maxlag=9) | | | | |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  | t-Statistic | Prob.\* |
|  |  |  |  |  |
|  |  |  |  |  |
| Augmented Dickey-Fuller test statistic | | | -1.353353 | 0.5952 |
| Test critical values: | 1% level |  | -3.605593 |  |
|  | 5% level |  | -2.936942 |  |
|  | 10% level |  | -2.606857 |  |
|  |  |  |  |  |
|  |  |  |  |  |
| \*MacKinnon (1996) one-sided p-values. | | | |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Augmented Dickey-Fuller Test Equation | | | |  |
| Dependent Variable: D(PREM) | | |  |  |
| Method: Least Squares | | |  |  |
| Date: 08/09/20 Time: 08:34 | | |  |  |
| Sample (adjusted): 1979 2018 | | |  |  |
| Included observations: 40 after adjustments | | | |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| PREM(-1) | -0.107945 | 0.079761 | -1.353353 | 0.1839 |
| C | 0.393650 | 0.266203 | 1.478758 | 0.1474 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.045983 | Mean dependent var | | 0.152773 |
| Adjusted R-squared | 0.020877 | S.D. dependent var | | 1.265239 |
| S.E. of regression | 1.251962 | Akaike info criterion | | 3.336008 |
| Sum squared resid | 59.56158 | Schwarz criterion | | 3.420452 |
| Log likelihood | -64.72017 | Hannan-Quinn criter. | | 3.366541 |
| F-statistic | 1.831563 | Durbin-Watson stat | | 2.018535 |
|  |  |  |  |  |
|  |  |  |  |  |

**PREM AT 1ST DIFFERENCE**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Null Hypothesis: D(PREM) has a unit root | | | |  |
| Exogenous: Constant | | |  |  |
| Lag Length: 0 (Automatic - based on SIC, maxlag=9) | | | | |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  | t-Statistic | Prob.\* |
|  |  |  |  |  |
|  |  |  |  |  |
| Augmented Dickey-Fuller test statistic | | | -6.544441 | 0.0000 |
| Test critical values: | 1% level |  | -3.610453 |  |
|  | 5% level |  | -2.938987 |  |
|  | 10% level |  | -2.607932 |  |
|  |  |  |  |  |
|  |  |  |  |  |
| \*MacKinnon (1996) one-sided p-values. | | | |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Augmented Dickey-Fuller Test Equation | | | |  |
| Dependent Variable: D(PREM,2) | | |  |  |
| Method: Least Squares | | |  |  |
| Date: 08/09/20 Time: 08:35 | | |  |  |
| Sample (adjusted): 1980 2018 | | |  |  |
| Included observations: 39 after adjustments | | | |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| D(PREM(-1)) | -1.072942 | 0.163947 | -6.544441 | 0.0000 |
| C | 0.167415 | 0.208870 | 0.801525 | 0.4279 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.536513 | Mean dependent var | | 0.006301 |
| Adjusted R-squared | 0.523987 | S.D. dependent var | | 1.877423 |
| S.E. of regression | 1.295304 | Akaike info criterion | | 3.405288 |
| Sum squared resid | 62.07904 | Schwarz criterion | | 3.490599 |
| Log likelihood | -64.40311 | Hannan-Quinn criter. | | 3.435897 |
| F-statistic | 42.82971 | Durbin-Watson stat | | 2.020334 |
| Prob(F-statistic) | 0.000000 |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

**INFL AT LEVEL**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Null Hypothesis: INFL has a unit root | | | |  |
| Exogenous: Constant | | |  |  |
| Lag Length: 0 (Automatic - based on SIC, maxlag=9) | | | | |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  | t-Statistic | Prob.\* |
|  |  |  |  |  |
|  |  |  |  |  |
| Augmented Dickey-Fuller test statistic | | | -5.854824 | 0.0000 |
| Test critical values: | 1% level |  | -3.605593 |  |
|  | 5% level |  | -2.936942 |  |
|  | 10% level |  | -2.606857 |  |
|  |  |  |  |  |
|  |  |  |  |  |
| \*MacKinnon (1996) one-sided p-values. | | | |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Augmented Dickey-Fuller Test Equation | | | |  |
| Dependent Variable: D(INFL) | | |  |  |
| Method: Least Squares | | |  |  |
| Date: 08/09/20 Time: 08:38 | | |  |  |
| Sample (adjusted): 1979 2018 | | |  |  |
| Included observations: 40 after adjustments | | | |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| INFL(-1) | -0.950415 | 0.162330 | -5.854824 | 0.0000 |
| C | 20.43019 | 6.640681 | 3.076521 | 0.0039 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.474259 | Mean dependent var | | -0.196620 |
| Adjusted R-squared | 0.460424 | S.D. dependent var | | 48.46663 |
| S.E. of regression | 35.60157 | Akaike info criterion | | 10.03136 |
| Sum squared resid | 48163.93 | Schwarz criterion | | 10.11581 |
| Log likelihood | -198.6273 | Hannan-Quinn criter. | | 10.06190 |
| F-statistic | 34.27896 | Durbin-Watson stat | | 1.998564 |
| Prob(F-statistic) | 0.000001 |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

**FDI AT LEVEL**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Null Hypothesis: FDI has a unit root | | | |  |
| Exogenous: Constant | | |  |  |
| Lag Length: 0 (Automatic - based on SIC, maxlag=9) | | | | |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  | t-Statistic | Prob.\* |
|  |  |  |  |  |
|  |  |  |  |  |
| Augmented Dickey-Fuller test statistic | | | -3.882306 | 0.0048 |
| Test critical values: | 1% level |  | -3.605593 |  |
|  | 5% level |  | -2.936942 |  |
|  | 10% level |  | -2.606857 |  |
|  |  |  |  |  |
|  |  |  |  |  |
| \*MacKinnon (1996) one-sided p-values. | | | |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Augmented Dickey-Fuller Test Equation | | | |  |
| Dependent Variable: D(FDI) | | |  |  |
| Method: Least Squares | | |  |  |
| Date: 08/09/20 Time: 08:41 | | |  |  |
| Sample (adjusted): 1979 2018 | | |  |  |
| Included observations: 40 after adjustments | | | |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| FDI(-1) | -0.567817 | 0.146258 | -3.882306 | 0.0004 |
| C | 0.937545 | 0.296611 | 3.160862 | 0.0031 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.283996 | Mean dependent var | | 0.050227 |
| Adjusted R-squared | 0.265153 | S.D. dependent var | | 1.394805 |
| S.E. of regression | 1.195671 | Akaike info criterion | | 3.244000 |
| Sum squared resid | 54.32595 | Schwarz criterion | | 3.328444 |
| Log likelihood | -62.87999 | Hannan-Quinn criter. | | 3.274532 |
| F-statistic | 15.07230 | Durbin-Watson stat | | 2.022945 |
| Prob(F-statistic) | 0.000400 |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

**POP AT LEVEL**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Null Hypothesis: POP has a unit root | | | |  |
| Exogenous: Constant | | |  |  |
| Lag Length: 7 (Automatic - based on SIC, maxlag=9) | | | | |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  | t-Statistic | Prob.\* |
|  |  |  |  |  |
|  |  |  |  |  |
| Augmented Dickey-Fuller test statistic | | | -3.222229 | 0.0275 |
| 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(POP) | | |  |  |
| Method: Least Squares | | |  |  |
| Date: 08/09/20 Time: 08:44 | | |  |  |
| Sample (adjusted): 1986 2018 | | |  |  |
| Included observations: 33 after adjustments | | | |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| POP(-1) | -0.084286 | 0.026158 | -3.222229 | 0.0036 |
| D(POP(-1)) | 0.558133 | 0.177600 | 3.142647 | 0.0044 |
| D(POP(-2)) | 0.304126 | 0.239646 | 1.269065 | 0.2166 |
| D(POP(-3)) | -0.007869 | 0.468537 | -0.016795 | 0.9867 |
| D(POP(-4)) | 0.471834 | 0.619074 | 0.762161 | 0.4534 |
| D(POP(-5)) | -0.649805 | 0.604054 | -1.075740 | 0.2927 |
| D(POP(-6)) | 0.056535 | 0.549168 | 0.102946 | 0.9189 |
| D(POP(-7)) | 0.331156 | 0.262308 | 1.262471 | 0.2189 |
| C | 0.217699 | 0.067590 | 3.220900 | 0.0037 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.845896 | Mean dependent var | | 0.001745 |
| Adjusted R-squared | 0.794529 | S.D. dependent var | | 0.018086 |
| S.E. of regression | 0.008198 | Akaike info criterion | | -6.542793 |
| Sum squared resid | 0.001613 | Schwarz criterion | | -6.134655 |
| Log likelihood | 116.9561 | Hannan-Quinn criter. | | -6.405467 |
| F-statistic | 16.46743 | Durbin-Watson stat | | 2.277720 |
| Prob(F-statistic) | 0.000000 |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

**GDP AT LEVEL**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Null Hypothesis: GDP has a unit root | | | |  |
| Exogenous: Constant | | |  |  |
| Lag Length: 1 (Automatic - based on SIC, maxlag=9) | | | | |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  | t-Statistic | Prob.\* |
|  |  |  |  |  |
|  |  |  |  |  |
| Augmented Dickey-Fuller test statistic | | | -2.228217 | 0.2000 |
| Test critical values: | 1% level |  | -3.610453 |  |
|  | 5% level |  | -2.938987 |  |
|  | 10% level |  | -2.607932 |  |
|  |  |  |  |  |
|  |  |  |  |  |
| \*MacKinnon (1996) one-sided p-values. | | | |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Augmented Dickey-Fuller Test Equation | | | |  |
| Dependent Variable: D(GDP) | | |  |  |
| Method: Least Squares | | |  |  |
| Date: 08/09/20 Time: 08:44 | | |  |  |
| Sample (adjusted): 1980 2018 | | |  |  |
| Included observations: 39 after adjustments | | | |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| GDP(-1) | -0.366870 | 0.164647 | -2.228217 | 0.0322 |
| D(GDP(-1)) | -0.205937 | 0.156546 | -1.315506 | 0.1967 |
| C | 1.600154 | 0.991931 | 1.613171 | 0.1154 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.267737 | Mean dependent var | | 0.089111 |
| Adjusted R-squared | 0.227055 | S.D. dependent var | | 5.577188 |
| S.E. of regression | 4.903312 | Akaike info criterion | | 6.091502 |
| Sum squared resid | 865.5287 | Schwarz criterion | | 6.219468 |
| Log likelihood | -115.7843 | Hannan-Quinn criter. | | 6.137415 |
| F-statistic | 6.581322 | Durbin-Watson stat | | 2.022207 |
| Prob(F-statistic) | 0.003664 |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

**GDP AT 1ST DIFFERENCE**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Null Hypothesis: D(GDP) has a unit root | | | |  |
| Exogenous: Constant | | |  |  |
| Lag Length: 0 (Automatic - based on SIC, maxlag=9) | | | | |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  | t-Statistic | Prob.\* |
|  |  |  |  |  |
|  |  |  |  |  |
| Augmented Dickey-Fuller test statistic | | | -9.792427 | 0.0000 |
| Test critical values: | 1% level |  | -3.610453 |  |
|  | 5% level |  | -2.938987 |  |
|  | 10% level |  | -2.607932 |  |
|  |  |  |  |  |
|  |  |  |  |  |
| \*MacKinnon (1996) one-sided p-values. | | | |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Augmented Dickey-Fuller Test Equation | | | |  |
| Dependent Variable: D(GDP,2) | | |  |  |
| Method: Least Squares | | |  |  |
| Date: 08/09/20 Time: 08:46 | | |  |  |
| Sample (adjusted): 1980 2018 | | |  |  |
| Included observations: 39 after adjustments | | | |  |
|  |  |  |  |  |
|  |  |  |  |  |
| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|  |  |  |  |  |
|  |  |  |  |  |
| D(GDP(-1)) | -1.384803 | 0.141416 | -9.792427 | 0.0000 |
| C | 0.255692 | 0.828422 | 0.308649 | 0.7593 |
|  |  |  |  |  |
|  |  |  |  |  |
| R-squared | 0.721578 | Mean dependent var | | -0.343789 |
| Adjusted R-squared | 0.714053 | S.D. dependent var | | 9.648323 |
| S.E. of regression | 5.159348 | Akaike info criterion | | 6.169418 |
| Sum squared resid | 984.8984 | Schwarz criterion | | 6.254729 |
| Log likelihood | -118.3037 | Hannan-Quinn criter. | | 6.200027 |
| F-statistic | 95.89162 | Durbin-Watson stat | | 2.169315 |
| Prob(F-statistic) | 0.000000 |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

**JOHANSEN COINTEGRATION TEST RESULT**

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Date: 08/09/20 Time: 09:07 | | | | |  | | |  | |  |  |
| Sample (adjusted): 1980 2018 | | | | |  | | |  | |  |  |
| Included observations: 39 after adjustments | | | | | | | |  | |  |  |
| Trend assumption: Linear deterministic trend | | | | | | | |  | |  |  |
| Series: DCP PREM INFL FDI POP GDP | | | | |  | | |  | |  |  |
| Lags interval (in first differences): 1 to 1 | | | | | | | |  | |  |  |
|  |  | |  | |  | | |  | |  |  |
| Unrestricted Cointegration Rank Test (Trace) | | | | | | | |  | |  |  |
|  |  | |  | |  | | |  | |  |  |
|  |  | |  | |  | | |  | |  |  |
| Hypothesized |  | | Trace | | 0.05 | | |  | |  |  |
| No. of CE(s) | Eigenvalue | | Statistic | | Critical Value | | | Prob.\*\* | |  |  |
|  |  | |  | |  | | |  | |  |  |
|  |  | |  | |  | | |  | |  |  |
| None \* | 0.757722 | | 159.5231 | | 95.75366 | | | 0.0000 | |  |  |
| At most 1 \* | 0.632141 | | 104.2341 | | 69.81889 | | | 0.0000 | |  |  |
| At most 2 \* | 0.590204 | | 65.23191 | | 47.85613 | | | 0.0005 | |  |  |
| At most 3 \* | 0.383749 | | 30.44016 | | 29.79707 | | | 0.0421 | |  |  |
| At most 4 | 0.214545 | | 11.56019 | | 15.49471 | | | 0.1793 | |  |  |
| At most 5 | 0.053443 | | 2.142022 | | 3.841466 | | | 0.1433 | |  |  |
|  |  | |  | |  | | |  | |  |  |
|  |  | |  | |  | | |  | |  |  |
| Trace test indicates 4 cointegrating eqn(s) at the 0.05 level | | | | | | | | | |  |  |
| \* denotes rejection of the hypothesis at the 0.05 level | | | | | | | | | |  |  |
| \*\*MacKinnon-Haug-Michelis (1999) p-values | | | | | | | |  | |  |  |
|  |  | |  | |  | | |  | |  |  |
| Unrestricted Cointegration Rank Test (Maximum Eigenvalue) | | | | | | | | | |  |  |
|  |  | |  | |  | | |  | |  |  |
|  |  | |  | |  | | |  | |  |  |
| Hypothesized |  | | Max-Eigen | | 0.05 | | |  | |  |  |
| No. of CE(s) | Eigenvalue | | Statistic | | Critical Value | | | Prob.\*\* | |  |  |
|  |  | |  | |  | | |  | |  |  |
|  |  | |  | |  | | |  | |  |  |
| None \* | 0.757722 | | 55.28905 | | 40.07757 | | | 0.0005 | |  |  |
| At most 1 \* | 0.632141 | | 39.00217 | | 33.87687 | | | 0.0112 | |  |  |
| At most 2 \* | 0.590204 | | 34.79175 | | 27.58434 | | | 0.0050 | |  |  |
| At most 3 | 0.383749 | | 18.87997 | | 21.13162 | | | 0.1004 | |  |  |
| At most 4 | 0.214545 | | 9.418169 | | 14.26460 | | | 0.2530 | |  |  |
| At most 5 | 0.053443 | | 2.142022 | | 3.841466 | | | 0.1433 | |  |  |
|  |  | |  | |  | | |  | |  |  |
|  |  | |  | |  | | |  | |  |  |
| Max-eigenvalue test indicates 3 cointegrating eqn(s) at the 0.05 level | | | | | | | | | |  |  |
| \* denotes rejection of the hypothesis at the 0.05 level | | | | | | | | | |  |  |
| \*\*MacKinnon-Haug-Michelis (1999) p-values | | | | | | | |  | |  |  |
|  |  | |  | |  | | |  | |  |  |
| Unrestricted Cointegrating Coefficients (normalized by b'\*S11\*b=I): | | | | | | | | | |  |  |
|  |  | |  | |  | | |  | |  |  |
|  |  | |  | |  | | |  | |  |  |
| DCP | PREM | | INFL | | FDI | | | POP | | GDP |  |
| 0.127637 | 0.165565 | | -0.000262 | | -0.360724 | | | -11.61451 | | -0.112978 |  |
| -0.266429 | 0.277101 | | -0.060093 | | 0.222658 | | | -0.591255 | | -0.133440 |  |
| 0.461113 | -0.579825 | | -0.020659 | | 0.310070 | | | -3.523797 | | -0.049132 |  |
| 0.043734 | -0.060425 | | 0.007460 | | 0.843946 | | | 6.819815 | | -0.200870 |  |
| -0.067418 | 0.122449 | | -0.006253 | | 0.523857 | | | -7.289471 | | 0.162005 |  |
| -0.051173 | -0.440974 | | 0.010386 | | 0.279138 | | | 1.618112 | | 0.011227 |  |
|  |  | |  | |  | | |  | |  |  |
|  |  | |  | |  | | |  | |  |  |
|  |  | |  | |  | | |  | |  |  |
| Unrestricted Adjustment Coefficients (alpha): | | | | | | | |  | |  |  |
|  |  | |  | |  | | |  | |  |  |
|  |  | |  | |  | | |  | |  |  |
| D(DCP) | 0.165360 | | 0.371537 | | -1.549625 | | | -0.045122 | | -0.120376 | 0.069510 |
| D(PREM) | 0.030385 | | -0.249406 | | 0.142002 | | | -0.382875 | | -0.013595 | 0.231565 |
| D(INFL) | -17.57374 | | 15.08105 | | 16.07172 | | | -7.340684 | | 4.217223 | -1.603266 |
| D(FDI) | 0.204812 | | -0.187246 | | -0.020387 | | | -0.691494 | | -0.240537 | -0.041403 |
| D(POP) | 0.014968 | | 0.002609 | | -0.000685 | | | -0.001138 | | 0.001635 | 0.000472 |
| D(GDP) | 1.891251 | | 0.977548 | | 0.026618 | | | 1.508221 | | -1.255543 | 0.262625 |
|  |  | |  | |  | | |  | |  |  |
|  |  | |  | |  | | |  | |  |  |
|  |  | |  | |  | | |  | |  |  |
| 1 Cointegrating Equation(s): | | | Log likelihood | | -376.3811 | | |  | |  |  |
|  |  | |  | |  | | |  | |  |  |
|  |  | |  | |  | | |  | |  |  |
| Normalized cointegrating coefficients (standard error in parentheses) | | | | | | | | | |  |  |
| DCP | PREM | | INFL | | FDI | | | POP | | GDP |  |
| 1.000000 | 1.297149 | | -0.002051 | | -2.826161 | | | -90.99608 | | -0.885145 |  |
|  | (0.46783) | | (0.05093) | | (0.92053) | | | (12.1625) | | (0.24930) |  |
|  |  | |  | |  | | |  | |  |  |
| Adjustment coefficients (standard error in parentheses) | | | | | | | |  | |  |  |
| D(DCP) | 0.021106 | |  | |  | | |  | |  |  |
|  | (0.04841) | |  | |  | | |  | |  |  |
| D(PREM) | 0.003878 | |  | |  | | |  | |  |  |
|  | (0.02825) | |  | |  | | |  | |  |  |
| D(INFL) | -2.243068 | |  | |  | | |  | |  |  |
|  | (0.78333) | |  | |  | | |  | |  |  |
| D(FDI) | 0.026142 | |  | |  | | |  | |  |  |
|  | (0.02915) | |  | |  | | |  | |  |  |
| D(POP) | 0.001910 | |  | |  | | |  | |  |  |
|  | (0.00023) | |  | |  | | |  | |  |  |
| D(GDP) | 0.241394 | |  | |  | | |  | |  |  |
|  | (0.09514) | |  | |  | | |  | |  |  |
|  |  | |  | |  | | |  | |  |  |
|  |  | |  | |  | | |  | |  |  |
|  |  | |  | |  | | |  | |  |  |
| 2 Cointegrating Equation(s): | | | Log likelihood | | -356.8800 | | |  | |  |  |
|  |  | |  | |  | | |  | |  |  |
|  |  | |  | |  | | |  | |  |  |
| Normalized cointegrating coefficients (standard error in parentheses) | | | | | | | | | |  |  |
| DCP | PREM | | INFL | | FDI | | | POP | | GDP |  |
| 1.000000 | 0.000000 | | 0.124267 | | -1.721464 | | | -39.26166 | | -0.115920 |  |
|  |  | | (0.02896) | | (0.48526) | | | (6.10411) | | (0.14148) |  |
| 0.000000 | 1.000000 | | -0.097381 | | -0.851636 | | | -39.88319 | | -0.593013 |  |
|  |  | | (0.02581) | | (0.43252) | | | (5.44066) | | (0.12610) |  |
|  |  | |  | |  | | |  | |  |  |
| Adjustment coefficients (standard error in parentheses) | | | | | | | |  | |  |  |
| D(DCP) | -0.077882 | | 0.130331 | |  | | |  | |  |  |
|  | (0.11030) | | (0.12051) | |  | | |  | |  |  |
| D(PREM) | 0.070327 | | -0.064080 | |  | | |  | |  |  |
|  | (0.06404) | | (0.06998) | |  | | |  | |  |  |
| D(INFL) | -6.261089 | | 1.269383 | |  | | |  | |  |  |
|  | (1.62692) | | (1.77765) | |  | | |  | |  |  |
| D(FDI) | 0.076029 | | -0.017976 | |  | | |  | |  |  |
|  | (0.06674) | | (0.07293) | |  | | |  | |  |  |
| D(POP) | 0.001215 | | 0.003201 | |  | | |  | |  |  |
|  | (0.00052) | | (0.00057) | |  | | |  | |  |  |
| D(GDP) | -0.019052 | | 0.584004 | |  | | |  | |  |  |
|  | (0.21400) | | (0.23383) | |  | | |  | |  |  |
|  |  | |  | |  | | |  | |  |  |
|  |  | |  | |  | | |  | |  |  |
|  |  | |  | |  | | |  | |  |  |
| 3 Cointegrating Equation(s): | | | Log likelihood | | -339.4841 | | |  | |  |  |
|  |  | |  | |  | | |  | |  |  |
|  |  | |  | |  | | |  | |  |  |
| Normalized cointegrating coefficients (standard error in parentheses) | | | | | | | | | |  |  |
| DCP | PREM | | INFL | | FDI | | | POP | | GDP |  |
| 1.000000 | 0.000000 | | 0.000000 | | -1.157502 | | | -47.16096 | | -0.429787 |  |
|  |  | |  | | (0.42547) | | | (5.33788) | | (0.12023) |  |
| 0.000000 | 1.000000 | | 0.000000 | | -1.293581 | | | -33.69294 | | -0.347052 |  |
|  |  | |  | | (0.34613) | | | (4.34249) | | (0.09781) |  |
| 0.000000 | 0.000000 | | 1.000000 | | -4.538308 | | | 63.56729 | | 2.525751 |  |
|  |  | |  | | (2.31272) | | | (29.0151) | | (0.65351) |  |
|  |  | |  | |  | | |  | |  |  |
| Adjustment coefficients (standard error in parentheses) | | | | | | | |  | |  |  |
| D(DCP) | -0.792434 | | 1.028842 | | 0.009645 | | |  | |  |  |
|  | (0.13628) | | (0.16514) | | (0.01581) | | |  | |  |  |
| D(PREM) | 0.135806 | | -0.146417 | | 0.012046 | | |  | |  |  |
|  | (0.11789) | | (0.14287) | | (0.01368) | | |  | |  |  |
| D(INFL) | 1.149788 | | -8.049397 | | -1.233693 | | |  | |  |  |
|  | (2.56836) | | (3.11234) | | (0.29802) | | |  | |  |  |
| D(FDI) | 0.066628 | | -0.006155 | | 0.011620 | | |  | |  |  |
|  | (0.12371) | | (0.14991) | | (0.01435) | | |  | |  |  |
| D(POP) | 0.000899 | | 0.003599 | | -0.000147 | | |  | |  |  |
|  | (0.00096) | | (0.00117) | | (0.00011) | | |  | |  |  |
| D(GDP) | -0.006778 | | 0.568571 | | -0.059788 | | |  | |  |  |
|  | (0.39669) | | (0.48071) | | (0.04603) | | |  | |  |  |
|  |  | |  | |  | | |  | |  |  |
|  |  | |  | |  | | |  | |  |  |
|  |  | |  | |  | | |  | |  |  |
| 4 Cointegrating Equation(s): | | | Log likelihood | | -330.0441 | | |  | |  |  |
|  |  | |  | |  | | |  | |  |  |
|  |  | |  | |  | | |  | |  |  |
| Normalized cointegrating coefficients (standard error in parentheses) | | | | | | | | | |  |  |
| DCP | PREM | | INFL | | FDI | | | POP | | GDP |  |
| 1.000000 | 0.000000 | | 0.000000 | | 0.000000 | | | -38.48613 | | -0.731853 |  |
|  |  | |  | |  | | | (6.49381) | | (0.14642) |  |
| 0.000000 | 1.000000 | | 0.000000 | | 0.000000 | | | -23.99827 | | -0.684630 |  |
|  |  | |  | |  | | | (6.16132) | | (0.13892) |  |
| 0.000000 | 0.000000 | | 1.000000 | | 0.000000 | | | 97.57936 | | 1.341418 |  |
|  |  | |  | |  | | | (31.2148) | | (0.70380) |  |
| 0.000000 | 0.000000 | | 0.000000 | | 1.000000 | | | 7.494439 | | -0.260963 |  |
|  |  | |  | |  | | | (3.37582) | | (0.07611) |  |
|  |  | |  | |  | | |  | |  |  |
| Adjustment coefficients (standard error in parentheses) | | | | | | | |  | |  |  |
| D(DCP) | -0.794407 | | 1.031569 | | 0.009308 | | | -0.495497 | |  |  |
|  | (0.13664) | | (0.16573) | | (0.01591) | | | (0.24723) | |  |  |
| D(PREM) | 0.119061 | | -0.123281 | | 0.009189 | | | -0.345588 | |  |  |
|  | (0.11207) | | (0.13594) | | (0.01305) | | | (0.20278) | |  |  |
| D(INFL) | 0.828748 | | -7.605836 | | -1.288458 | | | 8.485402 | |  |  |
|  | (2.47263) | | (2.99918) | | (0.28797) | | | (4.47391) | |  |  |
| D(FDI) | 0.036386 | | 0.035628 | | 0.006461 | | | -0.705477 | |  |  |
|  | (0.10366) | | (0.12574) | | (0.01207) | | | (0.18756) | |  |  |
| D(POP) | 0.000850 | | 0.003667 | | -0.000155 | | | -0.005992 | |  |  |
|  | (0.00096) | | (0.00116) | | (0.00011) | | | (0.00174) | |  |  |
| D(GDP) | 0.059183 | | 0.477437 | | -0.048536 | | | 0.816549 | |  |  |
|  | (0.36908) | | (0.44767) | | (0.04298) | | | (0.66780) | |  |  |
|  |  | |  | |  | | |  | |  |  |
|  |  | |  | |  | | |  | |  |  |
|  |  | |  | |  | | |  | |  |  |
| 5 Cointegrating Equation(s): | | | Log likelihood | | -325.3350 | | |  | |  |  |
|  |  | |  | |  | | |  | |  |  |
|  |  | |  | |  | | |  | |  |  |
| Normalized cointegrating coefficients (standard error in parentheses) | | | | | | | | | |  |  |
| DCP | PREM | | INFL | | FDI | | | POP | | GDP |  |
| 1.000000 | 0.000000 | | 0.000000 | | 0.000000 | | | 0.000000 | | -2.013021 |  |
|  |  | |  | |  | | |  | | (0.41576) |  |
| 0.000000 | 1.000000 | | 0.000000 | | 0.000000 | | | 0.000000 | | -1.483510 |  |
|  |  | |  | |  | | |  | | (0.29224) |  |
| 0.000000 | 0.000000 | | 1.000000 | | 0.000000 | | | 0.000000 | | 4.589746 |  |
|  |  | |  | |  | | |  | | (1.02895) |  |
| 0.000000 | 0.000000 | | 0.000000 | | 1.000000 | | | 0.000000 | | -0.011480 |  |
|  |  | |  | |  | | |  | | (0.07513) |  |
| 0.000000 | 0.000000 | | 0.000000 | | 0.000000 | | | 1.000000 | | -0.033289 |  |
|  |  | |  | |  | | |  | | (0.00939) |  |
|  |  | |  | |  | | |  | |  |  |
| Adjustment coefficients (standard error in parentheses) | | | | | | | |  | |  |  |
| D(DCP) | -0.786292 | | 1.016829 | | 0.010061 | | | -0.558557 | | 3.890071 |  |
|  | (0.13714) | | (0.16787) | | (0.01593) | | | (0.27840) | | (3.89648) |  |
| D(PREM) | 0.119978 | | -0.124946 | | 0.009274 | | | -0.352710 | | -3.217861 |  |
|  | (0.11291) | | (0.13821) | | (0.01311) | | | (0.22920) | | (3.20794) |  |
| D(INFL) | 0.544431 | | -7.089440 | | -1.314828 | | | 10.69463 | | 57.75675 |  |
|  | (2.45565) | | (3.00591) | | (0.28521) | | | (4.98505) | | (69.7705) |  |
| D(FDI) | 0.052603 | | 0.006174 | | 0.007965 | | | -0.831485 | | -5.158710 |  |
|  | (0.10167) | | (0.12445) | | (0.01181) | | | (0.20638) | | (2.88854) |  |
| D(POP) | 0.000739 | | 0.003868 | | -0.000165 | | | -0.005135 | | -0.192659 |  |
|  | (0.00095) | | (0.00117) | | (0.00011) | | | (0.00194) | | (0.02709) |  |
| D(GDP) | 0.143829 | | 0.323696 | | -0.040686 | | | 0.158823 | | -3.199695 |  |
|  | (0.35027) | | (0.42876) | | (0.04068) | | | (0.71107) | | (9.95205) |  |
|  |  | |  | |  | | |  | |  |  |
|  |  | |  | |  | | |  | |  |  |
| **ERROR CORRECTION MECHANISM**  Dependent Variable: DCP(1) | | | | | |  |  | |
| Method: Least Squares | | | | | |  |  | |
| Date: 08/09/20 Time: 09:28 | | | | | |  |  | |
| Sample (adjusted): 1978 2017 | | | | | |  |  | |
| Included observations: 40 after adjustments | | | | | | |  | |
|  | |  | |  | |  |  | |
|  | |  | |  | |  |  | |
| Variable | | Coefficient | | Std. Error | | t-Statistic | Prob. | |
|  | |  | |  | |  |  | |
|  | |  | |  | |  |  | |
| C | | -16.49197 | | 8.947189 | | -1.843257 | 0.0740 | |
| PREM(1) | | 0.817496 | | 0.171397 | | 4.769599 | 0.0000 | |
| INFL | | -0.008447 | | 0.012017 | | -0.702980 | 0.4869 | |
| FDI | | 0.000198 | | 0.340298 | | 0.000581 | 0.9995 | |
| POP | | 9.031865 | | 3.374590 | | 2.676433 | 0.0114 | |
| GDP(1) | | 0.100832 | | 0.082744 | | 1.218592 | 0.2314 | |
|  | |  | |  | |  |  | |
|  | |  | |  | |  |  | |
| R-squared | | 0.590736 | | Mean dependent var | | | 9.284876 | |
| Adjusted R-squared | | 0.530550 | | S.D. dependent var | | | 3.541384 | |
| S.E. of regression | | 2.426430 | | Akaike info criterion | | | 4.748201 | |
| Sum squared resid | | 200.1772 | | Schwarz criterion | | | 5.001533 | |
| Log likelihood | | -88.96401 | | Hannan-Quinn criter. | | | 4.839797 | |
| F-statistic | | 9.815180 | | Durbin-Watson stat | | | 1.105815 | |
| Prob(F-statistic) | | 0.000007 | |  | |  |  | |
|  | |  | |  | |  |  | |
|  | |  | |  | |  |  | |