



Effect of Financial Deepening on Insurance Penetration in Nigeria, 1986 -2018

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ABSTRACT

This study examined the effect of financial deepening on insurance penetration in Nigeria, using annual time series data from 1986 to 2018. The study adopted ex-post facto research design. Broad money supply and credit to private sector were used as proxies for financial deepening. Data for the study were first subjected to stationarity test using Phillips-Perrons statistical method and Johansen co-integration test. Ordinary least square (OLS) statistical method was used for data analysis. The results from the tests of hypotheses show that: broad money supply and credit to private sector as a ratio of Gross Domestic Product have positive but non significant effect on insurance penetration in Nigeria. The study concludes that broad money supply and credit to private sector as a ratio of Gross Domestic Product had not exerted significant effect on insurance penetration in Nigeria between 1986 to 2018. The study recommends that: There is need to increase the amount of credit facilities given to private sector (CPS) in the country in order to deepen insurance penetration in Nigeria. Thus, all unnecessary stringent measures inhibiting public sector access to credit facilities should be addressed to make funds available to genuine investors/borrowers.

Keywords: Financial Deepening; Insurance Penetration; Broad Money Supply

1. Introduction

Monetary authorities in Nigeria over the years have introduced and implemented various measures aimed at deepening the financial system and reducing to the barest minimum, the level of financial repression in the Nigerian financial system (Adelakun, 2010). One of the most important policy concerns in most countries and in Nigeria is to enhance financial system growth and development which will translate into financial deepening, and in turn, impart positively on other sectors of the economy.

Economic development specialists do use the term financial deepening to refer to a condition of sufficient liquidity and smooth financial intermediation. Nigerian financial system has advanced in response to the challenges caused by developments in the Nigerian financial system which include systemic crisis, globalization, technological innovation, and financial crisis (Ibrahim and Shuaibu, 2013). The reforms often seek to act proactively to strengthen the system, prevent a systemic crisis, strengthen the market mechanism, and ethical standards (Nkoro and Uko, 2013).

Furthermore, a financial system also provides connections for the diverse segments of the economy and encourages a high level of specialization, expertise, and economies of scale. The financial system offers the essential setting for the execution of various economic policies of the government which is aimed at achieving non-inflationary growth, stability in the exchange rate, the balance of payments equilibrium, foreign exchange management, and high levels of employment (Nzotta & Okereke, 2009). The Nigerian financial system has undergone many reforms in the past decade and these reforms have had positive impacts on the growth of the Financial Systems of which insurance is a component. Thus, insurance companies are regarded as a channel of nations' development because of the large fund reserve and ability to commit to long-term investment.

Insurance should be regarded as a sound policy and practice that allows democratization of finance as well as social and economic benefits. A strong and vibrant insurance market is a mechanism for economic growth. It provides a good mechanism for accumulating long-term funds for infrastructural financing, sustainability for business models, job creation, and an improved standard of living. Thus, Insurers take in premiums based on anticipated loss costs, keeping a small portion to cover operating expenses and investing the rest until needed to pay claims or to hold aside to cover extraordinary losses (American Insurance Association, AIA, 2010). To operate profitably, insurers must earn more from premiums, which are invested across a range of asset classes, than they pay out in claims (Zacks, 2017). Investment by insurance companies is concerned with the application of insurance funds that are not immediately required for expenditure, or payment of insurance claims and benefits. When the funds are not meant for immediate "consumption", they are employed to be productive and increase in value or even multiply, depending on how long they are engaged in the productive activities. Due to the long-term nature of their liabilities, sizeable reserves, and predictable premiums, insurance providers can serve an important function as institutional investors providing capital to infrastructure and other long-term investments as well as professional oversight to these investments (Brainard, 2008).

Money supply and credit to private sectors are very important in every country's monetary policy to control. Several measures have been proposed to analyze the depth of the financial sector. Mostly those measures focus on ratios of broad money credit to private sector aggregates (M2, M3 CPS) to the size of the economy such as the money/GDP ratio, which measures the level of the

'monetization' in the economy (Williamson & Mahar, 1998). Access to finance remains a significant issue and has the potential of being in contradiction with the aim of stability. Therefore, this study investigates the effect of financial deepening on insurance penetration in Nigeria.

Statement of the Problem

Financial deepening has been acknowledged as one of those strategies that can accelerate the pace of development of the Nigerian economy (Onwumere, Ibe, Ozoh, & Mounanu, 2012). Financial deepening improves economic performance by means of improved competitive efficiency within financial markets thereby indirectly benefiting the financial and non-financial sectors of the economy. An ideal measure of financial deepening must comprise of the total amount of banking and non-banking financial assets including local credit to the private sector, liquidity liabilities, stock and bond market capitalization, Treasury bills (Ndebbio, 2004). The roles played by Financial deepening in ensuring the improvement of an economy include the widening of resource base and provision of the capital required in encouraging savings and credit investments.

The level of financial deepening reflects the soundness of the financial sector and the ability with which credits are created with respect to lending and deposit rates. Financial deepening theory thus defines the positive role of the financial system on economic growth by the size of the sector's activity. That means that an economy with more intermediary activity is assumed to be doing more to generate efficient allocations. The Nigerian insurance industry in 2019 generated a total gross premium of N413.8 billion, according to statistics obtained from the latest edition of the insurance digest produced by the umbrella body of insurance underwriters, the Nigerian Insurers Association (NIA). This represented an increase of N13.8 billion, compared with the N400 billion recorded in 2018. The report showed that the industry has sustained the path of marginal growth in the past three years. In 2018, it recorded a 10 percent growth in gross premium generation from N363 billion in 2017 to N400 billion in 2018.

Little emphasis has been placed on the effect of financial deepening and insurance penetration in Nigeria. This study, therefore, investigated the effect of financial deepening on insurance penetration in Nigeria, focusing on the ratios of broad money supply and credit to the private sector to gross domestic product (GDP) on insurance penetration of Nigeria from 1986-2019.

Objectives of the Study

The broad objective of the study is to examine the effect of financial deepening on insurance penetration in Nigeria. While the specific objectives are to:

1. Find out the effect of broad money supply M_2 as a ratio of gross domestic product (M_2/GDP) on insurance penetration in Nigeria.
2. Find out the effect of credit to private sector CPS as a ratio of gross domestic product (CPS/GDP) on insurance penetration in Nigeria.

Research Questions

The following research questions were put forward in line with the objectives of the study:

1. What is the effect of broad money supply M_2 as a ratio of Gross Domestic Product M_2/GDP on insurance penetration in Nigeria?
2. What is the effect of credit to private sector CPS as a ratio of gross domestic product (CPS/GDP) on insurance penetration in Nigeria?

Research Hypotheses

The researchers postulated the following research hypotheses to guide the study.

1. H_{01} : Broad money supply M_2 as a ratio of Gross Domestic Product M_2/GDP has no significant effect on insurance penetration in Nigeria?
2. H_{02} : Credit to private sector CPS as a ratio of gross domestic product (CPS/GDP) has no significant effect on insurance penetration in Nigeria.

2. Review of Related Literature

2.1 Conceptual Framework

Financial Deepening

The concept of financial deepening has attracted diverse definitions from numerous financial experts and financial institutions. In development studies, financial deepening very often refers to the increased provision of financial services with a wider choice of services geared to the development of all levels of society. Experts in the field of Economic development frequently use the word financial deepening to denote a condition of abundant liquidity and smooth financial intermediation even as a consensus that financial deepening stimulates growth has been reached by almost all researchers. It is also claimed that financial deepening is simply an upshot of growth in the real sector of the economy which could be apportioned to more valuable purposes in the early stages of growth (Odiambho, 2004 & Wadud, 2005).

World Bank (1989) defines it as an increase in the stock of assets. Shaw (1973) sees it as a process involving specialization in financial functions and institutions through which organized domestic institutions and markets relate to foreign markets. He stressed that an increase in the real size of the monetary system will generate

opportunities for the profitable operation of other institutions as well via bill dealers to industrial banks and insurance companies.

Financial deepening often refers to a state of an atomized financial system, meaning a financial system that is largely free from financial repression. Financial deepening thus is the outcome of accepting appropriate real finance policy such as relating the real rate of return to the real stock of finance. Financial deepening generally entails an increased ratio of money supply to Gross Domestic Product (Nnanna & Dogo, 1998; Nzotta, 2004).

Broad Money Supply

M₂ is a calculation of the money supply that includes all elements of M₁ as well as "near money." M₁ includes cash and checking deposits, while near money refers to savings deposits, money market securities, mutual funds, and other time deposits. These assets are less liquid than M₁ and not as suitable as exchange mediums, but they can be quickly converted into cash or checking deposits (Brian, 2020). M₂ is a category within the money supply that includes M₁ in addition to all time-related deposits, savings deposits, and non-institutional money-market funds.

M₂/GDP: This is a major indicator of financial sector deepening. It refers to the ratio of monetary assets in the economy to the GDP. It is a measure of the level of liquidity in the financial system and the ability of such a financial system to finance economic growth. Thus, a country with a higher Money / GDP ratio will have a more developed and efficient financial sector. Economic units will only form monetary assets/instruments when they feel convenient in terms of liquidity, risk, return, and efficiency of payments. A financial sector with a higher Money/GDP ratio is thus able to provide funds needed for investment purposes than a financial system with a low money/GDP ratio. This is one of the most widely used measures of financial deepening. The higher this ratio is the greater the level of financial sector development.

Credit to Private Sector

Credit to the private sector refers to financial resources provided to the private sector by financial corporations, such as through loans, purchases of non-equity securities, and trade credits, and other accounts receivable, that establish a claim for repayment. For some countries, these claims include credit to public enterprises. The financial corporations include monetary authorities and deposit money banks, as well as other financial corporations where data are available (including corporations that do not accept transferable deposits but do incur such liabilities as time and savings deposits).

CPS/GDP: This is also a major indicator of financial sector deepening. It refers to the ratio of credit to private sectors in the economy to the GDP. It is a measure of the level of liquidity in the financial system and the ability of such a financial system to finance economic growth. Thus a country with a higher CPS/GDP ratio will have a more developed and efficient financial sector. A financial sector with a higher CPS/GDP ratio is thus able to provide funds needed for investment purposes than a financial system with a low CPS/GDP ratio. The higher this ratio is the greater the level of financial sector development.

Meaning of Insurance

Insurance is a risk transfer mechanism by which the losses of the few are paid for by the contribution of many. It is a safeguard against risk (Nwite, 2005). Ivamy (1979) from the legal perspective posits that "a contract of insurance in the widest sense of the term may be defined as a contract whereby one person, called the insurer undertakes, to pay compensation, in return from the insured a sum of money, or its equivalent, on the happening of a specified event". Bird (1988) in upholding this view said an insurance contract is a contract whereby one part in consideration of payment of a premium assumes the risk of any uncertain event, which is not within his control, happening at a future time in which event the other party has an interest and under contract to pay money or provide its equivalent if the uncertain event occurs.

Insurers invest the premium income they receive, making them among the largest institutional investors. For life insurance companies, in particular, the products they write are long-term in nature, and so correspondingly long-term investments are made and held to maturity. This steady flow of long-term capital provided to the financial markets by the insurance industry is crucial for the financial system as a whole, as it reduces market volatility and thus contributes considerably to the stability and functioning of markets (Insurance Europe, 2012).

Insurance Penetration

Insurance penetration indicates the level of development of the insurance sector in a country. It is measured as the ratio of premium underwritten in a particular year to the GDP. Insurance Penetration - refers to a product's sales

volume relative to the sales volume of competing products. Within insurance, there is life insurance penetration which considers premiums from life insurance policies only as a percentage of GDP, and non-life insurance penetration which considers premiums from other than life insurance policies like auto insurance, health insurance, etc.

Insurance penetration measures the input of insurance premium to the Gross Domestic Product (GDP) of a country in percentage terms. For instance, if Nigeria generates a total insurance premium say, N10 billion and Nigeria's GDP for the same period is N100 billion, insurance penetration translates to 10% (Onifade, 2016). Insurance penetration refers to a product's sales volume compared to the sales volume of competing products, usually expressed as a ratio of premium to another financial measure like Gross Domestic Product (Jeff, 2016).

2.2 Theoretical Framework

This study adopted the financial Liberalization Theory proposed by McKinnon (1973) and Shaw (1973). Financial liberalization is defined as the removal of government intervention from financial markets, which reduce the government interference in financial markets, leading to the privatizing of state-owned banks; introducing the convertibility of the currency on the capital account (i.e., capital account liberalization); improving prudential regulation, and promoting local stock markets. In the past three decades, both industrial and emerging market countries have moved toward this form of liberalization of their financial systems (Galindo, Micco & Panizza, 2005). Financial liberalization increases the long-run growth rate of the economy. King and Levine (1993) link financial market development to the insights of Schumpeter (1934), about the role of finance in encouraging entrepreneurship. McKinnon and Shaw predicted that after capital account liberalization, capital would be allocated efficiently around the world to the investment opportunities that offer the highest rate of return, thus increasing global growth rates and growth rates within individual countries. Furthermore, by being able to invest both internally and externally investors were able to diversify their investment, which would result in lower risks.

McKinnon (1973) and Shaw (1973) pointed out the reality of extensive government intervention, mostly in emerging market countries' financial markets. They characterized these interventions as "financial repression," in which the government, in place of the market, makes a series of decisions with regards to the: allocation of credit to given clients, determination of interest rates, and interest rate ceilings, mandatory reserve requirement in the amount and type of reserves (e.g., government paper), entry of new institutions into the credit market; creation of state-owned financial institutions; control of the "capital account," i.e., lending and borrowing abroad are subject to specific authorizations

The choice of this theory is based on the fact that it encourages financial market development (Schumpeter, 1934), efficient allocation of resources, and investment opportunities that offer the highest rate of return [McKinnon (1973) and Shaw (1973)]. The theory enhances prudential regulation and promotes local stock markets. Thus, a developed financial market fosters economic growth, which in turn impacts positively on insurance sector development. Moreover, a well-functioning financial institution can promote overall economic efficiency, create and expand liquidity, mobilize savings, enhance capital accumulation, transfer resources from traditional (non-growth) sectors to the more modern growth-inducing sectors, and also promote a competent entrepreneur response as well as insurance sector development.

2.3 Empirical Review

Karimo and Ogbonna (2017) examined the direction of causality between financial deepening and economic growth in Nigeria for the period 1970–2013. Their study adopted the Toda–Yamamoto augmented Granger causality test and the results they got showed that the growth-financial deepening nexus in Nigeria follows the supply-leading hypothesis. This they say means that it is financial deepening that leads to growth and not growth leading to financial deepening. They recommended that policy efforts should be channeled towards removing hindrances that weaken the growth of credit to the private sector, and also the confidence of people in stock market activities must be restored through appropriate policy formulations.

Okafor, Onwumere, and Ezeaku (2016) carried out a causality and impact study on financial deepening and economic growth in Nigeria within the years 1981 to 2013. Their study adopted the Phillips-Peron test for unit root to establish if the variables are static or not. To determine if the data set for the study were normally distributed, they employed the VEC residual normality test and the Histogram-Normality test. They also carried out a test for a long-run relationship with the aid of the Johansen co-integration test. They also used Error Correction Model alongside the

Granger causality test in their study. Their findings showed that there exists a long-run relationship between economic growth, broad money supply, and private sector credit, with a high speed of adjustment towards long-run equilibrium. Their results also revealed that while broad money has a positive and non-significant impact on economic growth, private sector credit has a negative and non-significant effect on growth. The Granger causality test results showed that neither broad money supply nor private sector credit is granger causal for economic growth and vice versa. The researchers recommended that government should implement private sector-friendly policies by ensuring that investors do not only have access to credit but at affordable interest rates.

Nwanna and Chiwudu, (2016) carried out research work to examine financial deepening and economic growth in Nigeria from 1985 to 2014 by focusing on the effects of the stock market and bank deepening variables such as money supply, market capitalization, private sector credit, and financial savings have on the economic growth of Nigeria. Their study adopted the supply leading hypothesis and also annual time series data for 1985 to 2014 obtained from the Central Bank of Nigeria statistical bulletin. They also used ordinary least square (OLS) econometric in which variations in the dependent variable, economic growth, measured by gross domestic product growth rate were regressed on money supply ratio to gross domestic product, private sector credit ratio to gross domestic product, market capitalization ratio to gross domestic product and financial saving ratio to gross domestic product using time series data from 1985 to 2014. The result of the analysis reveals that both bank-based and stock market financial deepening proxies have a significant and positive effect on economic growth and that the banking sector and stock market in Nigeria have each an important part to play in the process of economic growth. They recommended that improvements should be effected in the stock market sector to encourage more participation and restrictions (especially in the areas of international capital and entry) in the stock market should be eased to ensure that more companies are listed in the Nigerian stock market.

Onwumere, Ibe, Ozoh, and Mounanu (2012) in their study examined the impact of financial deepening on economic growth in Nigeria. Adopting the supply-leading hypothesis using variables such as broad money velocity, money stock diversification, economic volatility, market capitalization, and market liquidity as proxies for financial deepening and gross domestic product growth rate for economic growth they discovered that broad money velocity and market liquidity promote economic growth in Nigeria while money stock diversification, economic volatility and market capitalization did not within the period studied (1992-2008). Government policy should therefore be geared towards strategically increasing money supply and promoting an efficient capital market that will enhance overall economic efficiency, create and expand liquidity, mobilize savings, enhance capital accumulation, transfer resources from traditional sectors to growth-inducing sectors (such as manufacturing and industry, agriculture and the services sectors) and also promote a competent entrepreneurial response in various sectors of the economy.

Maduka (2012) used time-series data to investigate the impact of financial deepening on domestic investment. It explores both the long-run and short-run relationships between financial deepening and domestic investment (DI). The presence of unit root in the time series data was tested using Augmented – Dickey-Fuller and Philips – Perron unit root tests. The long-run relationship among the variables was estimated using Johansen and Juselius (1990) cointegration tests. While the short-run relationship was tested using the dynamic vector error correction model, adopting Hendry's general to specific approach until a parsimonious model is achieved. The major finding of this study was that financial deepening does not have a significant impact on domestic investment in Nigeria. From our result, it is obvious that Nigerian domestic investors cannot respond to the growth of output since the domestic financial system does not respond to the financing needs of investors. The study recommends that there has to be a sound financial policy aimed at improving financial depth if the growth of investment must be achieved.

Okoli (2010) examines the relationship between financial deepening and stock market returns and volatility in the Nigerian stock market for the period 1980-2009. The study employs the popular GARCH (1, 1) model. Four modeled equations were estimated and analyzed. Financial deepening was represented by two variables, the ratio of the value of stock traded to GDP (FD1t) and the ratio of market capitalization to GDP (FD2t). Empirical results revealed that financial deepening (FD1t) measured as the ratio of the value of stock traded to GDP does not affect the stock market and there is no news about volatility. But financial deepening (FD2t) is measured as the ratio of market capitalization to GDP affecting the stock market. It indicated that financial deepening reduces the level of risk (volatility) in the stock market. Result also recorded that the conditional volatility of returns is slightly persistent.

Odeniran and Udejaja (2010) examined the relationship between financial sector development and economic growth in Nigeria. The study employs granger causality tests in a VAR framework over the period 1960-2009. Four variables, namely; ratios of the broad money stock to GDP, growth in net domestic credit to GDP, growth in private sector credit to GDP, and growth in banks deposit liability to GDP were used to proxy financial sector development. The empirical results suggest bidirectional causality between some of the proxies of financial development and economic growth variable. Specifically, the study finds that the various measures of financial development granger cause output even at one percent level of significance except for the ratio of broad money to GDP. Additionally, net domestic credit was equally found to be driven by growth in output, thus indicating bidirectional causality.

Darrat and Al-Sowaidi (2010) assessed the role of information technology and financial deepening in Qatar, a fast-growing economy. The study employs vector-error-correction modeling technique with its attendant short-run causal dynamics and found that real economic growth in Qatar is robustly linked over the long run to both financial deepening and information technology and concluded that financial development, rather than IT, is more critical for enhancing economic growth over the short-run horizon.

Nzotta and Okereke (2009) examined financial deepening and economic development in Nigeria between 1986 and 2007. The study made use of time series data and two stages least squares analytical framework and found that four of the nine variables; lending rates, financial savings ratio, cheques/GDP ratio, and the deposit money banks/GDP ratio had a significant relationship with financial deepening and concluded that the financial system has not sustained effective financial intermediation, especially credit allocation and a high level of monetization of the economy.

Ndikumana (2003) investigates the impact of financial structure on domestic investment, using the study to provide answers to two related but different questions about the link between financial intermediation and domestic investment. The first question is whether higher financial development induces higher domestic investment. The second is whether the structure of the financial system matters for domestic investment. The results show that financial development indicators are positively related to domestic investment. Also, the results show that the structure of the financial system has no incremental impact on domestic investment.

Darrat (1999) examined the role of financial deepening in economic growth in the middle-eastern countries (Saudi Arabia, Turkey, and the United Arab Emirates). The study focused on the causal link between the degree of financial deepening and economic growth in order to discriminate between several alternative theoretical hypotheses. The study employed multivariate Granger-causality tests within an error-correction framework. The result generally supports the view that financial deepening is a necessary causal factor of economic growth, although the strength of the evidence varies across countries and across the proxies used to measure financial deepening. The causal relationships are also predominately long-term in nature.

2.4 Gap in Empirical Review

Based on the summary of the empirical review carried out, the gap in the literature that gave credence to this work was that: firstly, most of the studies reviewed focused on the effect of financial deepening on economic growth. Karimo and Ogbonna (2017) examined the direction of causality between financial deepening and economic growth in Nigeria. Okafor, Onwumere, and Ezeaku (2016) carried out a causality and impact study on financial deepening and economic growth in Nigeria. Nwanna and Chiwudu, (2016) carried out research work to examine financial deepening and economic growth in Nigeria. Onwumere, Ibe, Ozoh, and Mounanu (2012) in their study examined the impact of financial deepening on economic growth in Nigeria. Odeniran and Udejaja (2010) examined the relationship between financial sector development and economic growth in Nigeria. Darrat and Al-Sowaidi (2010) assessed the role of information technology and financial deepening in Qatar, a fast-growing economy. Nzotta and Okereke (2009) examined financial deepening and economic development in Nigeria. Darrat (1999) examined the role of financial deepening in economic growth in the middle-eastern countries (Saudi Arabia, Turkey, and the United Arab Emirates).

Other reviewed studies investigated the role/impact of financial deepening on investment. Such studies include: Ndikumana (2003) investigated the impact of financial structure on domestic investment. Okoli (2010) examined the relationship between financial deepening and stock market returns and volatility in the Nigerian stock market for the period 1980-2009. Maduka (2012) used time-series data to investigate the impact of financial deepening on domestic investment in Nigeria.

This study, therefore, investigated the effect of financial deepening on insurance penetration in Nigeria from 1985 to 2018, using broad money supply M_2 as a ratio of gross domestic product (M_2/GDP) and credit to private sector CPS as a ratio of gross domestic product (CPS/GDP) on insurance penetration in Nigeria.

3. Methodology

Research design

The research design adopted for this study was *ex-post facto* research. This is a type of research design whereby the investigation starts after the fact has occurred without interference from the researcher. The choice of this research design was based on the fact that the researcher made use of secondary data (historical data or time-series data) to carry out this study.

Nature and Sources of Data

Secondary data were used for this study. Data were gathered from the Central Bank of Nigeria Statistical Bulletin, Insurance Digest, and National Insurance Commission's annual publication of various years.

Model specification

The study adopted a model from the study carried out by Onwumere, Ibe, Ozor, and Mounanu, (2012) which was stated as follows:

$$EG=f(BMV, MSD, ED, SMC) \quad - \quad - \quad - \quad (i)$$

$$EG = \beta_0 + \beta_1 BMV_{t1} + \beta_2 MSD_{t2} + \beta_3 ED_{t3} + \beta_4 SMC_{t4} + \mu_t \quad - \quad - \quad - \quad (ii)$$

The above model was modified to adequately capture the objectives of this study. Consequently, *the functional relation of the model was given as follows:*

$$INP = f(M_2/GDP, CPS/GDP) \quad - \quad - \quad - \quad (iii)$$

While its regression model was specified as:

$$INP_t = \beta_0 + \beta_1 M_2/GDP_{t1} + \beta_2 CPS/GDP_{t2} + \mu_t \quad - \quad - \quad - \quad (iv)$$

The general model was further disintegrated into model one and model two in order to capture the specific objectives and hypotheses of the study.

Model One or Hypothesis one

H_{01} : Broad money supply M_2 as a ratio of Gross Domestic Product M_2/GDP has no significant effect on insurance penetration in Nigeria?

The functional relation of the model was given as:

$$INP = f(M_2/GDP) \quad - \quad - \quad - \quad (v)$$

While its regression model was specified as:

$$INP_t = \beta_0 + \beta_1 M_2/GDP_{t1} + \mu_t \quad - \quad - \quad - \quad (vi)$$

Where: INP_t = Insurance Penetration Rate,

M_2/GDP = Ratio of money supply to Gross Domestic Product,

β_0 = Constant

β_1 & β_2 = slope coefficient,

μ = the error term

Model Two or Hypothesis Two

H₀₂: Credit to private sector CPS as a ratio of gross domestic product (CPS/GDP) has no significant effect on insurance penetration in Nigeria.

The functional relation of the model was given as:

$$INP = f(CPS/GDP) \quad - \quad - \quad - \quad (vii)$$

The regression model was specified as follows:

$$INP_t = \beta_0 + \beta_2 CPS/GDP_{t2} + \mu_t \quad - \quad - \quad - \quad (viii)$$

Where: INP_t = Insurance Penetration Rate,

CPS/GDP = Ratio of Credit to Private Sector to Gross Domestic Product,

β₀ = Constant,

β₁ & β₂ = slope coefficient,

μ = the error term

Description of Model Variables

Independent Variable

Financial deepening: financial deepening very often refers to the increased provision of financial services with a wider choice of services geared to the development of all levels of society. Experts in the field of Economic development frequently use the word financial deepening to denote a condition of abundant liquidity and smooth financial intermediation. The size of the financial sector is usually measured by two basic quantitative indicators: "monetization ratio" and "intermediation ratio". Whereas the monetization ratio includes money-based indicators or liquid liabilities like broad money supply to GDP ratio, intermediation ratio consists of indicators concerning bank-based measures like bank credit to the private sector and capital market-based measures such as capitalization ratio of the stock market (Ndebbio, 2004). This study, therefore, focused on two independent variables: money supply (M₂) and credit to the private sector (CPS).

1. **Money Supply/GDP (M₂/GDP):** M₂ is a calculation of the money supply that includes all elements of M₁ as well as "near money. Therefore, (M₂/GDP) refers to the ratio of monetary assets in the economy to the GDP. It is a measure of the level of liquidity in the financial system and the ability of such a financial system to finance economic growth.
2. **Credit to Private Sector/GDP (CPS/GDP):** Credit to the private sector refers to financial resources provided to the private sector by financial corporations, such as through loans, purchases of non-equity securities, and trade credits and other accounts receivable, that establish a claim for repayment. For some countries, these claims include credit to public enterprises. Therefore, (CPS/GDP) is an indicator of the financial sector deepening. It refers to the ratio of credit to private sectors in the economy to the GDP. It is a measure of the level of liquidity in the financial system and the ability of such a financial system to finance economic growth.

Dependent Variables

Insurance penetration Rate: This signifies the level of development of the insurance sector in a country. The penetration rate is measured as the ratio of premium underwritten in a particular year to the GDP. It refers to a product's sales volume relative to the sales volume of competing products in a country over a specific period of time.

Data Analysis Technique

The Hypotheses for the study were tested using the Ordinary Least Squares (OLS) regression method. However, data for the study were first subjected to the following test: stationarity test using Phillips-Perrons statistical method and co-integration test using Johansen co-integration. Thereafter, a test of Model adequacy was run. This was estimated using the Coefficient of Correlation (R) and Adjusted Coefficient of Determination (AR²) and Durbin Watson parameters. The Coefficient of Correlation (R) points to a high or low linear relationship between the dependent

and independent variable. The Adjusted Coefficient of Determination (AR^2) is a modified version of R^2 . It indicates how well terms fit a curve or line but adjusts for the number of terms in a model. If you add more and more useless variables to a model, Adjusted R^2 will decrease. If you add more useful variables, Adjusted R^2 will increase. The researcher's choice of this estimation technique (OLS) was based not only on its computational simplicity but also as a result of its optimal properties such as linearity and unbiasedness.

4. Data Presentation and Analysis

Data Presentation

Table 4.1 Showing annual data concerning money supply, credit to the private sector, gross domestic product, gross written premium in Billion of Naira and their different ratios to GDP.

YEAR	MONEY SUPPLY (N BILLION)	CREDIT TO PRIVATE SECTOR CPS (N' BILLION)	GROSS DOMESTIC PRODUCT GDP (N' BILLION)	GROSS WRITTEN PREMIUM (N' BILLION)	M2/GDP (%)	CPS/GDP (%)	INSURANCE PENETRAT RATE (%)
1986	23.81	15.25	202.44	0.25	11.76	7.53	0.12
1987	27.57	21.08	249.44	0.41	11.05	8.45	0.16
1988	38.36	27.33	320.33	0.49	11.97	8.53	0.15
1989	45.90	30.40	419.20	0.67	10.95	7.25	0.16
1990	52.86	33.55	499.68	1.01	9.49	6.71	0.20
1991	75.40	41.35	596.04	1.30	12.65	6.94	0.22
1992	111.11	58.12	909.80	2.45	12.21	6.39	0.27
1993	165.34	127.12	1,259.07	4.93	13.13	10.10	0.39
1994	230.29	143.42	1,762.81	14.52	13.06	8.14	0.82
1995	289.09	180.00	2,895.20	13.53	9.99	6.22	0.47
1996	345.85	238.60	3,779.13	11.09	9.15	6.31	0.29
1997	413.28	316.21	4,111.64	10.94	10.05	7.69	0.27
1998	488.15	351.96	4,588.99	11.69	10.64	7.67	0.25
1999	628.95	431.17	5,307.36	14.60	11.85	8.12	0.28
2000	878.46	530.37	6,897.48	22.53	12.74	7.69	0.33
2001	1,269.32	764.96	8,134.14	28.98	15.60	9.40	0.36
2002	1,505.96	930.49	11,332.25	37.77	13.29	8.21	0.33
2003	1,952.92	1,096.54	13,301.56	43.44	14.68	8.24	0.33
2004	2,131.82	1,421.66	17,321.30	50.10	12.31	8.21	0.29
2005	2,637.91	1,838.39	22,269.98	67.47	11.85	8.26	0.30
2006	3,797.91	2,290.62	28,662.47	81.58	13.25	7.99	0.28
2007	5,127.40	3,680.09	32,995.38	105.38	15.54	11.12	0.32
2008	8,008.20	6,941.38	39,157.88	157.21	20.45	17.67	0.40
2009	10,780.63	10,219.34	44,285.56	189.96	21.25	20.55	0.43
2010	11,525.53	9,830.34	54,612.26	200.38	20.21	18.60	0.37
2011	13,303.49	14,183.59	62,980.40	233.75	19.33	16.93	0.37
2012	15,483.85	15,151.76	71,713.94	252.14	19.37	20.43	0.35
2013	15,688.96	16,191.47	80,092.56	267.84	18.92	19.67	0.33
2014	18,913.03	18,126.05	89,043.62	293.54	18.24	19.24	0.33
2015	20,029.83	18,720.51	94,144.96	312.55	19.68	19.84	0.33
2016	23,591.73	21,982.15	101,489.49	315.98	21.31	20.77	0.31
2017	24,140.63	22,290.66	113,711.63	363.00	19.67	19.43	0.32
2018	25,079.72	22,521.93	127,762.55	400.00	19.63	17.63	0.31

Source: Central Bank of Nigeria Statistical Bulletin and Nigerian Insurance Digest for various years.

$$\text{Insurance penetration rate} = \frac{\text{Gross written Premium}}{\text{Gross Domestic Product}} \times 100$$

Table 4.1 shows that Nigeria insurance industry recorded an all-time low penetration rate of 0.12% in 1986. In 1987, insurance penetration rate rose to 0.16%, it dropped to 0.15% in 1988 and rose again to 0.16% in 1989. Penetration rate rose to 0.20% in 1990, 0.22% in 1991, 0.27% in 1992 and 0.39% in 1993. Nigerian Insurance Industry recorded an all-time high penetration rate of 0.82% in 1994. In 1995, penetration rate dropped to 0.47%. It further declined to 0.29% in 1996; 0.27%, and 0.25% in 1997 and 1998 respectively. It increased to 0.28% in 1999, 0.33% in 2000 and 0.36% in 2001. It dropped 0.33% in 2002 and 2003. In 2004 it further dropped to 0.29%. However, it rose to 0.30% in 2005; it dropped to 0.28% in 2006. It rose to 0.32% immediately after recapitalization in 2007, 0.40% in 2008 and 0.43% in 2009. In 2010 and 2011, it dropped to 0.37%; it was 0.35% in 2012. It further dropped to 0.33% in 2013, 2014 and 2015. It was 0.31 in 2016, 0.32% in 2017 and 0.31% in 2018.

Based on the above analysis, it can be seen that insurance penetration in Nigeria has been fluctuating over the years under review and as such have not recorded a consecutive increased growth rate of up to four years since 1994. Thus, 1986 was a dark year as it recorded an all-time low penetration rate of 0.12%. While 1994 recorded an all-time highest insurance penetration rate of 0.82%. Disappointingly, there was a drastic decline in the Nigerian insurance industry penetration rate from 0.82% in 1994 to 0.47% in 1995.

Table 4.2 Result of Stationarity Test

Variable	Level	Critical values @ 5%	Test statistic
<i>CPS/GDP</i>	1(1)	-3.562882	-4.260544
<i>INSPEN</i>	1(1)	-3.562882	-9.118836
<i>M2GDP</i>	1(1)	-3.562882	-5.646369

Source: Author's calculation using Eviews 9

Phillips Perron method was used to test for unit root. The results of the tests as reported show that at first difference all the variables were stationary. They were integrated at order one.

Table 4.3 Result of Descriptive Statistics

	<i>CPSGDP</i>	<i>INSPEN</i>	<i>M2GDP</i>
Mean	11.69485	0.316364	14.70515
Median	8.260000	0.320000	13.13000
Maximum	20.77000	0.820000	21.31000
Minimum	6.220000	0.120000	9.150000
Std. Dev.	5.493175	0.120359	3.976843
Skewness	0.669838	2.026646	0.388666
Kurtosis	1.628903	10.58271	1.630448
Jarque-Bera	5.052629	101.6493	3.409888
Probability	0.079953	0.000000	0.181783
Sum	385.9300	10.44000	485.2700
Sum Sq. Dev.	965.5992	0.463564	506.0890
Observations	33	33	33

Source: Author's calculation using Eviews 9

The values of the mean of the respective variables are low showing that they do aggregate easily. Also, the values of the median of the respective variables are low showing that the variables are not spread widely. The dispersion of the respective variables surrounding the mean is low given that differences between their respective minimum and maximum values are low. The standard deviation of the data in relation to their respective means each had a lower value than their respective mean. This shows that all the variables have low volatility.

Table 4.4 Result of Co-integration Test

Unrestricted Cointegration Rank Test (Trace)

Hypothesized	Trace	0.05		
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**
None *	0.507617	23.60939	15.49471	0.0024
At most 1	0.126017	3.771431	3.841466	0.0521

Trace test indicates 1 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 No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.507617	19.83796	14.26460	0.0059
At most 1	0.126017	3.771431	3.841466	0.0521

Max-eigenvalue test indicates 1 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=1):

CPSGDP	M2GDP
-1.109563	1.552969
-0.180506	0.593260

Source: Author's calculation using Eviews 9 and data in Appendix one

The Johansen co-integration test reported in Table 4.4 observes that the result has rejected the null hypothesis of no co-integration and established the presence of 1 co-integrating equation. The co-integrating equation is based on the probability of both the Trace value statistic (23.60939 > 15.49471) and Maximum Eigen value statistic (19.83796 > 14.26460) being significant at 5% or 0.05 level of significance respectively. The results are strengthened by the reported probability of the Trace value statistic (0.0024 < 0.05) and Maximum Eigen value statistic (0.0059 < 0.05). This implies that a linear combination of the variables was found to be stationary. In other words, the presence of co-integration indicated that there is a long-run relationship among the variables. Particularly, M₂/GDP and CPS/GDP had an equilibrium relationship with Insurance Penetration. Thus, the problem of spurious and inconsistent regression can be avoided, which otherwise could occur with regression of non-stationary series (Nwachukwu & Egwaikhide, 2007). The normalized co-integrating coefficients signs show that there will be a negative relationship between CPSDGP and INSPEN in the future and a positive relationship between M2GDP and INSPEN.

Test of Hypotheses

Test of Hypothesis One

Hypothesis one was restated as follows:

H₀= H₀₁: Broad money supply M₂ as a ratio of Gross Domestic Product M₂/GDP has no significant effect on insurance penetration in Nigeria.

H₁= H₀₁: Broad money supply M₂ as a ratio of Gross Domestic Product M₂/GDP has a significant effect on insurance penetration in Nigeria.

Table 4.5 Result For Test of Hypothesis One

Dependent Variable: INSPEN

Method: Least Squares

Date: 03/24/20 Time: 10:36

Sample (adjusted): 1 33

Included observations: 33 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.189078	0.079264	2.385415	0.0234
M ₂ GDP	0.008656	0.005209	1.661800	0.1066
R-squared	0.081796			

Source: Author's calculation using Eviews 9

Decision Criteria

Accept null hypothesis if the p-value of (t-statistic) is greater than 0.05 level of significance otherwise accept the alternate hypothesis.

Estimated Model Result for Hypothesis one

Using the extract of empirical results from table 4.5 for the test of hypothesis one. The OLS regression result of **INSP on M₂/GDP** shows that the coefficient was 0.008656; the t-statistic was 1.661800, and its p-value was [0.1066]. (See appendix 9). Since the level of significance [0.05] is less than the p-values [0.1066]. The p-value of M₂GDP at 0.1066 is higher than the level of significance of 0.05. It implies that there was not enough statistical evidence to reject the null hypothesis.

Conclusion

Hence, it was concluded that Broad money supply as a ratio of Gross Domestic Product has no significant effect on insurance penetration in Nigeria.

Test of Hypothesis Two

Hypothesis two was restated as follows:

H₀₂= Credit to private sector CPS as a ratio of gross domestic product (CPS/GDP) has no significant effect on insurance penetration in Nigeria.

H₁= Credit to private sector CPS as a ratio of gross domestic product (CPS/GDP) has a significant effect on insurance penetration in Nigeria.

Table 4.6 Result for Test of Hypothesis Two

Dependent Variable: INSP

Method: Least Squares

Date: 03/24/20 Time: 11:15

Sample (adjusted): 1 33

Included observations: 33 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.261324	0.049524	5.276769	0.0000
CPSGDP	0.004706	0.003843	1.224502	0.2300
R-squared	0.046136			

Source: Author's calculation using Eviews 9

Decision Criteria

Accept null hypothesis if the p-value of (t-statistic) is greater than 0.05 level of significance otherwise accept the alternate hypothesis.

Estimated Model Result for Hypothesis Two

Using the extract of empirical results from table 4.6 for the test of hypothesis two, the OLS regression result of **INSP on CPS/GDP** shows that the Coefficient was 0.004706; the t-statistic was 1.224502, and its p-value was [0.2300]. Since the level of significance [0.05] is less than the p-values [0.2300]. The p-value of CPS/GDP at 0.2300 is higher than the level of significance of 0.05. It implies that there was not enough statistical evidence to reject the null hypothesis.

Conclusion

It was therefore concluded that credit to private sector CPS as a ratio of gross domestic product (CPS/GDP) has no significant effect on insurance penetration in Nigeria.

Discussion of Empirical Results

Discussion of the effect of credit to private sector M₂ as a ratio of gross domestic product (M₂/GDP) on insurance penetration in Nigeria.

The regression equation for test of hypothesis one (INSP on M₂/GDP) = 0.189078 + 0.008656. Thus, if each index for M₂GDP is held constant, insurance penetration will increase by 0.189078 basis points. The coefficient of M₂GDP at 0.008656 shows that it has a positive relationship with insurance penetration. It implies that a unit increase in insurance penetration is dependent on a 0.008656 basis points increase in M₂GDP. It was observed that t-calculated for the M₂GDP was 1.661800. Compared to t-tabulated, derived as $t_{\infty/2(n-k)}$, $t_{(0.05/2)(33-2)} = (0.025)(31) = 2.021$, it is seen that t-calculated is lower than t-tabulated. This position is substantiated by the position of p-value (0.1066) which was higher than the level of significance of 0.05. This implies that broad money supply as a ratio of Gross

Domestic Product had no significant effect on insurance penetration in Nigeria. Moreover, the effect size (R^2) of 0.081796 shows that only 8.2% of changes in insurance penetration were explained or caused by broad money supply as a ratio of Gross Domestic Product in Nigeria. This implies that the degree of effect of M_2/GDP on insurance penetration in Nigeria was low.

Discussion of the effect of the broad money supply as a ratio of Gross Domestic Product has no significant effect on insurance penetration in Nigeria.

The regression equation for hypothesis two (INSP on CPS/GDP) = $0.261324 + 0.004706$. Thus, if each index for CPS/GDP is held constant insurance penetration will increase by 0.261324 basis points. The coefficient of CPSGDP at 0.004706 shows it has a positive relationship with insurance penetration. It implies that a unit increase in insurance penetration is dependent on a 0.004706 basis points increase in CPSGDP. It was observed that t-calculated for the CPSGDP was 1.224502. Compared to t-tabulated, derived as $t_{\infty/2(n-k)}$, $t_{(0.05/2)(33-2)} = (0.025)(31) = 2.021$, it is seen that t-calculated is lower than t-tabulated. This position is substantiated by the position of the p-value (0.2300) which was higher than the level of significance of 0.05. This implies that credit to the private sector as a ratio of Gross Domestic Product has no significant effect on insurance penetration in Nigeria. Moreover, the effect size (R^2) of 0.046136 shows that only 4.6% of changes in insurance penetration were explained or caused by credit to the private sector as a ratio of Gross Domestic Product in Nigeria. This implies that the degree of effect of CPS/GDP on insurance penetration in Nigeria was low.

5. Summary of Findings, Conclusion and Recommendations

5.1 Summary of Findings

The following were the findings of the study:

1. Broad money supply as a ratio of Gross Domestic Product has no significant effect on insurance penetration in Nigeria.
2. Credit to the private sector as a ratio of Gross Domestic Product has no significant effect on insurance penetration in Nigeria.

5.2 Conclusion

Based on the findings of the study, it was concluded that financial deepening had a positive but non-significant effect on insurance penetration in Nigeria from 1986 to 2018. Particularly, broad money supply M_2 as a ratio of gross domestic product (M_2/GDP) and credit to private sector CPS as a ratio of gross domestic product (CPS/GDP) had not impacted significantly on insurance penetration in Nigeria from 1986 to 2018.

5.3 Recommendations

Based on the findings and conclusion of the study, the following recommendations were made:

1. Government through its relevant authorities/agencies (such as CBN, Ministry of Finance, etc) should increase the broad money supply in Nigeria in such a proportion that it could meaningfully enhance insurance penetration in Nigerian.
2. There is also the need to increase the number of credit facilities given to the private sector (CPS) in the country in order to deepen insurance penetration in Nigeria. Thus, all unnecessary stringent measures inhibiting public sector access to credit facilities should be addressed to make funds available to genuine investors/borrowers.
3. National Insurance Commission (NAICOM) and other market associations in the Nigerian insurance industry should embark on aggressive enforcement of all compulsory insurances in order to boost insurance penetration in Nigeria. This can be achieved through a collaborative drive between NAICOM and relevant security agencies with the support of government both at The Federal and State levels.

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Appendices

Appendix 1

Gross Written Premium

YEAR	GROSS WRITTEN PREMIUM (N' BILLION)
1986	0.25
1987	0.41
1988	0.49
1989	0.67
1990	1.01
1991	1.30
1992	2.45
1993	4.93
1994	14.52
1995	13.53
1996	11.09
1997	10.94
1998	11.69
1999	14.60
2000	22.53
2001	28.98
2002	37.77
2003	43.44
2004	50.10
2005	67.47
2006	81.58
2007	105.38
2008	157.21
2009	189.96
2010	200.38
2011	233.75
2012	252.14
2013	267.84
2014	293.54
2015	312.55
2016	315.98
2017	363.00
2018	400.00

Source: CBN Statistical Bulletin, NAICOM and Nigerian Insurance Digest Publications of various years.

Appendix 2

Ratios of Broad Money Supply, Credit to Private Sector and Insurance Penetration Rate.

YEAR	M_2/GDP (%)	CPS/GDP (%)	INSURANCE PENETRATION RATE (%)
1986	11.76	7.53	0.12
1987	11.05	8.45	0.16
1988	11.97	8.53	0.15
1989	10.95	7.25	0.16
1990	9.49	6.71	0.20
1991	12.65	6.94	0.22
1992	12.21	6.39	0.27

1993	13.13	10.10	0.39
1994	13.06	8.14	0.82
1995	9.99	6.22	0.47
1996	9.15	6.31	0.29
1997	10.05	7.69	0.27
1998	10.64	7.67	0.25
1999	11.85	8.12	0.28
2000	12.74	7.69	0.33
2001	15.60	9.40	0.36
2002	13.29	8.21	0.33
2003	14.68	8.24	0.33
2004	12.31	8.21	0.29
2005	11.85	8.26	0.30
2006	13.25	7.99	0.28
2007	15.54	11.12	0.32
2008	20.45	17.67	0.40
2009	21.25	20.55	0.43
2010	20.21	18.60	0.37
2011	19.33	16.93	0.37
2012	19.37	20.43	0.35
2013	18.92	19.67	0.33
2014	18.24	19.24	0.33
2015	19.68	19.84	0.33
2016	21.31	20.77	0.31
2017	19.67	19.43	0.32
2018	19.63	17.63	0.31

Source: CBN Statistical Bulletin, NAICOM and Nigerian Insurance Digest Publications of various years.

Note: Insurance Penetration rate was calculated by the researcher: Annual Gross written premium as a ratio of annual GDP.

Appendix 3

Result of Stationarity test

Variable	Level	Critical values @ 5%	Test statistic
CPS/GDP	1(1)	-3.562882	-4.260544
INSPEN	1(1)	-3.562882	-9.118836
M2GDP	1(1)	-3.562882	-5.646369

Source: Author's calculation using Eviews 9

Appendix 4

Result of Descriptive Statistic

	CPSGDP	INSPEN	M2GDP
Mean	11.69485	0.316364	14.70515
Median	8.260000	0.320000	13.13000
Maximum	20.77000	0.820000	21.31000
Minimum	6.220000	0.120000	9.150000
Std. Dev.	5.493175	0.120359	3.976843
Skewness	0.669838	2.026646	0.388666
Kurtosis	1.628903	10.58271	1.630448
Jarque-Bera	5.052629	101.6493	3.409888
Probability	0.079953	0.000000	0.181783
Sum	385.9300	10.44000	485.2700
Sum Sq. Dev.	965.5992	0.463564	506.0890

Observations	33	33	33
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Source: Author's calculation using EViews 9

Appendix 5

Result of Co-integration test

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.507617	23.60939	15.49471	0.0024
At most 1	0.126017	3.771431	3.841466	0.0521

Trace test indicates 1 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 No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.507617	19.83796	14.26460	0.0059
At most 1	0.126017	3.771431	3.841466	0.0521

Max-eigenvalue test indicates 1 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=1):

CPSGDP	M2GDP
-1.109563	1.552969
-0.180506	0.593260

Source: Author's calculation using EViews 9

Appendix 6

Result For Test of Hypothesis One

Dependent Variable: INSPEN

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.189078	0.079264	2.385415	0.0234
M2GDP	0.008656	0.005209	1.661800	0.1066
R-squared	0.081796	Mean dependent var		0.316364
Adjusted R-squared	0.052177	S.D. dependent var		0.120359
S.E. of regression	0.117177	Akaike info criterion		-1.391566
Sum squared resid	0.425646	Schwarz criterion		-1.300869
Log likelihood	24.96084	Hannan-Quinn criter.		-1.361049
F-statistic	2.761578	Durbin-Watson stat		0.831919
	0.106634			

Source: Author's calculation using EViews 9

Appendix 7

Result for Test of Hypothesis Two

Dependent Variable: INSPEN

Method: Least Squares

Date: 03/24/20 Time: 11:15

Sample (adjusted): 1 33

Included observations: 33 after adjustments

<i>Variable</i>	Coefficient	Std. Error	t-Statistic	Prob.
<i>C</i>	0.261324	0.049524	5.276769	0.0000
<i>CPSGDP</i>	0.004706	0.003843	1.224502	0.2300
<i>R-squared</i>	0.046136	Mean dependent var		0.316364
<i>Adjusted R-squared</i>	0.015367	S.D. dependent var		0.120359
<i>S.E. of regression</i>	0.119431	Akaike info criterion		-1.353465
<i>Sum squared resid</i>	0.442176	Schwarz criterion		-1.262767
<i>Log likelihood</i>	24.33216	Hannan-Quinn criter.		-1.322948
<i>F-statistic</i>	1.499404	Durbin-Watson stat		0.847969
<i>Prob(F-statistic)</i>	0.229987			

Source: Author's calculation using Eviews