DEVELOPMENTS IN MONEY MARKET OPERATIONS AND ECONOMIC VIABILITY IN NIGERIA: AN EMPIRICAL APPRAISAL

By

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**Abstract**

*Money market provides instruments for effective liquidity management and acts as the core source of raising short-term funds for lubricating economics activities in any nation. This study seeks to empirically explore Developments in Money market Operations and Economic viability in Nigeria. Economic viability is proxy by Gross Domestic Product (GDP); the variable adopted in this study as the explained variable and Money market instruments commonly used in Nigeria served as the explanatory variables. The data used for empirical estimation which covered the period 1981 to 2011 were sourced from CBN statistical Bulletin, 2011 and analyzed by Multiple Regression Model (MRM) technique. The empirical findings substantially attest to strong linear relationship between variables, though the growth trends of GDP and its determinants in a graphic representation appear to cast doubts on whether Money market operations made significant contributions to GDP in the period under review. Interestingly, the summary statistics of the model as indicated by the Coefficient of determination (R2) and ANOVA F-Statistics showed that the estimated model passed the test of overall significance at all significant levels, implying that a long run relationship exists between Money market operations and economic growth in Nigeria. Though, the study data relates solely to the Nigerian economy, it has strong relevance and implications for developing and emerging economies and monetary agencies globally. The findings serve as additional contribution to other research thoughts in this field of knowledge and for its great impact on GDP, it is recommended that monetary authorities should initiate policies that re-invigorates Money market operations and also be proactive in their surveillance role in order to check practices that could sabotage market soundness.*

***Key Words:*** *Developments, Money market, Money market instruments, Economic viability, Gross Domestic Products (GDP), Nigeria*

1. **Introduction**

Financial markets are vital components of the financial system of every country. The Nigerian financial market is made up primarily of the Capital market, the Money market and some other sub-markets. CBN (2007) citing Onyido (1994) opined that the Money market primarily exist as a means of liquidity adjustment, while the Capital market provides the bridge by which the savings of surplus units may be transformed into medium and long term investment in deficit units. In other words, while the Money market provides the mechanism for short-term funds of less than one year, the Capital market provides long-term funds with maturity period of over one year through bonds and equity. The importance of these markets in any modern economy is enormous. The markets afford households, firms and even government the opportunity to raise funds from the savings of surplus economic units.

However, for the purpose of our research study, our focus is on Money market operations. Essentially, Money market is that segment of a financial market where securities and financial assets with high liquidity and short-term maturity periods are traded. As ‘Money’ assumes the form of commodity, it become a conduit for borrowing and lending very liquid assets and thus Money market serves as the best source to invest liquid assets in every economy. Money market transactions are carried out with instruments commonly referred to as ‘paper’. Major finance firms typically raise funds by issuing large amounts of Asset Backed Commercial Papers (ABCP). Usually, ABCP is secured by the pledge of eligible assets such as Mortgage loans while in some cases, large companies employ the services of banks to issue commercial paper on their behalf via commercial paper lines. According to Frank et al (2002), various other Money market instruments exist and these include [Treasury bills](http://en.wikipedia.org/wiki/Treasury_security#Treasury_bill), [Commercial paper](http://en.wikipedia.org/wiki/Commercial_paper), [Bankers' Acceptances](http://en.wikipedia.org/wiki/Bankers%27_acceptance), [Deposits](http://en.wikipedia.org/wiki/Deposit_%28finance%29), [Certificates of Deposit](http://en.wikipedia.org/wiki/Certificate_of_deposit), [Bills of Exchange](http://en.wikipedia.org/wiki/Bill_of_exchange), [Repurchase Agreements](http://en.wikipedia.org/wiki/Repurchase_agreement), Federal funds, and Short-lived mortgage and [Asset-Backed Securities](http://en.wikipedia.org/wiki/Asset-backed_security). These instruments are considered cash equivalent because they are highly liquid short-term debt securities and can be sold in the market easily at low cost

Participants in the Money market include [financial institutions](http://en.wikipedia.org/wiki/Financial_institution) and dealers in Money who wish to either borrow or lend typically for a short periods of time, usually, a year. Currently, the major participants in Money market operations in Nigeria include Banks, Discount Houses, Deposit Money Banks (DMBs) otherwise referred to as Commercial banks, and Microfinance institutions. These institutions, especially banks carry out the core activity of Money market operations which consists of [interbank lending](http://en.wikipedia.org/wiki/Interbank_lending_market); the segment of the market operating bank-to-bank transactions in the Money market. In other words, the interbank market consists of banks borrowing and lending to each other using Money market instruments such as [Commercial paper](http://en.wikipedia.org/wiki/Commercial_paper), [Repurchase agreements](http://en.wikipedia.org/wiki/Repurchase_agreement) et cetera. [Banks](http://en.wikipedia.org/wiki/Bank) are major players in several segments of the market for the purpose of meeting their reserve requirements and managing day-to-day liquidity needs. They buy and sell short-term uncollateralized loans in the [Federal Bonds market](http://en.wikipedia.org/wiki/Federal_funds). Internationally, banks transact in the [Eurodollar](http://en.wikipedia.org/wiki/Eurodollar) market. The [Eurodollar](http://en.wikipedia.org/wiki/Eurodollar) market is dollar denominated deposit liabilities of banks located outside the United States (US) utilized to meet serious liquidity requirements. Investors in Money market instruments can sell their holdings prior to maturity since active [secondary markets](http://en.wikipedia.org/wiki/Secondary_market) exist for almost all instruments transacted and for this reason, the Money market is also an [Over-The-Counter](http://en.wikipedia.org/wiki/Over-the-counter_%28finance%29) (OTC) market.

In Nigeria, the major Money market instruments include Treasury bills (TB), Treasury Certificate (TC), Eligible Development Stock (EDS), Certificate of Deposit (CD), Commercial Papers (CP), Banker Acceptances (BA) and Federal Government Bonds (FB). These instruments may be defined in terms of maturity period, characteristics or usage. Treasury bills (TB) are short-term debt instruments used majorly by the government to borrow short-term funds with maturity period of 90, 180, and 360 days. Nzotta (2004) posits that Treasury bills offer investor zero credit risk and the interest earned are not subject to withholding tax. On the other hand, Treasury certificates are short-term obligation issued by government and have maturity period of 12 to 36 months with interest payable by coupon redemption. Treasury Certificates have similar features to Treasury Bills in all respect, the only difference being their tenure. Eligible Development Stocks are fairly long-term debt instruments issued by the government through the Central Bank of Nigeria, (CBN). Nzotta (2004) argued that in an attempt to improve the liquidity and profitability of banks, the Central Bank of Nigeria classified government development stocks of less than three years to maturity as ‘eligible liquid assets’ for purposes of computing the liquidity ratios of banks. Certificates of deposit (CDs) are certificates issued by banks against deposited funds for definite period of time ranging from 3, 6, 9 to 12 months. They are one of several types of interest-bearing ‘time deposits’ offered by banks and are seldom referred to as ‘Fixed Deposit’ in Nigeria. CDs are instruments through which, bank customers lend to bank certain amount of money for a fixed period of time, and in exchange, the bank agrees to repay the money with specified interest rate at the end of the time period. Commercial paper refers to unsecured short-term promissory notes with maturities of up to 270 days issued by corporations at discount to face value and redeemed at face value. Typically, Commercial papers are issued by large, well-established and credit-worthy companies with unused lines of bank credit and as well by financial institutions, thus they carry low default risk. On the other hand, Banker Acceptance (BA) is an instrument issued by a corporation but guaranteed by a bank or in the name of a bank, indicating that the bank shall pay the face value of the instrument as at some future time. In other words, a BA is a draft or [bill of exchange](http://glossary.reuters.com/index.php?title=Bill_of_Exchange) drawn on and accepted by a bank. Banker Acceptances are similar to Treasury-bills and are regularly used financial instruments in Money market operations and in international trade and may be traded at a discount from face value on the secondary market. FGN Bonds (FB) are issued by **Debt Management Office (DMO);** a Federal Government Agency in Nigeria authorized by statute to issue same on behalf of the Federal Government, thus, FGN bonds are Federal Government of Nigeria securities. Since 2003, DMO has been regulating the activities of the FGN bonds market, while the CBN acts as the Issuing House and the Registrar. In this research study, these Money market instruments constitute our explanatory or independent variables.

The viability of an economy is measured in terms of the growth of Output produced annually, thus economic viability or economic growth has to do with the positive trend in the level of output in that economy. Output signifies the total value of all goods and services produced in a country at a given period of time, usually a year. Blanchard (2011) explained that Output can be measured as total income, or it can be viewed from the productive side and measured as the total value of final goods and services or the sum of all value added in the economy. As a macroeconomic phenomenon, Output is measured in terms of Gross Domestic Product (GDP). The concept of GDP cannot be ignored or over-emphasized in the field of macroeconomics, essentially, as it relates to the comparative state of the economy of nations. The relevance of GDP in every economy is enormous. It is the major indicator of a country economic viability because it is used to gauge the health of a country's [economy](http://www.investopedia.com/terms/e/economy.asp) and the living standard of its citizens. Agbada and Osuji (2013), opined that indeed, the best index to understand a country's economy viability is by looking at its output in terms of Gross Domestic Product (GDP). For this reason, Economic viability is proxy by Gross Domestic Product (GDP) and adopted in this research study as the dependent variable.

**1.1 Statement of the Problem**

The growth path of the Nigerian economy over the past two decade has been dwindling resulting in distresses and liquidation of financial institutions such as banks. The oil and gas sector is gradually slowing down and the inability of Small and Medium Enterprises (SMEs) and other economic units to raise funds for productive purposes is hindering the growth of the economy generally. Without mincing words, the economy is on the slow track. There is consensus in theoretical and empirical literatures that Economic viability in terms of growth in Gross Domestic Product (GDP) is a function of a number of interacting economic variables. A vibrant Money market serves as a core source of raising short-term funds for lubricating economic activities and that has the capability of improving positively growth in GDP. Against this backdrop, this paper seeks to empirically explore developments in Money market operations and economic viability in Nigeria with the sole aim of determining how Money market activities could enhance and influence economic viability in Nigeria.

* 1. **Hypotheses Formulation**

We deduce our hypotheses from the Statement of the problem and based on it, the following null hypotheses is formulated:

Ho ı: There is no relationship between Money market operations and Economics viability in Nigeria.

**1.3 Limitation of Study**

This empirical study employed data sourced from the Statistical Bulletin of the Central Bank of Nigeria (CBN), 2011 for the period 1981 to 2011. The data relates solely to the Nigerian economy and so are the study findings. However, the results of the study have important implications for global economies, the reason being that Money market operations and instruments utilized in the study constitute vital components of the financial system of nations cum the international financial system.

This research study is divided into the following segments. Section 1 had the introduction and Section 2 reviews related literatures to the study, Section 3 deals with the research methodology and model specification, Section 4 presents data, graphic representation and empirical results and analysis while Section 5 is summary, conclusion and recommendations deduced from the study.

1. **Review of Related Literatures**

We infer from empirical and theoretical literatures that Money market operations provide the mechanism through which short-term securities and other financial assets with maturity period of less than one year are traded. Money market instruments which are highly liquid assets provide facilities and means for short-term lending and borrowing. Ezirim (2005) argued that in line with the general observations on financial markets, Money market may be decomposed into primary markets and secondary markets. The trading of new issues of short-term securities with maturities of one year or less occurs in the primary markets and the trading of existing short-term securities takes place in the secondary markets. Generally, Money market generates the largest proportion of short-term funds for productive economic activities and thus constitutes an awesome segment of every economy of the world. Economic theories also have it that a well-developed, smoothly operating Money markets plays crucial roles in contributing to the efficiency and wellness of an economy and that there is a strong positive relationship between Money market developments and economic growth or viability. According to Rigg and Zibell (2009), Money market plays a key role in bank liquidity management and the transmission of monetary policy; that a developed, active and efficient interbank market enhances the efficiency of Central banks’ monetary policy, transmitting its impulse into the economy. As a matter of fact, research findings on the finance-growth nexus have offered a much daring appraisal of the causal relationship at the firm-level, industry-level, and cross-country level and suggest that the level of Money market development exerts a large, positive impact on economic viability and growth. Efficient Money market influences the direct flow of savings and investment in the economy in ways that facilitate capital accumulation for productive purposes. Jalloh (2013) opined that the existence of Money markets facilitate trading in short-term debt instruments to meet short-term financial needs of large users of funds such as governments, banks and allied institutions.

One of the primary uses of Money market instruments is the control of inflation. Monetary policy focuses on how a country determines the size and rate of growth of its [money supply](http://www.investopedia.com/terms/m/moneysupply.asp) in order to check or control [inflation](http://www.investopedia.com/terms/i/inflation.asp). Thus, formulating a nation's [monetary policy](http://www.investopedia.com/terms/m/monetarypolicy.asp) is extremely crucial particularly when it comes to promoting sustainable [economic growth](http://www.investopedia.com/terms/e/economicgrowth.asp) in a country. To control inflation, monetary authorities trade Money market instruments which are largely liquid assets or securities in Open Market Operation (OMO) activities. The Central Bank of Nigeria (CBN) buys and sells government security assets which are Money market instruments such as [Treasury bills](http://www.investopedia.com/terms/t/treasurybill.asp), Treasury certificates; FGN [bonds](http://www.investopedia.com/terms/t/treasurybond.asp) et cetera to regulate the level of the money supply. Depending on its goal, CBN at one time buys securities from banks and pump money into the system to increase productive economic activities and at another time sells security assets to banks which consequently reduce funds for credits and resultantly leads to limiting access to capital. Ultimately, this slows down economic growth with implication for GDP as investments decrease.

Money market operations are an integral part of a nation’s financial market. In Nigeria, the financial market constitutes primarily of Money and Capital markets. Capital markets provides the mechanism by which the savings of surplus economic units may be used to finance medium and long-term investments in deficit economic units and as emphasized earlier, the Money market primarily exists as a means of liquidity adjustment. Accessing thefinancial market for capital through an efficient functioning financial system lessens a country’s reliance on foreign aid and other forms of external borrowing. The issue of efficiency of the financial market implies the potential to stimulate additional savings and/or investments, guarantee efficient intermediation process, provides short and long term liquidity for productive purposes and enhance the welfare of participating economic units. Pedro and Erwan (2004) opined that financial market development raises Output by increasing the capital used in production and by ensuring that capital is put into best uses. According to Tharawanji (2007), countries with deeper financial markets face less severe business cycle, output (GDP) contraction and lower chances of an economic downturn compared to those with less developed financial market. Nieuwerbugh et al (2005) studied the long term relationship between economic growth and financial market developments and conclude that financial market developments substantially affect economic growth.

The evolution of International Money Market (IMM) has re-invigorated world trade since inception.Twomey (2010), posits that 'International Money Market (IMM) isa division of the Chicago Mercantile Exchange (CME) that deals with the trading of currency and interest rate futures and options. The primary purpose of the IMM is to trade [currency futures](http://www.investopedia.com/terms/c/currencyfuture.asp), a relatively new product previously studied by academics as a way to open a freely traded exchange market to facilitate trade among nations. [Roosa](http://www.britannica.com/bps/user-profile/2517) (2013) contends that since 1944 most of the countries that have domestic Money markets or that play a role in the International Money market have been joined together in the [International Monetary Fund](http://www.britannica.com/EBchecked/topic/291108/International-Monetary-Fund-IMF) (IMF) and that involves pooling of part of the foreign exchange reserves (including gold) of more than 100 member countries. Drawings on the pool may be made by member countries to meet some of the reserve drains arising from balance of payments deficits and in amounts related to the quota that each has subscribed’. Jalloh (2013) affirmed that a well functioning financial market is very crucial for the promotion of global financial integration. An efficient functioning domestic financial market can better position a country’s competitiveness in the markets for global capital. The ultimate goal of the International Money market is to help boost world trade and thus the GDP levels of participating nations.

**3.0 RESEARCH MOTHODOLOGY**

**3.1 Variables and Data for the Regression Estimation**

This research study seeks to investigate empirically developments in Money market operations and economic viability in Nigeria. Economic viability is proxy by Gross Domestic Product (GDP), and represents our dependent or explained variable. On the other hand, the various Money market instruments used commonly in Nigeria are our independent or explanatory variables. These include: [Treasury bills](http://en.wikipedia.org/wiki/Treasury_security#Treasury_bill) (TB), Treasury Certificate (TC), Eligible Development Stocks (EDS), [Certificates of Deposit](http://en.wikipedia.org/wiki/Certificate_of_deposit) (CD),[Commercial paper](http://en.wikipedia.org/wiki/Commercial_paper)s (CP), [Bankers' Acceptances](http://en.wikipedia.org/wiki/Bankers%27_acceptance) (BA) and FGN Bonds (FB). The data utilized for the regression estimation were secondary data sourced from the 2011 edition of the Statistical Bulletin of the Central Bank of Nigeria (CBN) for the period 1981 to 2011.

**3.2**  **Specification of the Econometric Model**

The statistical technique of Multiple Regression Model (MRM) analysis was used to obtain the estimates; employing IBM Statistical Package for Social Science (SPSS) Statistics 20. The mathematical expression of the regression model is given as:

Y = *f* (X1, X2, X3, X4, X5, X6, X7) ………………………………….(Eqn 1)

Where: Y = Dependent variable and

X1, X2, X3, X4, X5, X6, X7 =. Independent variables

According to Ojamieruaye and Oaikhenan; (2001;53) regression theory postulates that there exist a stochastic relationship between a variable Y and a set of other variables (say, X1; X2;…………..Xk). In other words, Y referred to as the dependent or explained variable depends on other observed variables, (X1; X2; ………..; Xk) called the explanatory variables, and an unobserved disturbance or error term usually denoted by ‘µ’. The disturbance or error term signifies that the relationship between economic variables are generally inexact.. For the purpose of this research study, the econometric version of the Multiple Regression Model is expressed as follows:

Y = β0  + β1 X1  + β2 X2 + β3 X3  + β4 X4  + β5 X5 + β6 X6 +  β7 X7  + µ ………….(Eqn 2)

Where: Y = Dependent variable and

X1, X2, X3, X4, X5, X6, X7 =. Independent variables

β1; β2 …… β7  = The parameters of the independent variables of the model or slope coefficients

β0  = The intercept (the expected value of Y when all the explanatory variables assume zero as value.

µ = Disturbance or error term (a random or stochastic variable)

Substituting Economic viability and Money market variables into the above Multiple Regression Model (MRM), we specify a model to link the explained variable, Gross Domestic Product (GDP) and the explanatory variables, Treasury Bills, (TB), Treasury Certificate (TC), Eligible Development Stocks (EDS), [Certificates of Deposit](http://en.wikipedia.org/wiki/Certificate_of_deposit) (CD), [Commercial paper](http://en.wikipedia.org/wiki/Commercial_paper)s (CP), [Bankers' Acceptances](http://en.wikipedia.org/wiki/Bankers%27_acceptance) (BA) and FGN Bonds (FB) as follows.

GDP = β0  + β1 TB + β2TC + β3EDS + β4 CD + β5CP + β6BA + β7FB + µ ….………..(Eqn 3)

Where:

GDP = Gross domestic product (Output)

TB = Treasury Bills; TC = Treasury Certificate; EDS = Eligible Development Stocks; CD = [Certificates of Deposit](http://en.wikipedia.org/wiki/Certificate_of_deposit); CP = [Commercial paper](http://en.wikipedia.org/wiki/Commercial_paper)s; BA = [Bankers' Acceptances](http://en.wikipedia.org/wiki/Bankers%27_acceptance" \o "Bankers' acceptance) and FB = FGN Bonds.

β1; β2; ………β7 = The parameters for the independent variables or slope coefficients

β0 =  The intercept; the expected value of GDP when all the explanatory variables assume zero as value.

µ = Disturbance or error term (a random or stochastic variable)

1. **Presentation and Analysis of Empirical Results**
   1. **Presentation and Description of Results**

The data for the empirical estimation sourced from the 2011 edition of the Statistical Bulletin of the Central Bank of Nigeria (CBN) for the period 1981 to 2011 are presented on a tabular form as per table 1 in the appendix. However, for ease of discussion of trends in the data, they are represented in a graphic form.

* + 1. **Graphic Representation of Data**

Figure 4.1: Dependent variable (GDP) and the Independent variables

**Source:** Researcher’s graphical representation, 2014

Figure 4.1 presents the graphic representations of our data. The graph depicts the trends in the growth of our dependent variable GDP and Money market instruments representing our independent variables namely, [Treasury bills](http://en.wikipedia.org/wiki/Treasury_security#Treasury_bill) (TB), Treasury Certificate (TC), Eligible Development Stocks (EDS), [Certificates of Deposit](http://en.wikipedia.org/wiki/Certificate_of_deposit) (CD), [Commercial paper](http://en.wikipedia.org/wiki/Commercial_paper)s (CP), [Bankers' Acceptances](http://en.wikipedia.org/wiki/Bankers%27_acceptance) (BA) and FGN Bonds (FB).The graphs yielded very robust and distinct results depicting the growth relationship between GDP and Money market variables in the period under review. The growth trends in GDP and Money market instruments were very low between the periods 1981 to 1983 but thereafter, GDP grew at a faster rate to 2001 from which point it went astronomically high compared to Money market instruments whose growth trends retarded drastically and appeared dwindled by 2011. A close observation of the graph reveals that GDP growth experienced a little distortion in 2007 to 2008 which appear to reflect the impact of the global financial crises that occurred in most economies of the world at that time. The impact of the financial crises appeared to have hindered Money market operations severely resulting in a downwards growth movement of outstanding balances thereafter.While the growth of GDP went sky high after the financial crises, Money market operations appeared retarded as outstanding balances growth movements appeared decelerated towards 2011. From the foregoing findings, the contrast in the growth trends of GDP and the explanatory variables appear to suggest a non-correlation relationship and also cast doubts on whether Money market operations made significant contributions to GDP in the period under review.

**4.2: Empirical Analysis of Results**

For the purpose of the analysis of results obtained from the empirical estimation, we have utilized thePearson correlation coefficient which serves to measure the strength of the linear relationship between the variables; the t-statistics parameters or slope coefficients of the independent variables which attest to the significance of each of the independent variables; the coefficient of determination otherwise referred to as the adjusted R square (R2) which according to Barenson and Levine (1998) indicates the proportion of variation that is explained by the independent variables in the regression model and the F-statistics of the Analysis of Variance (ANOVA) which attests to the overall significance of the model. In this research study, the ANOVA result showed the overall effect of all Money market variables on GDP – the Economic viability variable.

**4.2.1 Pearson Correlation Coefficient Matrix**

The coefficients shown in the Pearson Correlation Coefficient matrix in table 4.2 serves to attest to the strength of the linear relationship between the variables.

**Table 4. 2:** Pearson Correlation Coefficient Matrix of variables

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | GDP | Treasury bills  TB | Treasury Certificate  TC | Eligible Dev.Stock  EDS | Certificate of Deposit  CD | Commercial Papers  CP | Banker Acceptances  BA | FGB Bonds  FB |
| GDP. | 1 |  |  |  |  |  |  |  |
| TB | .894 | 1 |  |  |  |  |  |  |
| TC | -.019 | -.226 | 1 |  |  |  |  |  |
| EDS | .736 | .469 | .264 | 1 |  |  |  |  |
| CD | .307 | .181 | .475 | .536 | 1 |  |  |  |
| CP | .729 | .455 | .339 | .759 | .438 | 1 |  |  |
| BA | .943 | .849 | -.080 | .745 | .292 | .757 | 1 |  |
| FB | .935 | .791 | .064 | .701 | .331 | .614 | .818 | 1 |

**Source:** Author’s computation using IBM SPSS Statistics 20; 2014

From the Pearson Correlation Coefficient Matrix table, it is observed that the correlation coefficients between GDP and most of the explanatory variables are relatively very high suggesting a strong relationship between them. For example, the correlation coefficient between Gross Domestic Product (GDP) and Banker acceptances, FGN Bonds and Treasury Bills stood at .943, .935 and .894 indicating that the linear relationship between GDP and those explanatory variables are 94.30%, 93.50% and 89.40% respectively. Other outstanding correlation coefficients are those between GDP and Eligible Development Stock and GDP and Commercial Papers standing at .736 and .729, meaning a linear relationship of 73.6% and 72.9% respectively. However, the coefficient between GDP and Treasury Certificate had a negative sign at -.019 which appears to suggest that there is no relationship. This result counters apriori expectation and the reason for this may be for the fact that Treasury certificate were converted into treasury bonds with effect from 16th March 1996, from which date treasury certificate outstanding had a nil balance.

From the results of the Pearson correlation coefficient matrix which exhibited high coefficients, thus, attesting to strong linear relationship, we reject the Null hypothesis of no relationship and accept the Alternative hypothesis of a relationship. We therefore conclude that there is a strong linear relationship between Money market operations and Economic viability (GDP) in Nigeria.

**4.2.2 Regression Analysis: Hypothesis Testing.**

In the empirical estimation, GDP was regressed on its determinants, namely: [Treasury bills](http://en.wikipedia.org/wiki/Treasury_security#Treasury_bill) (TB), Treasury Certificate (TC), Eligible Development Stocks (EDS), [Certificates of Deposit](http://en.wikipedia.org/wiki/Certificate_of_deposit) (CD), [Commercial paper](http://en.wikipedia.org/wiki/Commercial_paper)s (CP), [Bankers' Acceptances](http://en.wikipedia.org/wiki/Bankers%27_acceptance) (BA) and FGN Bonds (FB) and the results are as displayed in tables 4.3; 4.4 and 4.5 below.

**Table 4.3** Coefficients (a)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Coefficientsa** | | | | | | |
| Model | | Unstandardized Coefficients | | Standardized Coefficients | T | Sig. |
| B | Std. Error | Beta |
| 1 | (Constant) | 121623.215 | 437988.749 |  | .278 | .784 |
| Treasury bills | 9.109 | 1.424 | .367 | 6.399 | .000 |
| Treasury Certificate | -16.256 | 19.962 | -.024 | -.814 | .424 |
| Eligible Deve. Stock | 2.571 | 1.258 | .091 | 2.044 | .053 |
| Certificate of Deposit | -53.173 | 32.400 | -.045 | -1.641 | .114 |
| Commercial Papers | 12.041 | 2.693 | .204 | 4.472 | .000 |
| Banker Acceptances | 41.130 | 32.241 | .103 | 1.276 | .215 |
| FGB Bonds | 4.617 | .522 | .388 | 8.836 | .000 |
| a. Dependent Variable: GDP at Cur. Basic Price | | | | | | |

**Source:** Regression Analysis Report using IBM SPSS Statistics 20; 2014

Table 4.3 displays the parameters for the independent variables or slope coefficients. Generally, the empirical results appeared robust and impressive. A large proportion of the independent variables exhibited high t-test coefficients attesting to strong linear relationship with GDP. In particular, FGN Bonds, Treasury Bills, Commercial Papers and Eligible Development Stock with t-test coefficients of 8.836; 6.399; 4.472 and 2.044 respectively passed the test of significance at all significant levels. However, a small proportion of the independent variable parameters counter apriori expectation. For instance, though, the t-test coefficient of Bank Acceptances variable exhibited a positive sign at 1.276, its value however exhibits a rather weak relationship. While the positive sign is in conformity with apriori expectation suggesting that the variable passed the test of statistical significance and qualifies it as a policy relevant variable to GDP, its small value counters its validity. The consequent empirical result of Banker Acceptances may be a reflection of over dependence on cash transactions by businesses in the Nigeria economy. The parameters of the independent variables or slope coefficients further revealed that Treasury Certificate and Certificate of Deposit with coefficients of -.814 and -1.641 respectively fail the test of significance. Obviously, these results without reservation, counter apriori expectation. In line with the results of Pearson Correlation coefficient, the effect of the conversion of Treasury Certificate into treasury bonds has become more obvious. Based on these results, Treasury Certificate and Certificate of deposit cannot be considered as being relevant to policy formulated to affect GDP.

**Table 4.4** Model Summary (b)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Model Summaryb** | | | | | |
| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate | Durbin-Watson |
| 1 | .995a | .990 | .987 | 1209758.379 | 1.227 |
| a. Predictors: (Constant), FGB Bonds, Treasury Certificate, Certificate of Deposit, Commercial Papers, Eligible Deve. Stock, Treasury bills, Banker Acceptances | | | | | |
| b. Dependent Variable: GDP at Cur. Basic Price | | | | | |

**Source:** Regression Analysis Report using IBM SPSS Statistics 20; 2014

Table 4.4 shows the results of the model summary. The summary statistics are indicated by the adjusted R square, otherwise referred to as the Coefficient of determination (R2) and the F-statistics of the Analysis of Variance (ANOVA). The Coefficient of determination (R2) indicates that the explanatory variables were able to account for 99.00% of total systematic variation in GDP. In other words, 99% of the variation in the GDP can be explained by Money market instruments serving as our explanatory variables. This result further lends reasons for the rejection of the null hypothesis of no relationship and acceptance of the alternative hypothesis of a relationship and thus affirming that there is a strong linear relationship between Money market operations and Economic viability (GDP) in Nigeria.

**Table 4.5** ANOVA (a)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **ANOVAa** | | | | | | |
| Model | | Sum of Squares | Df | Mean Square | F | Sig. |
| 1 | Regression | 3383498379364796.500 | 7 | 483356911337828.060 | 330.271 | .000b |
| Residual | 33660852716531.676 | 23 | 1463515335501.377 |  |  |
| Total | 3417159232081328.000 | 30 |  |  |  |
| a. Dependent Variable: GDP at Cur. Basic Price | | | | | | |
| b. Predictors: (Constant), FGB Bonds, Treasury Certificate, Certificate of Deposit, Commercial Papers, Eligible Deve. Stock, Treasury bills, Banker Acceptances | | | | | | |

**Source:** Regression Analysis Report using IBM SPSS Statistics 20; 2014.

Table 4.5 exhibits the results of the Analysis of Variance (ANOVA). The ANOVA statistics shows that the problem of serial correlation was not severe enough to weaken the results of our empirical estimations. As a matter of fact, the very high value of the F-statistics standing at 330.271 is overwhelming and awesome and attests to the overall significance of the model. Based on this classic result, we reject the null hypothesis of no relationship and accept the alternative hypothesis of a relationship. Indeed, the F – statistics value of 330.271 shows that the estimated model passed the test of overall significance at all significant levels.

1. **Summary, Conclusion and Recommendation**

This research study empirically investigates developments in Money market Operations and Economic viability in Nigeria. While Economic viability was proxy by Gross Domestic Product (GDP), the study examined the relationship between GDP and Money market instruments namely, [Treasury bills](http://en.wikipedia.org/wiki/Treasury_security#Treasury_bill) (TB), Treasury Certificate (TC), Eligible Development Stocks (EDS), [Certificates of Deposit](http://en.wikipedia.org/wiki/Certificate_of_deposit) (CD), [Commercial paper](http://en.wikipedia.org/wiki/Commercial_paper)s (CP), [Bankers' Acceptances](http://en.wikipedia.org/wiki/Bankers%27_acceptance) (BA) and FGN Bonds (FB) in the Nigerian economy for the period 1981 to 2011. Theoretical and empirical literatures affirmed that Money market operations provides instruments for effective liquidity management globally and acts as the core source of raising short-term funds for lubricating economics activities in any nation. For this baronial role, the importance of Money market operations particularly in developing and emerging financial systems and economies cannot be over-emphasized. The Data for the study were sourced from Central Bank of Nigeria (CBN) statistical Bulletin, 2011, analyzed by Multiple Regression Model (MRM) and estimated using IBM SPSS statistics 20. The findings were robust. The summary statistics of the model as indicated by the adjusted R square, otherwise referred to as the Coefficient of determination (R2) accounted for 99.00% of total systematic variation in GDP. In addition, the very high value of ANOVA F-Statistic which stood at 330.271 shows that the estimated model passed the test of overall significance at all significant levels.

Our conclusion drawn from these outstanding empirical results led us to reject the null hypothesis and accept the alternate hypotheses, affirming that the overall estimated model is significant. Though the contrast in the growth trends of GDP and explanatory variables as revealed by the graphic representation appear to cast doubts on whether Money market operations actually made significant contributions to GDP growth in the period under review, the empirical model summary results as displayed by the Coefficient of determination (R2) and the high value of ANOVA F-Statistics are overwhelming. Based on the empirical results, we conclude that development in Nigerian Money market operations and economic viability are co-integrated, implying that a long run relationship exists between Money market operations and economic growth in Nigeria. .

Against this backdrop, we strongly recommend that monetary authority should initiate policies that would encourage and re-invigorate Money market operations and also be proactive in their surveillance role in order to check practices that could undermine or sabotage market integrity and soundness. For effectiveness, policies must include means of effective implementation, monitoring and sanctions. It is also recommended that all economic stakeholders, monetary, regulatory and practitioners should combine efforts aimed at improving Money market operations, entrench modalities for achieving set economic goals that are favourable for a productive-based economy that ensures growth in GDP. The role of government is crucial in any economy; therefore, we recommend that government should deliberately and consciously provide the enabling environment for a vibrant and efficient financial system that promote short-term lending opportunities amongst economic units and financial institutions in particular. Finally, training and re-training of the workforce operating the system is strongly recommended because the advent of Information and Communication Technologies (ICT) has brought forward new innovations and methodologies for facilitating business transactions efficiently. The safe currency in any modern organization is ‘Competence’, the product of effective training. It ensures the safety and going concern of the organization.

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Appendix 1

Table 1 Value of Money Market Instruments Outstanding as at End-Period and GDP

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Period | Treasury Bils  (TB)  N’Million | Treasury Certificates  (TC)  N’Million | Eligible Development Stocks  (DS)  N’Million | Certificate of Deposit  (CD)  N’Million | Commercial papers  (CP)  N’Million | Banker Acceptances  (BA)  N’Million | FGN  Bonds  (FB)  N’Million | GDP at Current Basic Prices  N’Million |
| 1981 | 5,782 | 2,308 | 99 | 169 | 73 | 19 | - | 47,620 |
| 1982 | 9,782 | 1,669 | 94 | 346 | 110 | 21 | - | 49,069 |
| 1983 | 13,476 | 4,894 | 91 | 419 | 153 | 18 | - | 53,107 |
| 1984 | 15,476 | 6,413 | 87 | 261 | 157 | 19 | - | 59,623 |
| 1985 | 16,976 | 6,644 | - | 212 | 218 | 20 | - | 67,909 |
| 1986 | 16,976 | 6,655 | 15 | 262 | 259 | 18 | - | 69,147 |
| 1987 | 25,226 | 6,664 | 28 | 1,328 | 496 | 9 | - | 105,222 |
| 1988 | 35,476 | 6,795 | 6 | 38 | 1,861 | 669 | - | 139,085 |
| 1989 | 24,126 | 6,945 | - | 12 | 1310 | 737 | - | 216,798 |
| 1990 | 25,476 | 34,215 | - | 4 | 1743 | 953 | - | 267,550 |
| 1991 | 56,728 | 34,215 | - | 0 | 1,107 | 1,032 | - | 312,140 |
| 1992 | 103,327 | 35,241 | - | 537 | 1,575 | 128 | - | 532,614 |
| 1993 | 103,327 | 36,584 | 10 | 91 | 3,372 | 1,858 | - | 683,870 |
| 1994 | 103,327 | 37,343 | - | 15 | 5,253 | 4,660 | - | 899,863 |
| 1995 | 103,327 | 23,596 | - | 48 | 10,035 | 8,102 | - | 1,933,212 |
| 1996 | 103,327 | - | - | 105 | 8,024 | 12,200 | - | 2,702,719 |
| 1997 | 221,801 | - | - | - | 13,595 | 11,956 | - | 2,801,973 |
| 1998 | 221,802 | - | 790 | - | 7,252 | 17,474 | - | 2,708,431 |
| 1999 | 361,758 | - | 953 | - | 20,476 | 11,972 | - | 3,194,015 |
| 2000 | 465,536 | - | 2,406 | - | 19,003 | 31,774 | - | 4,582,127 |
| 2001 | 584,536 | - | 3,705 | - | 35,348 | 30,753 | - | 4,725,086 |
| 2002 | 584,536 | - | 1,128 | - | 36,978 | 32,214 | - | 6,912,381 |
| 2003 | 825,055 | - | 33,255 | - | 47,569 | 33,900 | 72,560 | 8,487,032 |
| 2004 | 871,577 | - | 32,759 | - | 80,115 | 24,003 | 72,560 | 11,411,067 |
| 2005 | 854,828 | - | 101,362 | - | 194591 | 41,124 | 250,830 | 14,572,239 |
| 2006 | 701,400 | - | 319,332 | - | 193,512 | 45,744 | 643,940 | 18,564,595 |
| 2007 | 574,929 | - | 694,061 | 2,498 | 363,370 | 81,834 | 1,186,160 | 20,657,318 |
| 2008 | 471,930 | 39,706 | 914,106 | - | 822,701 | 66,399 | 1,445,600 | 24,296,329 |
| 2009 | 797,483 | 52,577 | 1,229,050 | 50,500 | 509,079 | 62,244 | 1,974,930 | 24,794,239 |
| 2010 | 1,277,100 | 0 | 1,448,130 | 0 | 189,216 | 79,172 | 2,901600 | 33,984,754 |
| 2011 | 1,727,914 | 0 | 0 | 0 | 203,008 | 73,406 | 3,541,199 | 37,543,655 |

Source: CBN Statistical Bulletin, December, 2011 & 2012