

The Relationship between Macroeconomic Variables and Stock Market Index in Nigeria

Ifuero Osad Osamwonyi and Esther Ikavbo Evbayiro-Osagie

*Department of Banking and Finance, Faculty of Management Sciences,
University of Benin, Benin City, Nigeria
E-mail: ifuerosad@yahoo.co.uk*

KEYWORDS Nigerian Capital Market. Stock Prices. Interest Rates. Inflation Rates. Exchange Rates. Fiscal Deficit

ABSTRACT This study is an attempt to determine the relationship between macroeconomic variables and the Nigerian capital market index. It considers the yearly data of several macroeconomic variables of interest rates, inflation rates, exchange rates, fiscal deficit, GDP and money supply from 1975 to 2005; and it tries to reveal the relative influence of these variables on the 'All Share Index' of the Nigerian capital market. In pursuance of this, the Vector Error Correction Model (VECM) was used to study the short-run dynamics as well as long-run relationship between the stock market index and the six selected macroeconomic variables from the Nigerian economy. The major finding is that macroeconomic variables influence stock market index in Nigeria. It is recommended that the adoption of appropriate economic policies will be beneficial to the stock market index [a proxy for stock prices] and this in turn will result in needed growth in the capital market.

JEL Classification: E44, G12

INTRODUCTION

Economic theory and empirical studies consider stock prices and thus, market index to be one of the best indicators of changes in economic activity. This intellectual curiosity gained ascendancy in the last two decades due to the increasing belief that real economic activities often impact on stock prices. For instance, Chen et al. (1986) argued and empirically showed that movements in macroeconomic variables affect future dividends as well as discount rates, thus affecting stock prices. Smith (1990), in his study of the American stock price behaviour, observed that stock prices usually decline shortly (on average, for months), before a recession begins and rise shortly before a recession ends. Changes in consumption and investment opportunities are priced in capital markets, hence stock price changes are related to innovations in economic variables (Goswami and Jung 1997).

There exists a long-term relationship between the changes in stock prices and the macroeconomic variables. Fama (1981, 1990) and Chen et al. (1986) tested the relationships with the US economic data. Fama (1981) documents a strong positive correlation between common stock returns and real economic variables like capital expenditures, industrial production, real GNP, money supply, lagged inflation and interest rates. Chen et al. (1986), found that changes in aggregate production, inflation, short-term

interest rates, the maturity risk premium and default risk premium are the relevant economic factors.

The Nigerian economy has experienced significant changes in its macroeconomic aggregates in the recent past. The inception of the Structural Adjustment Programme (SAP) in 1986 came with fundamental economic reforms [a major aspect was the far-reaching liberalization of various sectors of the economy]. Similarly, the transition from a military to civilian rule in 1999 witnessed various programmes of deregulation, privatization and commercialization, with implications for stock market index.

The relationship between stock prices and the economy can be of a reversible model, viz: the stock market may influence the economy as found by Smith (1990), or the economy may influence the stock market (Amadi and Odubo 2002). This is the case of macroeconomic variables and the stock market index. Fundamental analysis beliefs that stock prices are influenced by changes in money supply, interest rates, inflation and other macroeconomic indicators. It employs a general equilibrium approach, stressing the interrelations between sectors as central to the understanding of the persistence and comovement of macroeconomic time-series.

While economic literature has been devoted to studies on the relationship between stock market returns and real macroeconomic activities in the developed economies like US and

Japan, there are very few attempts at unraveling this linkage in developing economies such as Nigeria. The nature of the relationship between stock prices [indeed, stock market index] and macroeconomic variables may differ between developed and developing economies. Therefore, this study attempts to examine the relationship between some macroeconomic variables [money supply, inflation, exchange rate, interest rate, and national income] and stock market index in Nigeria. The study covers the period 1975 to 2005 and uses data for the two hundred and seven quoted firms on the Nigerian Stock Exchange.

Review of Related Literature and Theoretical Underpinnings

Researchers have found out that 30-35% of changes in stock price can be attributed to economy-wide factors (Chandra 2004). The variables employed in this study are essentially economy fundamentals, thus the study will therefore provide more details on fundamental analysis. That is, stock price movement depends on the behaviour of fundamental factors. Thus, it can be argued that corporate earnings, which are themselves critical to stock price determination depend on such determinants as economic growth, prosperity and output growth, the availability of quality labour force as well as capital stock (Golob and Bishop 1997). There are other factors which directly or indirectly bear on economic growth and prosperity, and thus influence the behaviour of stock prices (Oaikhen 2002). Maysami et al. (2005) identified short and long-term interest rates, industrial production, price levels, exchange rate and money supply using cointegration for Singapore stock market. Other supporting literature includes Aga and Kocaman (2006), Abeyratna et al. (2004), Bilson et al. (1999), Bulmash and Trivoli (1991), Hondroyannis and Papapetrou (2001), Islam (2003), Emeni and Asein (2003) and Panetta (2002).

From the foregoing, it therefore means that there exist some key variables used to describe the state of the macro economy that an investor must monitor and forecast. The essence is to get an idea of the future corporate earnings and the payment of dividends and interests. These key variables include: Gross Domestic Product (GDP), Industrial Growth Rate, Capacity Utili-

zation, Savings and Investment, Price Level and Inflation, Interest Rates, Balance of Payments, Foreign Exchange Reserves and Exchange Rates, and Supply of Money. In this study, the researchers establish some empirical evidence relating selected macroeconomic variables to market index, a proxy for stock prices.

Interest Rate and Stock Prices

Interest rate varies with time, default risk, inflation rate, and productivity of capital, among others (Chandra 2004). Changes in interest rate encourage substitution between stock market and money market instruments, and speculative activities. According to Kevin (2000), the interest rates in the organized financial sector of the economy are guided within preferred range through monetary policy. However, for the unorganized financial sector, the rates are not controlled and may fluctuate widely depending upon the demand and supply of funds in the market. An investor has to consider the level and growth in interest rates prevailing in the different sectors of the economy, and evaluate their impact on the performance and profitability of companies. Chandra (2004) submits that a rise in interest rate depresses corporate profitability and also leads to an increase in the discount rate applied to equity investors; both of which have adverse impact on stock prices, and vice-versa. Therefore a rise in interest rate is expected to impact negatively on the performance of the organization.

Smith (1990) did a study on the United States' economy and found that stock prices jump immediately after (and sometimes before) the Federal Reserve announces a cut in the interest rate or discount rate, or Chase Manhattan announces a drop in its prime loan rate. Also, Goswami and Jung (1997), in a study on Korea economy found that stock prices are negatively correlated to long-term interest rates and positively related to short-term interest rate.

Fiscal Deficits and Stock Prices

Governments play an important role in most economies; the central budget they prepare annually provides information on revenues, expenditures, and deficit (surplus, in rare cases). The excess of governmental expenditures over governmental revenues represents the deficit. The

fiscal deficit has to be financed with government borrowings, which is done in three ways. First, the government can borrow from the Central Bank (ways and means). This leads to increase in money supply with an inflationary impact on the economy. Second, the government can resort to borrowing in domestic capital market. This tends to push up domestic interest rates and crowd out private sector investment. Third, the government may borrow from abroad. Investment analysts examine the fiscal deficit to assess how it is likely to impact on the stock market. A budget with a high surplus or deficit; a level of debt which is difficult to service; and a tax structure which provides disincentive for stock market investment, will have unfavourable influence on the stock market, otherwise, vice-versa (Chandra 2004). These are common in developing countries because of the need to build up infrastructure. Economic policies affect aggregate economic activities; which in turn have implications for stock prices (Geske and Roll 1983). Specifically, budget deficits impact on stock market activities and hence on stock prices through their effect on some macroeconomic variables. It is reasonable to expect that with rising deficits, stock prices in Nigeria would increase.

Money Supply and Stock Prices

Supply of money affects economic activities and that is why its control has been the chief function of the central monetary authority of any given economy (Osamwonyi 2003). Kevin (2000) classifies the supply of money as a leading indicator. M_1 refers to currency in circulation plus demand deposits; while M_2 is M_1 plus near monies, for example, time deposit. The researchers will adopt M_2 for this study. Many studies conducted using data from developed countries, came up with the interesting conclusion that money growth affects stock prices adversely (Davidson and Froyen 1982; Rozeff 1992). The consensus of opinion in this regard proceeds from the reasoning that money growth, except accompanied by growth in output of goods and services, serves to unleash inflationary spiral on the economy, driving stock prices downwards as a consequence; as rational economic agents diversify their wealth holdings away from financial assets (such as stocks and shares) to real (tangible) assets. This strategy is often adopted

to hedge against the erosive effect of inflation on financial assets (Udegbumam and Oaikhenan 2002). Following the widely held view and given the explosive growth in the Nigeria's money supply, we expect stock prices to be adversely and significantly affected by changes in this variable.

Inflation Rate and Stock Prices

Chandra (2004) stated that the effect of inflation rate on the corporate sector has been found to be bi-directional. While certain industries may benefit others tend to suffer. Researchers have studied the relationship between inflation and stock prices. In particular, Fama and Schwert (1977), present evidence that stock prices are negatively related to both the expected and the unexpected component of Consumer Price Index. It is believed that common stock should be a hedge against inflation. Feldstein (1980) argues that increase in the rate of inflation reduces share prices because of the interaction of inflation with the tax system. Summers (1981) claim that the above effect can explain a large fraction of the decline in share prices. The sources of this effect are the "historical cost" method of depreciation and the tax on nominal capital gains, both of which cause the net return on stocks to fall when inflation rises (Amadi and Odubo 2002). Another argument is that investors undervalue corporate stock during inflationary period because they (investors) fail to consider capital gain on corporate debt, and also they price stock to give an Earning Price Ratio that could be comparable to nominal rather than real interest rates. Conclusively, there is a negative relationship between inflation rate and stock prices.

Exchange Rate and Stock Prices

Exchange is the price of a unit of a given currency in relation to other currencies. The performance and profitability of industries and companies that are major importers or heavy users of imports are considerably affected by the exchange rate of the Naira against major currencies of the world (Osamwonyi 2003). Exchange rate is a product of a country's external trade and directly related to the balance-of-payments. Balance-of-payments deficit and the level of external reserve usually influence ex-

change rate. There is paucity of literature on the effect of exchange rate on stock price behaviour. The theoretical postulation states that there is a positive relationship between exchange rate and stock prices. Maku and Atanda (2010) shows that stock prices and depreciating Naira rate are positively related.

Gross Domestic Product (GDP) and Stock Prices

The growth rate of the Gross Domestic Product (GDP) and the growth rate of the economy have positive relationship. The higher the growth rate of GDP, other things being equal, the more favourable it is for the stock market (Chandra 2004). Equity prices may rise due to the potential for higher profits from a healthy business climate.

METHODOLOGY

The population of the study consists of firms quoted on the Nigerian Stock Exchange from the year 1975 to 2005. The characteristic of the population that is of interest to the researcher is the market index, which will be related to selected macroeconomic variables.

The data requirements for this methodology include secondary information on key Nigerian macroeconomic variables such as stock prices, inflation rate, interest rate, money supply, Gross Domestic Product, exchange rate and fiscal deficit. Data on interest rate, inflation rate, exchange rate, money supply, fiscal deficit and Gross Domestic Product (GDP) were sourced from various issues of the Statistical Bulletin and Annual Report and Statement of Accounts of the Central Bank of Nigeria. However, data on stock prices were sourced from the Fact Book published by the Nigerian Stock Exchange (various issues). The sample period covers 1975 to 2005, consisting of 31 annual observations for each variable. On account of lack of consistent real series, nominal values of the variables in the specification will be use in estimating the model.

The equation specified is based on the intuitively plausible assumption that stock prices and thus stock market index can be explained by extraneous factors [market fundamentals in this case]. The model is specified in its functional form as follows:

$$SMI = f(IR, IFR, FD, ER, Ms, GDP) \dots\dots\dots (1)$$

With the variables defined as follows:

SMI - Stock market index
 IR - Interest Rate
 IFR - Inflation Rate
 FD - Fiscal Deficit
 ER - Exchange Rate
 Ms - Money Supply
 GDP - Gross Domestic Product

The model can be restated as:

$$SMI_t = \alpha_0 - \alpha_1 IR_t - \alpha_2 IFR_t + \alpha_3 FD_t + \alpha_4 ER_t - \alpha_5 Ms_t + \alpha_6 GDP_t + \varepsilon_t \dots\dots\dots (2)$$

A priori signs are:

$$\alpha_1 < 0, \alpha_2 < 0, \alpha_3 > 0, \alpha_4 E > 0, \alpha_5 < 0, \alpha_6 > 0$$

For the method of analysis, this study will employ cointegration and therefore Error Correction Modeling technique because time series by their nature are non-stationary. There are similar studies that have applied ECM technique with data from other capital markets such as Maysami et al. (2005), Maysami and Koh (2000), Islam and Watanapalachaikul (2003), Maysami and Sim (2002), and Maysami and Sim (2001). Application of the normal OLS regression may yield spurious result. Therefore, this procedure involves determining the time series properties of the data, testing for cointegration among the variables and thereafter specifying an error correction model, which will help in investigating both the short and long run impacts of the identified variables on the stock market index.

RESULTS AND DISCUSSION

The first stage is to test for the stationarity properties of the variables by employing the Unit Root Test. The results obtained showed that four of the variables passed the unit root test in their level form, while the other four variables passed the test in first difference form. See Table 1 for a summary of the unit root test results. The Augmented Dickey-Fuller [ADF] expression includes an intercept and a linear trend (this is shown in column three of Table 1.

From Table 1, the following variables, Gross Domestic Product (GDP), Inflation Rate (IFR), and Money Supply (M2) are in their level form, that is integrated of order zero (0). At this order of integration, their ADF test statistics (-3.2679), (-3.3892), and (-3.3557) are greater than their critical value at 95% critical ADF statistics (-2.9665), (-2.9665) and (-2.9665) respectively in their absolute terms. While variables like Ex-

Table 1: Summary of unit root test results

Variables	Order of integration	ADF test statistics	Critical ADF statistics
ER	I(1)	-3.2055	-2.9705 at 5%
FD	I(1)	-6.0269	-3.6852 at 1%
IR	I(1)	-3.3253	-2.9705 at 5%
IFR	I(0)	-3.3892	-2.9665 at 5%
GDP	I(0)	-3.2679	-2.9665 at 5%
M2	I(0)	-3.3557	-2.9665 at 5%
SMI	I(1)	-3.8687	-3.5796 at 5%
Et	I(0)	-3.3004	-2.9665 at 5%

change Rate (ER), Fiscal Deficit (FD), Inflation Rate (IR) and Stock Market Index (SMI) are in their first difference form, which are integrated at order one (1). At this order of integration, their ADF test statistics (-3.2055), (-6.0296), (-3.3253) and (-3.8687) are greater than their critical value of ADF statistics (-2.9705), (-3.6852), (-2.9705) and (-3.5796) respectively at 95% confidence interval except for Fiscal Deficit which is at 99% confidence level. Therefore, the variables in our model specifications are stationary. Thus, we can go further to test for cointegration.

Testing for cointegration then entails testing the order of integration of the error term in the relationship. For the purpose of this study therefore, testing for cointegration implies testing for stationarity in the residuals of the regression equation. From Table 1, the residual (Et) is stationary, that is, it is I(0). At this order of integration, its ADF test statistic (-3.3004) is greater than the critical value at 95% critical ADF statistic (-2.9665) in absolute terms. Since the residuals is stationary, the variables are said to be cointegrated and therefore do not have the tendency to deviate from their linear relationship by an ever growing amount.

The third stage generates the Vector Error Correction Model [VECM]. This provides the

short-run and long-run relationship between SMI and the selected economic variables. The equations of the VECM are reported in Table 2, and they represent the short-run dynamics of the system.

In equation form:

$$SMI = 1850.24 - 73.87M2 - 34.52IR + 22.84IFR - 15.50GDP + 0.91FD + 125.10ER + 2834.39$$

The results contained in the table show the short-run relationship between SMI as the dependent variable and MS, IR, IFR, GDP, FD and ER as the independent variables. Interest rate and GDP impact adversely on SMI, though not statistically significant. Money supply has an adverse but significant relationship with SMI at 10% level of significance. From the result it can be deduced that a 1% increase in interest rate, GDP and money supply will lead to 34.5%, 15.5% and 73.9% decrease in SMI respectively. On the other hand, inflation rate, fiscal deficit and exchange rate are positively related to SMI. Exchange rate is significant at 1% level. It therefore means that a 1% increase in inflation rate, fiscal deficit and exchange rate will lead to 22.8%, 0.9% and 125.1% increase in SMI. The sign of GDP did not confirm the *a priori* expectation while the others did. The negative reaction of the capital market in Nigeria to increases in GDP is not immediately explainable.

Given the value of R^2 , it can be concluded that the independent variables explain over 81% of the systematic variations in stock market index during the period studied. The t-statistic shows money supply and exchange rate as the only variables that influence SMI significantly in the short-run. The F-statistic is significant at 1% level, showing a good fit of the model. The Durbin-Watson statistic shows absence of autocorrelation problem, hence the regression estimates seem unbiased. Using the Vector Error Correction Model, the long-run equilibrium

Table 2: Short-run static model of stock market index and economic variables

Dependent variables	Independent variables	Coefficient	t-Statistic	Probability
SMI	M2	-73.8743	-1.9703	0.0604
	IR	-34.5239	-0.2404	0.8121
	IFR	22.8369	0.6189	0.5418
	GDP	-15.4997	-0.5293	0.6015
	FD	0.9096	0.12671	0.2173
	ER	125.1005	10.4322	0.0000
	C	1850.243	1.2255	0.2323
	R ²	0.85		
	Adjusted R ²	0.81		
	F-statistic	23.1173(0.00)		
	Durbin-Watson	2.01		
	S.E. of Regression	2834.389		

Table 3: Over-parameterized model of SMI and economic variables

<i>Dependent variables</i>	<i>Independent variables</i>	<i>Coefficient</i>	<i>t-Statistic</i>	<i>Probability</i>
DLSMI	DLSMI (-1)	0.5934	2.4859	0.0262
	DIR	-0.0046	-0.2119	0.8353
	DIR (-1)	0.0118	0.5598	0.5845
	DER	-0.0002	-0.0772	0.9394
	DER (-1)	0.0008	0.2229	0.8268
	DLRGDP	0.8868	1.4565	0.1673
	DLRGDP (-1)	-0.3770	-0.7226	0.4818
	DLM2	-0.0686	-0.1691	0.8681
	DLM2 (-1)	0.0778	0.1770	0.8621
	DLCPI	0.7003	1.6605	0.1190
	DLCPI (-1)	-0.2382	-0.6056	0.5545
	DTB	0.0004	0.0378	0.9704
	DTB (-1)	-0.0046	-0.3570	0.7264
	RESIDUAL (-1)	-0.7182	-2.7768	0.0148
	C	-0.0283	-0.2536	0.8035
	R ²	0.67		
	Adjusted R ²	0.55		
	F-statistic	2.0633(0.09)		
	Durbin-Watson	2.2001		
	S.E. of Regression	0.1766		

relationship between stock market index and macroeconomic variables is determined. Thus, the results obtained from the over-parameterized model for thirty-one (31) yearly observations long-run analysis are reported in Table 3.

The results contained in the table show the long-run relationship between SMI as the dependent variable and MS, IR, CPI, RGDP, TB and ER as the independent variables. The results show that there exist some relationship between SMI and macroeconomic variables, but only lagged SMI was significant at 1 percent level.

The parsimonious model derived from the above over-parameterized model is stated below. This is as a result of further investigation with fewer variables to determine more reliable and definite results. The results obtained from this estimation exercise for thirty-one yearly observations using the parsimonious model are reported in Table 4, an improvement over the results in Table 3.

From Table 4, the result shows that the lagged SMI and CPI are positively significant at 1% level, while GDP is significant at 10% level and now properly signed. Table 3 reports F-statistic as significant at 5% [which is a good fit]. The DW-statistic reported in Tables 3 and 4, shows absence of auto-correlation and therefore bias.

The findings are that inflation rate, GDP, exchange rate, lagged SMI and money supply do influence SMI either in the short-run or the long-run while there are discrepancies between short-run result (Table 2) and long-run results (Tables 3 and 4), there are also areas where they confirm each other. Interest rate is negatively related to SMI in both the short-run and the long-run. They have been found to be consistently not statistically significant. The negative sign is consistent with theory as low rates mean more investment in stocks both due to portfolio effects and affordable sources of financing. Lagged SMI is significant in the long-run and positive indicative of auto-regressive process.

Table 4: Parsimonious model of SMI and economic variables

<i>Dependent variables</i>	<i>Independent variables</i>	<i>Coefficient</i>	<i>t-Statistic</i>	<i>Probability</i>
SMI	DLSMI (-1)	0.5384	4.5086	0.0002
	DLRGDP	0.57032	1.7711	0.0918
	DLCPI	0.4700	3.1642	0.0049
	RESID(-1)	-0.7919	-5.8340	0.0000
	DIR (-5)	-0.0205	1.6976	0.1051
	R ²	0.70		
	Adjusted R ²	0.64		
	D-W Statistic	2.00		
	S. E of Regression	0.2		

Consumer price index as proxy for inflation rate is positively related to SMI in both the short run and long run, but it is only significant in the long run (Table 4) at 1% level. The explanation for this relationship is that increasing inflation in the economy pushes the prices of stocks and thus market index upward, especially when returns to stocks are expected to rise. On the other hand, it was expected that a high and rising inflation rate serve to erode the real value of financial assets, stock prices inclusive. It is indicative that wealth holders would tend to shift their wealth holding in favour of real assets to the relative neglect of financial assets.

GDP is not significant in the short run but significant at 10% level in the long run (Table 4). It was wrongly signed in the short run analysis but became appropriately signed in the long run. The explanation for this relationship is that high and rising income growth rate are indicative of booming business condition, which in turn implies a conducive investment climate and this has beneficial implications for stock market activities and hence SMI. This is the explanation of the positive and significant long-run relationship between real GDP and SMI in Nigeria.

Fiscal deficit is positively related to SMI in the short-run, though not significant. The rising and monetized federal fiscal deficits help to raise the level of money supply in the economy and this impacts generally on all prices in the economy, stock prices (and therefore market index) inclusive. The positive sign of the variable is not surprising, given that fiscal irresponsibility in the form of persistent budget deficit, and ways and means financing were the norms. Much has not changed even now.

Exchange rates are positively related to SMI in the short run but negative in the long run. The Nigerian economy is an open economy where foreign sector play a major role in the capital intensive oil and gas sector. In the short run, exchange rate impacts positively on growth in import trades by enhancing the returns on trading firms and multi-nationals, and thus SMI. This explains why it is significant in the short-run. In the long run, it turns negative as the long run growth is impaired as well as the balance-of-payments by appreciating exchange rate.

Money supply (M2) has a negative relationship with SMI in both the short- run and long-

run. It is in the short run but not in the long run. The reason for its negative sign is the fiscal indiscipline of financing money supply growth by ways and means, the focus on trade instead of manufacturing, import fuelled consumption, and poor capacity utilization in the real sector.

CONCLUSION

This study was designed to evaluate the relationship between selected macroeconomic variables and SMI in Nigeria. We expected a relationship between SMI as proxy for stock prices in Nigeria and selected macroeconomic variables. The model was tested using Nigerian data and we found that SMI are influenced by some macroeconomic variables.

Optimal policy options are required to manage the determinants that were found significant such as M2, ER, CPI, GDP, and capital market growth. Inflation targeting has become important while adequate securities market supervision should be quickly internalized. In line with this, the results also suggest the need for policy makers to design policies that will help to curtail rapid growth in money supply. There is also the need to formulate policies that are capable of enhancing the national income of the country. Export policies should be encouraged, as they rise to the issue of balance-of-payments deficit or surplus and also responsible for the appreciation or otherwise of a nation's foreign exchange.

REFERENCES

- Abeyratna G, Pisedtasalasai A, Power D 2003. Macroeconomic influence on the stock market: Evidence from an emerging market in South Asia. *J of Emerging Market Finance*, 3(3): 85-304.
- Aga M, Kocaman B 2006. An empirical investigation of the relationship between inflation, P/E ratios and stock price behaviour using a new series called Index-20 for Istanbul Stock Exchange. *International Research J of Finance and Economics*, 6: 133-165.
- Amadi SN, Odubo TD 2002. Macroeconomic variables and stock prices: Causality analysis. *The Nigeria J of Economic and Management Studies*, 4(1 and 2): 29-41.
- American Stock Association 2005. How Much Stock Worth? From <moneychimp.com http://www.ppcug.org/CAISIG> (Retrieved on April 4, 2012).
- Bilson C, Brailsford TJ, Hooper V 1999. Selecting Macroeconomic Variables as Explanatory Factors of Emerging Stock Market Returns. Working Paper Series From <http://ssrn.com/abstract - 201908> (Retrieved on April 4, 2012).

- Booth JR, Booth LC 1997. Economic Factors, Monetary Policy, and expected Returns on Stocks and Bonds. *Economic Review, Federal Reserve Bank of San Francisco*, pp. 32-42.
- Bulmash SB, Trivoli GW 1991. Time-lagged interactions between stock prices and selected macroeconomic variables. *The J. of Portfolio Management*, 17(4): 66-67.
- Burgstaller J 2002. Are Stock Returns a Leading Indicator for Real Macroeconomic Development?, Working Paper No. 0207, Austria. Rom <<http://www.econ.jku.at/papers/2002/wp0207.pdf>> (Retrieved on April 6, 2012).
- Central Bank of Nigeria 1975-2005. *Annual Report and Statement of Accounts*. Abuja. Lagos.
- Central Bank of Nigeria 1975-2005. *Statistical Bulletin*, Abuja. Lagos.
- Chandra P 2004. *Investment Analysis and Portfolio Management*. New Delhi: McGraw-Hill.
- Chen N 1991. Financial investment opportunities and the macroeconomy. *J of Finance*, 46(2): 529-554.
- Chen N, Roll R, Ross S 1986. Economic forces and the stock market. *J of Business*, 59: 383-403.
- Emeni FK, Asein EI 2003. Fundamental analysis of selected firms on the Nigerian Stock Exchange. *Nigeria J of Business Administration*, 5(1): 37-54.
- Fama E 1981. Stock returns, real activity, inflation and money. *American Economic Review*, 71: 545-565.
- Fama E 1990. Stock returns, expected returns, and real activity. *J of Finance*, 45(4): 1089-1108.
- Federal Office of Statistics 1975-2005. *Annual Abstract of Statistics*, Nigeria.
- Goswami G, Jung SC 1997. Stock Market and Economic Forces: Evidence from Korea. IMF Working Paper. From <<http://papers.ssrn.com/sol3/Delivery.cfm?abstractid=1937914>> (Retrieved on April 6, 2012).
- Hondroyannis G, Papapetrou E 2001. Macroeconomic influences on the stock market. *J of Economics and Finance*, 25 (1): 33-49.
- Islam SMN, Watanapalachaikul S 2003. Time Series Financial Econometrics of the Thai Stock Market: A Multivariate Error Correction and Valuation Model. From <http://www.cfes.com/documents/CSES_Annual_Report_2003.PDF> (Retrieved on April 6, 2012).
- Iyoha MA 2004. *Macroeconomics: Theory and Policy*. Benin-City: Mindex Publishing Company.
- Kevin S 2000. *Portfolio Management*. Delhi: Prentice-Hill.
- Maku OE, Atanda AA 2010 Determinants of stock market performance in Nigeria: Long run analysis. *Journal of Management and Organisational Behaviour*, 1(3): 1-16.
- Maysami RC, Lee CH, Mohamed AH 2005. Relationship between macroeconomic variables and stock market indices: Cointegration evidence from Stock Exchange of Singapore's All-S Sector Indices. *J Pengurusan*, 24: 47-77.
- Maysami RC, Koh TS 2000. A Vector Error Correction Model of the Singapore Stock Market. *International Review of Economics and Finance*, 9: 79-96.
- Maysami RC, Sim HH 2002. Macroeconomic variables and their relationship with stock returns: Error Correction evidence from Hong Kong and Singapore. *The Asian Economic Review*, 44 (1): 69-85.
- Maysami RC, Sim HH 2001. Macroeconomic forces and stock returns: A general –to-specific ECM analysis of the Japanese and South Korean markets. *International Quarterly J of Finance*, 1(1): 83-99.
- Nigerian Stock Exchange 1975-2005. *Fact Book*. Lagos. Nigeria.
- Oaikhenan HE 2003. The impact of economic reform on the behaviour of stock prices: Empirical evidence from the Nigerian Stock Market. *The Indian J of Economics*, LXXXIII(330): 287-304.
- Osamwonyi IO 2003. Forecasting as a Tool for Securities Analysis. *A Paper Presented at a Three-day Workshop on Introduction to Securities Analysis, Organized by Securities and Exchange Commission*, Lagos August 17th.
- Osaze EB 1985. The effect of corporate earnings, dividends and volume on stock price movements in Nigeria. *Benin J of Social Science*, 1(1): 56.
- Oyama T 1997. Determinants of Stock Prices: The Case of Zimbabwe. *WP/97/117*. New York: International Monetary Fund Policy Development and Review Department.
- Panetta F 2002. The stability of the relation between the stock market and macroeconomic forces. *Economic Notes*. 31(3): 417.
- Prantik R, Vani V 2004. What Moves Indian Stock Market: A Study on the Linkage with Real Economy in the Post-Reform. *Paper Presented During the Sixth Annual Conference on Money and Finance in the Indian Economy*, India Institute of Capital Markets. March.
- Rozeff MS 1994. Money and stock prices. *J of Financial Economics*, 65-89.
- Smith G 1990. *Investments*, Illinois & London: Glenview.
- Summers LH 1981. Inflation, the stock market, and owner-occupied housing. *American Economic Review, Proceedings*, 71, May: 423-430.
- Udegbumam RI, Oaikhenan HE 2002. Fiscal deficits, money stock growth and the behaviour of stock prices in Nigeria: An empirical investigation. *J of Financial Management and Analysis*, 4 (1 and 2): 10-27.

APPENDIX

<i>Year</i>	<i>Stock prices</i>	<i>Interest rate</i>	<i>Inflation rate</i>	<i>Exchange rates</i>	<i>Nominal GDP N'b</i>	<i>Fiscal deficits N'b</i>	<i>Money supply M2 N'm</i>	<i>CPI</i>
1975	39.95	4.00	33.9	0.6159	21558.8	-427.9	3622.3	20.7
1976	41.22	4.00	21.1	0.6265	27297.5	-1090.8	5278.9	25.6
1977	45.12	4.00	21.5	0.6466	32747.3	-781.4	7057.5	29.6
1978	32.90	4.50	13.3	0.6060	36083.6	-2821.9	7699.5	34.5
1979	37.80	5.00	11.6	0.5957	43150.8	1461.7	9857.7	38.5
1980	42.70	6.00	10.0	0.5464	50848.6	-1975.2	14397.4	42.3
1981	47.60	6.00	21.4	0.6100	50749.1	-3902.1	15548.1	51.2
1982	64.60	7.50	7.2	0.6729	51792.3	-6104.1	16894	55.1
1983	79.30	7.50	23.2	0.7241	56745.2	-3364.5	19368.9	67.9
1984	100.00	9.50	40.7	0.7649	63076.2	-2660.4	21600.5	94.8
1985	117.28	9.50	4.7	0.8938	71620.5	3039.7	23818.6	100
1986	149.82	9.50	5.4	2.0206	72792.7	-8254.3	24592.7	105.4
1987	179.92	14.00	10.2	4.0179	110184.6	-5889.7	29994.6	116.1
1988	210.81	14.50	56.0	4.5370	145183.1	-12160.9	42780.3	181.2
1989	273.87	16.40	50.5	7.3916	222539.1	-15134.7	46678.9	272.7
1990	423.66	18.80	7.5	8.0378	274672.1	-22116.1	64932.7	293.2
1991	671.77	14.29	12.9	9.9095	320432.9	-35755.2	86152.5	330.9
1992	932.15	16.10	44.5	17.2984	541783.2	-39532.5	129085.5	478.4
1993	1230.14	16.66	57.3	22.0511	693623.4	-107735.3	198479.2	751.9
1994	1913.24	13.50	57.0	21.8861	907875.4	-70270.6	266944.9	1180.7
1995	3515.12	12.61	73.1	21.8861	1934831.0	1000.0	318763.5	2040.4
1996	5872.64	11.69	29.1	21.8861	2703809.0	32049.4	370333.5	2638.1
1997	7638.59	4.80	8.5	21.8861	2801972.6	-5000	429731.3	2863.3
1998	5961.88	5.49	10.0	21.8861	2721178.4	-133389.3	525637.8	3149.2
1999	5264.19	5.33	6.6	92.6934	3313563.1	-285104.7	699733.7	3357.6
2000	6699.26	5.29	6.9	102.1052	4727522.6	-103.8	1036079.5	3590.5
2001	10402.16	5.49	16.5	111.9433	5374334.8	-221.0	1315869.1	4268
2002	11928.96	4.15	12.2	120.9702	6232243.6	-301.4	1532578.5	4897
2003	15639.16	4.15	23.8	129.3565	6601700.0	-202.7	2002375.4	5493.3
2004	25005.15	4.44	10.0	133.5004	11411066.9	-162.6	2159986.0	6318.3
2005	21979.28	3.75	11.6	131.6600	15610881.5	-161.4	2626455.1	6710.0

Source: CBN Annual Report and Accounts various issues