ANALYSIS OF THE IMPACTS OF INTEREST RATE AND EXCHANGE RATE ON CAPITAL MARKET PERFORMANCE IN NIGERIA

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Abstract

The study empirically investigates the impact of interest rate and exchange rate on capital market performance in Nigeria. Secondary data were obtained from central bank of Nigeria statistical bulletin and Security exchange commission (SEC) covering the period of 1978 to 2012. Multiple regressions and Unit roots were employed to analyze data on variables such as interest rate, exchange rate, and market capitalization with the adjusted R^2 which significant at 0.9256 (92.6%), it signifies that interest rate and exchange rate accounted for 92.6% of the variation in the influence of the market capitalization in Nigerian capital market. It is therefore concluded that exchange rate has positive impact on capital market but there is a negative relationship between interest rate and capital market performance. The result suggests that Government should ensure appropriate determination of interest rate level that will break the double-edge effect of interest rate on savers and local investors in order to encourage investment and transactions in Nigerian Capital Market. Only the interest rate policy that can attract savings mobilization and encourage domestic investment will help the economy.
Keywords; Market capitalization; Interest rate; Exchange rate; Nigeria.

INTRODUCTION

As the business become successful, and needs to expand to meet the needs of their customers whose confidence has been gained and perhaps to pursue ideas generated in the course of running business which will make the operation of the business a lot easier, which is likely to include employment, more competent hands, use of modern technology and so on. It becomes

obvious that firms need more cash to cover the gaps between buying raw materials, paying employees, and that of getting paying from customers, and these can be solved through capital market. Capital market are markets for trading long term financial securities, including ordinary shares, long term debt securities such as debentures, unsecured loan stock and convertible bonds. Government bonds and other public sector securities such as Treasury bills and gilt-edged stocks are also traded on capital markets (Murinde, 2006). Capital market is a collection of financial institutions set up for the granting of medium and long term loans. It is a market for government securities, for corporate bonds, for the mobilization and utilization of long-term funds for development - the long term end of the financial system. In this market, leaders (investors) provide long term funds in exchange for long term financial assets offered by borrowers. As a marketplace where securities (stocks, bonds, shares) are bought and sold openly with relative ease, the stock exchange is very important to the investors. It is a market for government securities, for corporate bonds, for the mobilization and utilization of long-term funds for development - the long term end of the financial system. In this market, leaders (investors) provide long term funds in exchange for long term financial assets offered by borrowers. This market embraces both the new issues (primary) market and secondary market. Such securities might be raised in an organized market such as the Stock Exchange. In this sense, it involves consortium under writing, syndicated loans and project financing. Thus, it is a rnechanisms whereby economic unit desirous to invest their surplus funds, interact directly or through financial intermediaries with those who wish to procure funds for their businesses. The existence of a stock exchange in a capital market helps to broaden the share ownership base of firms; and evenly distribute the nation's wealth by making it possible for people in different locations to own shares in a firm in another location by purchasing the shares, bond/stock through the simple mechanism of the capital market. The liquidity role stands out clearly as the most significant among the numerous functions provided by the capital market. This is because an illiquid stock market would discourage many profitable long-term investments that would have been undertaken since savers may be reluctant to tie up their investments for long periods of time (Levine, 1997). According to Ezeoha 2009, capital market provides liquidity, contributes to capital formation, and investment risk reduction by offering opportunities for portfolio diversification. Nyong (1997) emphasized that the financial structure of a firm, that is, the mix of debt and equity financing, changes as economies develop. It moves towards equity financing through the capital market. If the rate of interest paid by banks to depositors is increased, investors will patronize the banks the more and fewer investors will invest on the capital market. This will lead to a decrease in capital investment in the economy, therefore, economic growth and development will be lowered, because the allocation of capital resources plays a crucial role in the determination of the rate of the nation's output. Interest and exchange rates are financial prices for credit and foreign currencies, respectively. They both affect resource allocation,

production levels, prices and profitability. According to Akiri and Adofu (2007), the existence of externalities and imperfection in the financial markets of most developing economies has often called for intervention by the government through its appropriate agent (the Central Bank of Nigeria in the case of Nigeria) to encourage investment and to re-channel credit to those economic units with high social rate of returns but low commercial rate of returns. Capital market is a collection of financial institutions set up for the granting of medium and long term loans.

Statement of the problem

The financial position of an economy that is mainly determined by the capital market is susceptible to its foreign exchange volatility. Hence, this makes foreign exchange market developments to have cost implications for all the economic agents. While in principle, capital controls may help limit short-term speculation and exchange rate volatility, many governmental institutions choose to compound this inefficiency through pegged exchange rates. By fixing their currency to that of another nation, short-term currency speculation is made near impossible. And, as has already been established, such limitations may lead to overvalued exchange rates, which again produce overvalued capital markets (Tamirisa, 1998). The choice of exchange rate regime is a perennial issue for policy makers. But, in the wake of the recent volatility in global capital markets, this issue has taken on special relevance for emerging markets. Recent exchange rate crises have led some to conclude that, in an environment of capital market volatility, more exchange rate flexibility is desirable (Shigeru and Evan 2002). Exchange rate volatility has implications for the financial system of a country especially the capital market. The exchange rate value from the period of the study has been skyrocketing couple with the level of market capitalization in Nigeria. Therefore, in view of that, the effect of exchange rate on Nigerian capital market in recent times must be examined.

Objectives of the study

The main aim of this study is to empirically analyse the effects of interest rate and exchange rate on the performance of Nigerian capital market.

The specific objectives are:

i.   To evaluate the effect of interest rate on investment

ii.   To determine the effects of interest rate on market capitalisation.

iii. To investigate the effect of exchange rate on market capitalisation

LITERATURE REVIEW

Effect of Interest rate on Investment

Interest is the reward for not hoarding but for parting with liquidity for a specific period of time. Keynes' definition of interest rate focuses more on the lending rate. Adebiyi (2002) defines interest rate as the return or yield on equity or opportunity cost of deferring current consumption into the future. Some examples of interest rate include the saving rate, lending rate, and the discount rate. According to Mundell-Fleming model, an increase in interest rate is necessary to stabilize the exchange rate depreciation and to curb the inflationary pressure and thereby helps to avoid many adverse economic consequences. The high interest rate policy is considered important for several reasons. Firstly, it provides the information to the market about the authorities" resolve not to allow the sharp exchange rate movement that the market expects given the state of the economy and thereby reduce the inflationary expectations and prevent the vicious cycle of inflation and exchange rate depreciation. Secondly, it raises the attractiveness of domestic financial assets as a result of which capital inflow takes place and thereby limiting the exchange rate depreciation. Thirdly, it not only reduces the level of domestic aggregate demand but also improves the balance of payment position by reducing the level of imports (Dash, undated). The behaviour of interest rates, to a large extent, determines the investment activities and hence economic growth of a country. Investment depends upon the rate of interest involved in getting funds from the market, while economic growth to a large extent depends on the level of investment.

According to Jhingan (2003), if interest rate is high, investment is at low level and when interest rate falls, investment will rise. There is therefore a need to promote an interest rate regime that will ensure "inexpensive" spending for investment and consequently enhancing economic growth at low financial cost. Additionally, financial repression, largely manifested through indiscriminate distortion of financial prices including interest rates has tended to reduce the real rate of growth and the real size of the financial system. The resulting low or negative interest rates discourage savings mobilization and channeling of mobilized savings through the financial system and this invariably has negative impact on the quantity and quality of investment and hence economic growth in view of the empirical link between savings, investment and economic growth. It is a known fact that the investment that promotes economic growth and development requires long term funding, far longer than the duration for which most savers are willing to commit their funds.

According to Vaish (2000) the demand for capital consists of the demand for productive and consumptive purpose. Capital is demanded by the investors because it is productive. But the productivity of capital is subject to the law of variable proportions (additional units of capital are not productive as their earlier units). However, according to Jhingan (2007), the supply of capital depends upon savings rather upon the will to save and the power to save of the

community. Some people save irrespective of the rate. They would continue to save even if the rate of interest were zero. There are others who save because the current rate of interest induces them to save and reduce when the rates are low. The higher the rate of interest, the larger the community savings and more will be the supply of funds. The supply curve of capital or the savings curve moves upward to the right. If the rate of interest paid by banks to depositors is increased, investors will patronize the banks the more and fewer investors will invest on the capital market. This will lead to a decrease in capital investment in the economy. Hence, economic growth and development will be lowered, because the allocation of capital resources plays a crucial role in the determination of the rate of the nation's output. Interest and exchange rates are financial prices for credit and foreign currencies, respectively. They both affect resource allocation, production levels, prices and profitability (Akingunola and Adekunle 2012). According to them, fluctuations in these reflect in share prices – an indicator of market performance. For instance, lowering of interest rate on demand and savings deposits will improve returns to investing on the exchange relative to investing in deposit money banks (DMBs) holding factors such as risk, transaction costs, etc. constant. This will therefore increase the demand and share price of affected equities on the exchange thereby affecting its performance (Akingunola and Adekunle 2012).

Effect of Exchange Rate on Capital Market Performance

Devereux and Engel (2003) assert that free exchange rates allow for the adjustment of relative prices when goods prices are sluggish. Engel and Rogers (2001), on their turn, study border effects on relative prices for a sample of 55 European countries from 1981 to 1997, finding that exchange rate volatility explains part of the deviations in those prices. Chen (2004) points to an increase in price stickiness in face of the uncertainty derived from exchange rate volatility (i.e., firms become more reluctant to adjust their prices due to the possibility of a later reversion in the exchange rate). Higher exchange rate volatility means poorer response of inflation to exchange rate movements. Sutherland (2002) recalls that, in the welfare literature, exchange rate volatility has a direct effect on welfare when the pass-through is incomplete. Hence, in this case, monetary policy should take exchange rate volatility into consideration. The developed model shows that increasing or decreasing exchange rate volatility to obtain domestic price stability may be an optimum from the welfare point of view. Decision will depend on the model's parameters, which indicate whether prices are set according to the producer's currency or local currency and if domestic demand reacts to exchange rate changes.

Bleaney (1996) also states that the present value of an investment project depends on the expected value of future demand, price level and relative prices. Therefore, uncertainty over relative prices affects investment decisions and, hence, output growth. The influence of

exchange rate towards market capitalization itself depends on the choice of exchange rate regime in the country. Changes in the exchange rate will have a great impact on the capital market as a whole. In the system of floating exchange rates, exchange rate fluctuations can have a strong impact on the level of prices of shares and stocks through the aggregate demand (AD) and aggregate supply (AS). Interest rates are an important tool that can be used to affect prices and output in an economy through monetary expansion and monetary tightening. Adjasi and Biekpe (2005) showed that in the long-run exchange rate depreciation leads to increases in stock market prices in some of the countries, and in the short-run, exchange rate depreciations reduce stock market returns. However, the higher the interest rates the stable the exchange rates.

Adjasi and Biekpe (2005) showed that in the long-run exchange rate depreciation leads to increases in stock market prices in some of the countries, and in the short-run, exchange rate depreciations reduce stock market returns. Fang and Fu (2008) showed the possibility of a very weak or no relationship between stock prices volatility and exchange rates movement. Rizwan and Khan (2007) further explained varying importance of domestic macroeconomic variables in explaining the relationship between stock returns and volatility in Karachi stock exchange. According to Schnabl, (2007), a decline in exchange rate uncertainty also enhances price transparency increasing the efficiency of price mechanisms at international level.

Kolawole and Olalekan (2014) adopted unit root test and error correlation model to test the effect of exchange rate volatility on Nigeria capital market, based on the findings of this study, they concluded that exchange rate volatility has a very serious implication on the Nigeria stock market, according to them, for any serious development of the stock market there is need to stabilize the exchange rate movement. Mishra (2004) studied the relationship among stock return, exchange rate, the demand for money and interest rate, the conclusion is that there is relationship exists between them. Mishra (2004) pointed further that exchange rate return affects the demand for money. It was said further that interest rate causes exchange rate to change. Ajayi and Mougoue (1996) investigated the short-and long- run relationship between stock prices and exchange rates in eight advanced economies. They find that an increase in stock prices causes the currency to depreciate for both the U.S. and the U.K. According to Ajayi and Mougoue, a rising stock market is an indicator of an expanding economy.

RESEARCH METHODOLOGY

This study was designed to examine the effects of interest rate and exchange rate on the performance of Nigerian capital market. The regression analysis method and unit roots test were employed to analyse the data collected from Central bank of Nigeria Statistical Bulletin and Security and Exchange Commission for the relevant years covering 1978 to 2012 through STATA 10.

Method of data collection

Secondary data was used in this study. The relevant data were sourced from the publications of the Security and Exchange Commission and Central Bank of Nigeria from 1978 to 2012. The variables for which data were sourced include: Market capitalisation, Interest rate and Exchange rate from 1978 to 2012.

Method of Data Analysis

Multiple regression analysis and unit root test were used to analyze the hypothesis with the Market capitalisation as the dependent variable while Interest rate and Exchange rate were the independent variables. The functional form on which the econometric model is based is given as;

$$M = f(Y1, Y2, \mu)$$

Where M is Market capitalisation = dependent variables,

$Y1 - Y2$ are independent variables and f represents the functional notation.

$Y1 - Interest\ rate, and\ Y1 - Exchange\ rate$

$$MCAP = f(INTR, EXCH, \mu)$$

Model Specification

$$MCAP = \alpha0 + \beta1NTR + \beta2EXCH + \mu \tag{1}$$

$$LogMCAP = \alpha0 + \beta1LogNTR + \beta2LogEXCH + \mu \tag{2}$$

$logMCAP$ − $log\ of\ Market\ Capitalisation$

$logNTR$ − $log\ of\ Interest\ Rate$

$logEXCH$ − $log\ of\ Exchange\ Rate$

ANALYSIS & FINDINGS

This section analyzed and presented the data collected from Security and Exchange commission and CBN Statistics Bulletin from 1978 -2012.

Test of Stationarity

The unit root test was carried out by the Augumented Dickey-Fuller (ADF) using STATA 10 version to investigate the stationarity of the series (Dickey and Fuller, 1981). The test results shown in table 1 indicated that all the series are integrated of order one "I(1)". And it was also

stationary at first difference. Hence, the existence of unit root test in all the series showed that the relationship would be spurious if stated at level. However, the regression test confirmed the effect of exchange rate and interest rate on capital market performance.

Table 1- Unit Root Test

Variables	Order of Stationarity	Augmented Dickey-Fuller Test Statistics	Conclusion
MCAP	0	-0.529	Non Stationary
MCAP	1	-0.364	Non Stationary
NTR	0	-2.466	Non Stationary
NTR	1	-2.294	Non Stationary
EXCH	0	0.036	Non Stationary
EXCH	1	-0.047	Non Stationary

Test critical values: Augmented Dickey-Fuller test at 1% -3.730, 5%   -2.992,10% -2.626

Non-stationarity is a commonly observed problem with time-series. It stems from the fact that the time series is not independent of time. When a variable is not stationary, its mean and variance are not constant over time, and an observation is correlated with its more recent lags. Desislava (2005) indicated that the data to be non-stationary of unit root one I(1) means that the value of the variable for the current period is correlated with the value of the variable in the previous period.

Table 2- The short run effect of interest rate (NTR), and exchange rate (EXCH)
on market capitalization.

Dependent variable	Independent variables	Coefficient	Standard Error	T	P>|t	[95% Conf. interval]	
MCAP	ntr	-1.677896	91926.46	-1.83	.079	-356407.1	20827.9
	Exch	4.482485	8294.668	5.40	.000	27805.59	61844.1
	constant	2360269	1683898	1.40	.172	-1094804	5815341
R-squared = 0.5218	Adj R-squared = 0.4864			Prob > F = 0.000		F(2, 27) =	
				Root MSE = 2.5e+06		14.73	

Table 2 above shows the short run effect of interest rate (NTR), and exchange rate (EXCH) on market capitalization. 1% increase in NTR reduces the level of market capitalization (MCAP) by 1.68 percent. This suggests a negative relationship between the interest rate and market

capitalization in Nigeria. The result is also significant. Conversely, the relationship between MCAP and exchange rate (EXCH) is positive suggesting that if exchange rate increases, market capitalization, that is 1% increase in EXCH brings out 4.49% increases in market capitalisation (MCAP).

The R^2 coefficient (0.5218) which is the coefficient of determination indicates that the explanatory variables accounted for 52.1% of the variation in the influence of interest rate and exchange rate on market capitalization in Nigeria for the period under study. Given the adjusted R^2 which significant at 48.6%, it predicts the independence variables incorporated into this model have been able to determine variation of interest rate (NTR) and exchange rate (EXCH) on capital market performance to 48.6%. It is also indicates that interest rate (NTR) and exchange rate (EXCH) accounted for 48.6% of the variation in the influence on capital market performance in the short-run.

Table 3- The long run effect of interest rate (NTR), and exchange rate (EXCH)
on market capitalization.

Dependent variable	Independent variables	Coefficient	Standard Error	T	P>|t	[95%Conf. interval]	
logMCAP	logntr	-3.191313	.5729932	-5.57	.000	-4.366998	-2.015628
	logExch	1.644313	.0949546	17.32	.000	1.449482	1.839144
	constant	16.2135	1.472499	11.01	.000	13.19218	19.23482
R-squared	= 0.9307	Adj R-squared = 0.9256		Prob > F = 0.000		F(2, 27) =	
				Root MSE = .73517		181.40	

Table 3 above shows the long run effect of interest rate (NTR), and exchange rate (EXCH) on market capitalization. 1% increase in NTR reduces the level of market capitalization (MCAP) by 3.19 percent. This suggests a negative relationship between the interest rate and market capitalization in Nigeria. The negative effect is highly significant. In contrary, the relationship between MCAP and exchange rate (EXCH) in the longrun is positive suggesting that if exchange rate increases in the long run, market capitalization will also increase, that is 1% increase in EXCH brings out 1.64% increases in market capitalisation (MCAP). The positive effect of exchange rate on market capitalization is also highly significant in the longrun.

The R^2 coefficient (0.9307) which is the coefficient of determination indicates that the explanatory variables accounted for 93% of the variation in the influence of interest rate and exchange rate on market capitalization in Nigeria for the period under study. Given the adjusted R^2 which significant at 92.6%, it predicts the independence variables incorporated into this model have been able to determine variation of interest rate (NTR) and exchange rate (EXCH)

on capital market performance to 92.6%. It is also indicates that interest rate (NTR) and exchange rate (EXCH) accounted for 92.6% of the variation in the influence on capital market performance in the long-run, and only 7.4% is for error term. The F and probability statistics also confirmed the significance of this model.

CONCLUSION

The study analyses the effects of interest rate and exchange rate on capital market performance in Nigeria for the period of 1978 -2012. Based on the finding, the result shows that there is a negative significant effect of interest rate on capital market performance (proxied by market capitalization) both in the short run and the long run. Conversely, exchange rate impacted positively both in the short run and the long run on market capitalization. In conclusion, interest rate has negative significant impact on capital market performance as supported by Akingunola and Adekunle (2012) which concluded that that as the rate of interest increases, the performance of the capital market reduces. Also, exchange rate has positive significant impact on capital market performance. This is in line with kolawole and olalekan (2014) which concluded that exchange rate volatility has very serious implication on Nigerian capital market.

Policy Recommendations

Based on the findings made in the course of this study, the following recommendations are hereby suggested:

1) Government should ensure appropriate determination of interest rate level that will break the double-edge effect of interest rate on savers and local investors in order to encourage investment and transactions in stocks in the Nigerian Capital Market. Only the interest rate policy that can attract savings mobilization and encourage domestic investment will help the economy.

2) Central bank of Nigeria should promote an interest rate regime that will ensure economical spending for investment in capital market and this will invariably enhancing economic growth at low financial cost.

REFERENCES

Adebiyi, M.A. (2002). The Role of Real Interest Rates and Savings in Nigeria. First Bank of Nigeria Plc, quarterly review, March, 2002.

Adjasi, C. K.D., and B.N. Biekpe. (2005), Stock Market Returns and Exchange Rate Dynamics in Selected African Countries: A bivariate analysis, The African Finance Journal, July issue. 05

Ajayi, R. A. and Mougoue, M., 1996. On the Dynamic Relation between Stock Prices and Exchange Rates. The Journal of Financial Research 19: 193-207

Akingunola R. .O., *Adekunle .O.A, & Ojodu H. (2012) Impact of Interest Rate on Capital Market Growth (A Case of Nigeria) Universal Journal of Management and Social Sciences Vol. 2, No.11; November 2012

Akiri, E.S. and I. Adofu, 2007. Interest rate deregulation and investment in Nigeria. Journal of Economics and Management Studies, 2(1).

Bleaney, M. (1996) Macroeconomic stability, investment and growth in developing countries, Journal of development economics, vol. 48, pp. 461-477

Chen, J., Naylor, M., and Lu, X. (2004). Some insights into the foreign exchange pricing puzzle: Evidence from a small open economy, Pacific-Basin Finance Journal,12, 41 – 64.

Desislava D.(2005),The Relationship between Exchange Rates and Stock Prices: Studied in a Multivariate Model. Issues in Political Economy, Vol. 14, August 2005

Devereux, M. B.; Engel, C. (2003) Monetary Policy in the Open Economy Revisited: Price Setting and Exchange Rate Flexibility, The Review of Economic Studies, October

Engel, C.; Rogers, J. H. (2001) Deviations from purchasing power parity: causes and welfare costs, Journal of International Economics, 55, pp. 29-57

Fang W. and Fu S.M.(2008)"Export Promotion through Exchange Rate Policy: Exchange Rate Depreciation or Stabilization?

Jhingan, M.L (1997). The Economic of Development and Planning. Vrinda Publications (P) Ltd, Delhi.

Jhingan, M.L. (2003) Macro-Economic Theory. Vrinda Publication (P) Ltd, Delhi.

Kolawole S. and Olalekan M.S.(2014). Exchange Rate Volatility and the Stock Market: The Nigerian Experience. *OC10113*

Levine, R. (1997). Financial Development and Economic Growth: Views and Agenda. Journal of Economic Literature, 31(5), pp. 1-7.

Mishra K.A (2004) Stock market and foreign Exchange market in India. Are they related? South Asia Economic Journal, 5:2, Sage Publications, New Delhi.

Murinde, V. (2006). Capital Markets: Roles and Challenges. Being a Paper presented at the International Conference on Accelerating Africa's Development: Five Years into the Twenty-First Century held in Tunis on November 22-24, 2006 under the joint organization of the African Development Bank and the African Economic Research Consortium: 1.

Nyong, M.O. (1997). Capital Market Development and Long run Economic Growth: Theory, Evidence and Analysis, First Bank Review, December, 13-38.

Rizwan, M.F and Khan, S. U. (2007). "Stock Return Volatility in Emerging Equity Market: The relative Effects of Country and Global Factors", International Review of Business Research Papers, Vol.3, No.2, pp. 362 – 375

Schnabl, G. (2007). Exchange Rate Volatility and Growth in Small Open economies at the EMI Periphery. ECB Working Paper, No.773.

Shigeru I. and Evan T.(2012) Pick Your Poison: The Exchange Rate Regime and Capital Account Volatility in Emerging Markets. IMF WORKING PAPER 2012

Sutherland, A. (2002) Incomplete pass-through and the welfare effects of exchange rate variability, CEPR, Discussion Paper No 3431

Tamirisa, N. T. (1998). "Exchange and Capital Controls as Barriers to Trade." International Monetary Fund, Monetary and Exchange Affairs Department.

Vaish, M.C. (2000). "Monetary Theory" fifteenth Revised Edition, Vikas Publishing House PVT Ltd, New Delhi.