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RESEARCH ARTICLE

The Relationship Between Stock Price and Exchange Rate in an Emerging Capital Markets

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ABSTRACT

The necessity to examine the relationship between stock price and exchange rate has increased due to the introduction of new global capital markets, flexible exchange "rate systems, and globalization of financial markets. The paper examined the concepts of exchange rate, approaches of exchange rates and stock prices, dynamics of stock market price and the causality between exchange rate and stock market price in developing countries, especially Nigeria. This work examined the impact of exchange rate on stock market prices in Nigeria, using ordinary least squares (OLS) regression technique. We examined the impact of exchange rate, interest rate, gross domestic product and volume of transaction on stock market prices. It was found that exchange rate and volume of transactions had a positive and significant impact on stock market price in Nigeria, and therefore should be highly considered when making investment decisions as its relates the stock market. While interest rate and gross domestic product growth had negative and insignificant impact on stock market price in Nigeria. This could be de-emphasized when making decisions on investment in the stock market. We recommended that policy analysts should aim at achieving the following. First, greater stability and efficiency of the Nigeria's foreign exchange market. There is the need for government to promote greater deepening of the market and its integration with other global markets across the world. Thus, policy measures that are consistent with the stabilization and growth of the stock market, hence stock market price.

INTRODUCTION

The necessity to examine the relationship between stock price and exchange rate has increased due to the introduction of new global capital markets, flexible exchange rate systems, and globalization of financial markets. More and more developing nations are realizing how beneficial stock markets can be for improving the effectiveness of their own financial systems (Stavarek, 2004; Azman-saini et al., 2006). Ilmolelian (2005) asserts that the stock market lowers the cost of capital for borrowers by effectively competing with and complementing the banking industry. The literature has demonstrated a connection between exchange rates and stock prices. Granger et al. (2000) and Bahmani-Oskooee and Sohrabian (1992) assert that there are adequate theoretical justifications for casaulity to run in both directions.

According to Stavarek (2004) and Muhammad and AbdulRasheed (2002), there is theoretical agreement on neither the existence nor the direction of the correlation between exchange rates and stock prices. For example, theories of exchange rate determination based on portfolio balance assume that stock prices and exchange rates have a negative connection and that exchange rates cause stock prices. Since people own both foreign and domestic assets, including currencies, under these models, the exchange rate is crucial in maintaining a balance between the supply and demand for assets. Local investors would sell international assets, which are currently less desirable, in order to purchase more domestic assets, which would result in an increase in the value of the local currency. Conversely, a gain in wealth brought forth by rising domestic asset prices will also cause

investors to demand more money, which will draw in foreign investment and increase the value of the home currency. The rise in overseas demand for domestic assets as a result of rising stock prices is another pathway for the same inverse relationship. An increase in the value of the domestic currency would also result from this.

On the other hand, it is also anticipated that there would be a positive correlation between stock prices and exchange rates, with the direction of causality being from exchange rates to stock prices. Dornbusch and Fisher (1980) assert that fluctuations in exchange rates impact trade balance and global competitiveness, which in turn impacts real economic variables like output and real income. Consequently, local businesses become more competitive globally as a result of a particular depreciation of the indigenous currency, which boosts exports. Their stock prices grow in response to an increase in foreign exchange inflow-income. Due to the anticipated increase in production costs, a situation known as no causation occurs when businesses, particularly those in developing nations, import as much capital inputs in terms of value as they export.

The necessity for an empirical study of this kind is further necessitated by the current global financial crisis, which was sparked by the United States mortgage crisis, massive corporate closures, and the ensuing effects on other countries, especially the weaker ones like Nigeria. As a result, the protracted crisis had an impact on Nigeria's external economy. The collapse of oil prices led to a sharp drop in foreign exchange profits and, obviously, a decrease in the accretion of external reserves for an economy that is heavily dependent on windfalls in the oil market. Crude oil prices dropped 36.2 percent on average to US$69.23 per barrel. In October 2008, external reserves, which were valued at US$62,082.86 million in September, fell by 6.3 percent to US$58,426.40 million. The Central Bank of Nigeria (CBN) purposefully depreciated the naira, which had been stable up until that point. It went from being worth $116.20 in November 2008 to $131.5 in December 2008, a 12.95 percent decrease. It is necessary to look into how the exchange rate affects Nigerian stock market prices in light of the aforementioned trend and global occurrences. Stock prices are influenced by a wide range of factors, including company performance, dividends, foreign stock prices, GDP, exchange rates, interest rates, current account, money supply, employment, and their information (Kurihara, 2006). In particular, the exchange rate is now one of the primary factors influencing company profitability and stock prices due to the ongoing expansion of global commerce and capital flows (Kim, 2003).

The question of whether exchange rates and stock prices are related has drawn a lot of attention. Controlling exchange rates can help avoid stock market crises if there is a relationship between stock prices and exchange rates and a causal relationship between the two. Furthermore, emerging nations might take use of this connection to draw in or encourage foreign portfolio investment in their own nations. In a similar vein, authorities can concentrate on domestic economic policies to stabilize the stock market if the causal relationship extends from exchange rates to stock prices. According to some research, there is a strong positive correlation between stock prices and exchange rates (see, for example, Smith, 1992; Solnik, 1987; Aggarwal, 1981).

Others, like Soenen and Hennigar (1998), have noted a strong inverse link between the two. However, several research (e.g., Franck and Young, 1992; Eli-Bartov and Bodnor, 1994) have found little or no correlation between stock prices and currency rates. In light of the aforementioned, the main focus of the study problem is determining how the exchange rate and other factors affect the price of stocks in Nigeria. The study's main goal is to provide an empirical analysis of how Nigerian stock prices are affected by currency rates. Additional sub-objectives include analyzing how interest rates affect Nigerian stock prices, figuring out how economic growth affects Nigerian stock market prices, and assessing the influence

2. LITERATURE REVIEW

The stock market has a significant impact on a country's economic growth. The market's very existence improves a nation's international investment climate in addition to acting as a tool for the corporate sector to mobilize domestic capital. Theoretically, the capital market connects an economy's internal macroeconomic indicators to the external environment. It is linked to capital, trade, and other financial flows. The relationship between stock prices and a nation's exchange rate is one that is currently receiving a lot of attention. Classical economics believe that a product's

international competitiveness and trade balance position may be impacted by currency gratitude. This section looks at empirical studies on the connection between stock.

According to Stavarek (2004), the Britton-wood agreement marked the beginning of the first phase of empirical research on the connection between stock prices and currency rates. Franck and Young (1972), Aggarwal (1981), Giovannini and Jorion (1987), Solnik (1987), and Soenen and Hennigan (1988) are a few of this research. Even though they were considered pioneer research, their findings differed. For example, Solnik (1987) examined nine industrialized nations and found no discernible impact of the exchange rate (among other factors) on stock prices. Soenen and Hennigan (1988) used monthly data of the US stock market index and the US dollar's effective exchange rate from 1980 to 1986 to report a considerable negative relationship. Furthermore, Jorion (1990) discovered a moderate correlation between the effective US dollar exchange rate from 1971 to 1987 and the stock returns of US multinational corporations.

Cointegration approaches were then used in the majority of empirical investigations conducted in the 1990s. For example, Yu (1997) used spot currency rates and daily stock price indices sourced from Hong Kong, Tokyo, and Singapore's financial markets between January 3, 1983, and June 15, 1994, to investigate potential interactions between these financial variables. Results derived from the Granger causality test demonstrate that shifts in exchange rates in the Tokyo and Hong Kong markets are the primary cause of changes in stock prices. For the Singapore market, however, no such causality was discovered. Results on the reverse causal relationship between stock prices and exchange rates only indicated this relationship for the Tokyo market. Consequently, there is a reciprocal causal relationship between stock returns and exchange rate fluctuations for the Tokyo market. Furthermore, the Vector Autoregressive (VAR) model's results demonstrated a robust and consistent long-term correlation between stock prices and exchange rates across all three markets.

To investigate the long-term relationship between the stock price index and the real effective exchange rate for Pakistan, Korea, India, and the Philippines, Abdalla and Murinde (1997) used the cointegration approach. Monthly data from January 1985 to July 1994 was used in their investigation. The results showed that India and the Philippines had a long-term relationship, whereas Pakistan and Korea did not. Additionally, the application of the vector error correction model to the cases of India and the Philippines revealed a unidirectional causal relationship between exchange rates and stock prices for India, but a reverse relationship between exchange rates and stock prices for the Philippines. Using conventional Granger causality tests, the same authors also demonstrated a unidirectional causal relationship between exchange rates and stock prices for both Korea and Pakistan.

According to a study by Kaminsky et al. (1998), the fourth-best indicator of currency crises is stock prices. Granger, Huang, and Yang (2000) used the impulse response function and Granger causality tests for nine Asian countries to investigate the question of causation. They included Hong Kong, Indonesia, Japan, South Korea, Malaysia, the Philippines, Singapore, Thailand, and Taiwan in their analysis, which used daily data from January 3, 1986 to November 14, 1997. Findings for Thailand and Japan indicated that exchange rates drive up stock prices. correlation, however in Taiwan, stock prices have a negative correlation with exchange rates. The results also showed that Singapore had no association, whereas the other countries showed bi-directional causality. Amare and Mohsin (2000) used the cointegration technique on a monthly basis with the same sample of nine nations. Only for Singapore and the Philippines did their findings show a long-term correlation between stock prices and exchange rates. They blamed the bias brought about by the omission of some important variables for the other countries' lack of cointegration between the aforementioned variables.

Ong and Izan (1999) used the nonlinear least squares approach to investigate the relationship between stock prices and currency rates in the United States. After four weeks, they discovered that US share price returns accurately follow information expressed by changes in the French franc and the Japanese yen. However, their findings indicated a very weak correlation between currency rates and the US equities market. They came to the conclusion that a country's share market return would increase if its currency depreciated, and the opposite would occur if it appreciated. Additionally, Kim (2003) looks at whether there are long-term equilibrium linkages between the real exchange rate, industrial production, and the total stock price. using Johansen's cointegration methodology to

analyze the US interest rate and inflation rate. It was discovered between 1974 and 1998 that the S&P 500 index had a positive correlation with industrial production but a negative correlation with the other factors. Inflation, industrial production, and stock prices all compensate for disequilibrium among the five variables when the error correction analysis is applied. However, the data also shows that innovation in the interest rate is a major factor in stock prices.

Ibrahim (2000) investigates the relationship between the foreign exchange market and the Malaysian stock market. The findings showed that, although there was no long-term correlation between the exchange rate measures and stock prices in bivariate cointegration models, there was evidence of long-term relationships in multivariate models that included foreign reserves and M 2 (broad) money supply. Using the novel Granger non-causality test put forward by Toda and Yamamoto (1995), Azman-Saini et al. (2006) recently investigated the causal relationships between stock prices and the currency rate in Malaysia. The results showed a feedback relationship between stock prices and currency rates prior to the financial crisis. The findings also demonstrated that during a crisis, stock values are driven by currency rates. According to the authors, exchange rate stability is critical to the health of the stock market in a financially liberalized environment.

Granger et al. (2000) discovered that in a collection of Asian nations, there is a causal relationship between the exchange rate and local stock prices. Though only in the near term, their findings provided theoretical justification for a reciprocal relationship between the stock and foreign exchange markets. They contended that a shift in exchange rates would alter the market value of every company that engages in foreign trade. Wu (2001) offers proof of the inverse link between South East Asian exchange rates and stocks. Azman-Saini et al. (2003) discovered that there is a feedback interaction in Thailand for the pre-crisis period and that exchange rates lead stock prices during the crisis period, whereas Nagayasu (2001) examined intra and inter-market causality in Thailand and the Philippines using a bivariate VAR model and came to the conclusion that stock prices appear to have caused upward pressure on exchange rates.

Broome and Morley (2003) evaluated the efficacy of stock prices as a leading indicator of currency crisis between 1997 and 1998 using a simple currency crisis model. Based on monthly data, the findings showed that Hong Kong is the most significant indication and that the local stock price is a strong leading indicator. Further evidence of bi-causality between the stock and foreign exchange markets was provided by the results of causality tests. Dong et al. (2005) looked at six developing Asian nations from 1989 to 2003 and discovered no correlation between stock prices and currency rates. However, in Korea, Malaysia, Thailand, and Indonesia, they found a bi-directional causal relationship. With the exception of Thailand, the stock returns and the contemporaneous change in exchange rates had a substantial negative relationship, suggesting that currency depreciations typically occur in tandem with stock price declines.

Murinde and Poshakwale (2004) studied price interactions between the stock market and the foreign exchange market in three European rising financial markets: the Czech Republic, Poland, and Hungary. Using daily measurements of stock prices and currency rates, they discovered that only in Hungary do the pre-euro period stock prices have a unidirectional Granger cause effect on exchange rates, whereas Poland and the Czech Republic had bi-directional causation links. Exchange rates have a unidirectional Granger effect on stock prices in all three nations after the adoption of the euro. The nature of the relationship between stock prices and spot exchange rates for Canada, France, Germany, Italy, Japan, the United Kingdom, and the United States is examined by Morley and Pentecost (2000). Because exchange rates and stock prices show similar cycles rather than comparable patterns, they discovered that there is no association between the level of the stock price index and the level of the exchange rates. As a result, the statistical association is short-term rather than trending or long-term. For each of the G-7 nations-Canada, France, Germany, Italy, Japan, the United Kingdom (UK), and the United States-Lee and Nieh (2001) investigates both short-term co-movements and long-term equilibrium correlations between stock prices and exchange rates. Their results imply that there is no relationship of long-term equilibrium between the two variables. In the medium term, however, the causal relationship extends from stock prices to exchange rates in Germany, Canada, and the UK, and from the latter to the former in Italy and Japan.

Gunduz and Abdulnasser (2004) examined the relationship between exchange rates and stock prices in the Middle East and North Africa prior to and following the Asian financial crisis. For Israel and Morocco prior to and following the crisis, as well as for Jordan following the crisis, empirical data demonstrated unidirectional Granger causality between exchange rates and stock prices. Furthermore, there was no correlation found between the two factors for Egypt. According to Jefferis, Okeahalam, and Matome (2001), the Johannesburg Stock Exchange's (JSE) real stock market index has a negative correlation with real long-term interest rates and a positive correlation with real GDP and real exchange rates in Africa. Phylaktis and Ravazollo (2005) used cointegration methodology and multivariate analysis to study the long-term and short-term dynamics between stock prices and exchange rates as well as the ways that exogenous shocks affect these markets in Pacific Basin countries. Granger causality tests. Their results suggested that these markets are positively related and that the US market acts as the primary cause of these connections. Furthermore, it was discovered that foreign currency restrictions influenced the relationships between stock prices and exchange rates.

Bivariate cointegration and Granger causality tests were used by Alexandra and Livia (2007) to analyze daily and monthly stock price and currency rate data gathered between 1999 and 2007. Three different exchange rate types are used in their study: the Romanian leu's nominal effective exchange rates, the leu's bilateral nominal exchange rates against the US dollar and the euro, and the leu's real effective exchange rates. The Johansen-Juselius procedure, on the other hand, suggests the existence of cointegration between the stock market indices used and the exchange rates—nominal bilateral, nominal effective, or real effective rates—while the Engle and Granger methodology shows no cointegration between the exchange rates and the stock prices. The authors came to the conclusion that, as acknowledged in the literature, the test's lower power could be the cause of the lack of cointegration shown by the Engle and Granger approach. Granger causality tests, however, showed one bilateral causal relationship between the stock prices and the bilateral exchange rate against the US dollar and the euro for the first sub-period, as well as one unilateral causal relationship between the stock prices and exchange rates for the entire period and the second sub-period.

According to classical economic theory, exchange rate behavior and stock market performance are related. For instance, flow oriented models of exchange rate determination (see, for instance, Dornbusch and Fisher, 1980) confirm that currency fluctuations impact the nation's real output, which in turn impacts the cash flows and stock prices of businesses both now and in the future. They also have an impact on international competitiveness and the balance of trade position. Exchange rates may also be impacted by changes in the stock markets. According to monetarist models of exchange rate determination, equity, which is a component of wealth, may influence the behavior of exchange rates through the demand for money (see Gavin, 1989). The portfolio balance models also reveal similar connections (see Branson (1983) and Frankel (1983)).

Using monthly data for the 1974–1978 floating rate period, Aggarwal (1981) investigates the impact of exchange rate fluctuations on US stock prices. He discovers a positive correlation between exchange rates and stock prices. Market indices and the currency rate are positively correlated, according to Roll (1992). Smith (1992) investigates the factors influencing exchange rates using a portfolio balance model. The findings indicate that while the stock of money and bonds has minimal effect on exchange rates, equity prices have a major impact.

Using the Granger causality methodology, Vygodina (2006) conducted an empirical study of the relationship between exchange rates and stock prices for both large-cap and small-cap stocks in the United States from 1987 to 2005. Granger causality between large-cap stocks and the exchange rate is demonstrated by the study's findings. But when it comes to small-cap stocks, there is no causality. The same macroeconomic factors influence stock prices and currency rates and shifts in US Federal Monetary policy have a significant impact on the nature of these relationships. Stated differently, the nature of the link between the exchange rate and stock price is evolving throughout time.

More and more developing nations are realizing how beneficial stock markets can be for improving the effectiveness of their own financial systems. Muhammad and Rasheed (2002) use monthly data from 1994 to 2000 to analyze the links between stock prices and currency rates for Bangladesh, Sri Lanka, India, and Pakistan. According to the empirical findings, only Bangladesh and Sri Lanka exhibit

a bi-directional long-term causal relationship between these factors. For India and Pakistan, there are no correlations between stock prices and exchange rates. Okuyan (2007) investigated the relationship between exchange rates and stock prices for thirteen developing economies. For eight economies, the results show evidence of causal relationships. In the five of them, the relationship between stock price and exchange rates is unidirectional; however, in the other three economies, the relationship is bidirectional. Additionally, they discovered no causal relationship between these financial variables in Turkey, which contradicts our findings.

Ajayi et al. (1998) examine the causal relationship between stock returns and exchange rate fluctuations for seven advanced markets between 1987 and 1991 using daily market indices and exchange rates. According to the empirical findings, all advanced economies exhibit unidirectional causality between the stock and currency markets, whereas emerging economies lack consistent causal relationships. They attributed the divergent outcomes between advanced and emerging nations to the variations in the composition and features of their respective financial markets. Most of the empirical research on the relationship between stock prices and exchange rates has concentrated on studying it for industrialized nations, paying very little attention to developing nations. However, these research' findings are not conclusive. There is conflicting evidence regarding causation as well. While some research (like Abdalla and Murinde, 1997) showed a causal relationship between exchange rates and stock prices, others (Ajayi & Mougoue, 1996) found a reverse causal relationship. However, Bahmani-Oskooee and Sohrabian (1992) assert that there is short-term, but not long-term, bidirectional causality between stock prices and currency rates.

According to the review, for example, models of exchange rate determination based on portfolio balance assume that stock prices and exchange rates have a negative relationship and that exchange rates cause stock prices. In these models, a person's portfolio consists of both international and local assets, including currencies. The function of exchange rates is to balance the supply and demand for assets. When the price of domestic stocks rises, people want more domestic assets. Since foreign assets are now comparatively less appealing, local investors would sell them to purchase more domestic assets, which would result in an increase in the value of the local currency. As wealth increases as a result of rising domestic asset values, investors' demand for money will also rise, which in turn turn raises domestic interest rates. This again leads to appreciation of domestic currency by attracting foreign capital. Another channel for the same negative relationship is increase in foreign demand for domestic assets due to stock price increase. This would also cause a domestic currency appreciation.

On the other hand, a positive correlation between stock prices and exchange rates, with a causal relationship from exchange rates to stock prices, can be explained as follows: local enterprises become more competitive as a result of depreciating native currency, which in turn increases their exports. Their stock values rise as a result.

It is also possible to assume that there is little to no correlation between exchange rates and stock prices. The price of an asset (the cost of one unit of foreign currency) is treated as the exchange rate by the asset market approach to exchange rate calculation. As a result, the exchange rates are based on anticipated future exchange rates, just like the prices of other assets. any information or elements influencing the exchange rate today. It's possible that the news or factors influencing exchange rates differ from those influencing stock prices. There should be no connection between the aforementioned factors in such a situation.

It is evident from the discussion above that there is no empirical or theoretical agreement regarding the relationship between stock prices and exchange rates, or the direction of causality if there is. Thus, empirical data about the effect of exchange rates on Nigerian stock market prices will be presented in this" paper.

3. METHODOLOGY

Various academics have used a variety of macroeconomic parameters, "such as interest rates, transaction volume, gross domestic product, etc., to the exchange rate in order to explain their link with stock prices. Controlling exchange rates can help avoid stock market crises if there is a relationship between stock prices and exchange rates and a causal relationship between the two.

Below is a detailed analysis of the effects of the exchange rate and other macroeconomic factors, such as interest rates, transaction volumes, and GDP, on stock market prices.

Exchange Rate and Stock Price: Economic theory suggests that there are several ways in which exchange rate can affect the stock market. Firstly, a depreciating currency causes a decline in stock prices because of expectations of inflation (Ajayi and Mougoue, 1996).

RER = EXP*/P

Where RER = Real Exchange Rates, EXP* = nominal exchange rate, and P = price level

A decline in the price ratio (p*/p) toward a long-term equilibrium level, where the Real Exchange Rate equals unity, is consistent with a higher nominal exchange rate in the short term. Relatively greater domestic prices are implied by a smaller p*/p ratio. As a result, future inflation is anticipated when the nominal exchange rate declines. The stock market views inflation as bad news since it tends to reduce consumer spending and, consequently, business profits.

Interest Rate and Stock Price: The literature has focused a lot of attention on the connection between interest rates and stock prices. Higher interest rates are thought to lower stock prices through the substitution effect (interest-bearing assets become more appealing in comparison to shares), an increase in the discount rate (and thus a reduced present value of future expected returns), or a depressing effect on investment and thus on expected future profits, according to Jefferis and Okeahalam's (2000) research on the stock markets of South Africa, Bostwana, and Zimbabwe. Arango (2002) discovered that the interbank loan interest rate, which is somewhat influenced by monetary policy, provides some evidence of the nonlinear and inverse relationship between the identical prices on the Bogota stock market and the interest rate.

Volume of transaction and stock price: Numerous theoretical works offer concrete proof of the connection between stock market prices and trading volume. According to Wood, McInish, and Ord (1985), Wei (1992), and Jain and Joh (1988), the trading volume—which is determined by the number of shares traded—follows a U-shaped pattern throughout the trading day. Therefore, it is possible to deduce a positive correlation between stock price variance and trading volume based on the comparable patterns shown for volumes and variance. Harris (1987), who discovers a favorable correlation between changes in volume (calculated as the number of transactions) and changes in squared returns for particular NYSE equities, provides more support. This association was shown to be stronger for inter day interval than intraday intervalThe total number of shares exchanged in the market is known as the transaction volume. It stands for the total number of shares that are traded on the market. The price of market shares is typically under pressure as transaction volume rises. Therefore, a significant degree of stock price volatility can be explained by the growing volume of transactions. As a result, there is a positive correlation between the stock price and transaction volume.

Gross Domestic Product (GDP) and Stock Price: Since the stock price equals the discounted present value of the company's payout, economic theory predicts that there should be a substantial correlation between GDP and stock prices. This kind of link ought to win out if this reward is eventually determined by actual action. According to the conventional discounted-cash-flow model, if investors' expectations about a company's future are generally accurate, stock prices will drive actual economic activity. This is one theoretical explanation for the possible relationship between stocks and economic output. The degree to which macroeconomic factors accounted for changes in the US and Japanese stock markets was" examined by Humpe and Macmillan (2005).

Based on the above discussion, the equation (1) and (2) present the theoretical and empirical forms of the model adopted for the study is:

$$SP = f(EXRT, INTR, GDPG, VOT) \quad (1)$$

$$SP = \beta_0 + \beta_1 EXRT + \beta_2 INTR + \beta_3 GDPG + \beta_4 VOT + U_t \quad (2)$$

Where, SP = stock price captured by All Share Index (ASI), EXRT = Exchange Rate, INTR = Interest Rate, GDPG = Gross Domestic Product Growth, and VOT = Volume of Transaction.

The β_0's are parameters and U_t is error term. The apriori sign are $\beta_4 > 0$, $\beta_3 > 0$, $\beta_2 < 0$, $\beta_1 > 0$.

Data

The above model would be analysed using secondary time series data obtained from such sources as Central Bank of Nigeria (CBN), Nigeria Stock Exchange (NSE), Securities and Exchange Commission (SEC), Nigerian Bureau of Statistics (NBS) and other relevant articles, journals and text. Occasionally, personal visits were made to these offices and oral interviews were conducted.

Time series data ranging from 1984 to 2008 were used for the analysis using an Ordinary Least Square (OLS) regression technique with the aid of E-view econometric software. The reasons for using time series analysis are because data are kept annually in Nigeria. Also, because of the use of stock market price movement. As a justification for the choice of estimation technique, Maddala (1977) identified that ordinary least square (OLS) regression technique is more robust against specification errors of simultaneous equation methods. He also observed that, predictions from equation estimated by ordinary least square (OLS) are often favourably compared to those obtained from equations estimated by the simultaneous equation method.

4. RESULTS

This study examines the impact of exchange rates on stock market price. To this "end, time series data covering 1984 to 2008 were used to obtain the coefficient of the variables included in the model specified in the previous chapter. The dependent variable included in the model in the previous chapter is stock market price while the independent variables were Exchange rate (EXRT), Interest rate (INTR), Gross Domestic Product Growth (GDPG), and Volume of transaction (VOT). The regression analysis adopted Ordinary Least Square (OLS) technique and the result is presented in Table 1.

Exchange rate (EXTR) has a positive impact on stock market price which is represented as SP. The positive impact of exchange rate on stock market price was significant since the calculated t-value of the variable (EXTR) of 2.24 was greater than the theoretical t value of 2.09 at 5% level of significance. Interest rate (INTR) which measures the lending and borrowing capacity of investors and financial institutions in Nigeria had a positive relationship with stock prices as against the anticipated inverse relationship. This positive relationship could be as a result of attraction of foreign portfolio investment necessitated by the increase in interest rate. Here, interest rate is not seen as lending rate only but also as returns on investment, hence the positive relationship. But this should not be taken seriously because interest rate had insignificant impact on stock market price because the calculated t-value of 0.10 was less than the theoretical t-value of 2.09 at 5% level of significance.

Gross domestic product growth (GDPG) which measures Nigeria economic performance had a negative relationship with stock market price. This negative relationship could be because of volatility in the growth pattern. This situation could lead to loss of confidence on the part of investors to invest in the economy, thus, affecting the stock market price negatively. However, this should not be taken seriously because the resultant insignificant impact of GDPG on stock market price since the calculated t-value in absolute term of 0.35 was less than the theoretical t-value of 2.09 at 5% level of significance. Volume of transaction is a major indicator of the performance of the capital market. The volume of transaction had a positive impact on stock market price which is represented by SP. The positive impact of volume of transaction on stock market price was significant since the calculated t-value of 12.54 was greater than the theoretical t-value of 2.09 at 5% level of significance

The adjusted coefficient of determination (R-bar squared= 0.96) shows that about 96% of systematic variations in the dependent variable (SP) is explained by the independent variables (EXTR, INTR, GDPG, and VOT), while the negligible 4% is accounted for by the error term. This implies that the model is a good fit with high predictive power. The F-test which measures the existence of linear relationship between the dependent and independent variables revealed that, actually a highly statistical significant relationship exist between the dependent variable and independent variables since the F-calculated value of 162.86 was greater than the theoretical F-value of 2.87 at 5% level of significance. The Durbin-Watson statistic value of 1.31 revealed the problem of autocorrelation in the OLS results.

Table 1: Model for SP (OLS Estimation)

Variable	Coefficient	Standard error	t-value
Constant	-257.9475	1892.1	-0.13633
EXRT	33.7759	15.0809	2.2397
INTR	8.4252	82.5704	0.10204
GDPG	-55.1387	157.0707	-0.35104
VOT	0.024038	0.0019157	12.5424
R-squared = 0.97; R-bar squared= 0.96, F(4,20) = 162.86, DW-Statistics = 1.31.			

Table 2 shows the result for stock price estimation using serial correlation correction method, the Durbin-Watson statistic value of 1.73 shows no evidence to accept or reject the presence of autocorrelation in the model. The adjusted coefficient of determination (R-bar squared= 0.96) that about 96% of the systematic variations in the dependent variable (SP) is explained by the independent variables (EXTR, INTR, GDPG, and VOT). This implies that changes in Exchange rate (EXTR), Interest rate (INTR), Gross Domestic Product Growth (GDPG) and Volume of transaction (VOT) would affect the stock market price. The F-test which measures the overall significance of the model revealed that there is highly significant linear relationship between the dependent variable and independent variables. This was so because the calculated F-value of 131.20 was greater than the theoretical F-value of 2.74.

As expected, exchange rate (EXTR) which measure the price of one currency quoted in terms of another currency had a positive and significant impact on the stock market price represented by SP. This implies that despite the fluctuation in the exchange rate, it has favourably affected the stock market price. This should be taken seriously since the calculated t-value of 1.81 is greater than the theoretical t-value of 1.73 at 10% level of significance. Interest rate (INTR) which measures the rate of return on investment and not only viewed from lending and borrowing rate had a positive impact and insignificant impact on stock market price because the calculated t-value of 0.14 is less than the theoretical t-value of 2.09 at 5% level of significance. GDPG which measures Nigeria economic performance had a negative and insignificant impact on the stock market price because the calculated t-value of 0.23 in absolute term is far less than the theoretical t-value of 2.09 at 5% level of significance. Volume of transaction (VOT) captures the total value of shares traded in the capital market had a positive and significant impact on the stock market price because the calculated t-value of 10.16 is greater than the theoretical t-value of 2.09 at 5% level of significance.

The regression results show that exchange rate has a positive and significant impact on stock market prices. This therefore means that specific attentions need to be given to exchange rate variation when predicting stock market price in Nigeria. The regression results also show that the growth of gross domestic product and interest rate had an influence on stock market price. The negative impact of gross domestic product growth on stock market price might be due to investors' response to variation in economic activity (i.e. economic uncertainties). Interest rate had an insignificant impact on stock market price. This therefore means that investors should not place more emphasis on interest rate when predicting stock market price in Nigeria. In the case of volume of transaction, the regression results show that the volume of shares traded is a major determinant to share price variation in Nigeria.

In line with Phylaktis and Ravazzolo (2005), we argue that this result may be due to the inclusion of some important variables, which act as conduit through which the two markets are linked. Therefore, we incorporated these additional variables to the system such as interest rate, gross domestic product and volume of transaction. The regression results indicate that exchange rate and volume of transaction have positive and significant impact on stock market price while interest rate and gross domestic product have insignificant impact on stock market price.

Table 2: Model for SP AR(1)-Estimation [Inverse interpolation converged after 6 iterations]

Variable	Coefficient	Standard error	t-value

Constant	-501.9207	2148.7	-0.23360
EXTR	35.0757	19.3733	1.8105
INTR	12.8527	93.1920	0.13792
GDPG	-33.6216	146.9163	-0.22885
VOT	0.024238	0.0023854	10.1608
R-squared= 0.97, R-bar squared= 0.96, F(5,19)= 131.20, DW-Statistics = 1.73			

5. CONCLUSIONS

In this study, we examined the concepts of exchange rate, approaches of exchange rates and stock prices, dynamics of stock market price and the causality between exchange rate and stock market price in developing countries, especially Nigeria. Also, various literature and theoretical issues were reviewed as they related to exchange rate and stock market price. In addition, an empirical analysis was undertaken to investigate how changes in exchange rate affect the stock market price in Nigeria over the period of 1984 to 2021.

This work examined the impact of exchange rate on stock market prices in Nigeria, using ordinary least squares (OLS) regression technique. We examined the impact of exchange rate, interest rate, gross domestic product and volume of transaction on stock market prices. It was found that exchange rate and volume of transactions had a positive and significant impact on stock market price in Nigeria, and therefore should be highly considered when making investment decisions as its relates the stock market. While interest rate and gross domestic product growth had negative and insignificant impact on stock market price in Nigeria. This could be de-emphasized when making decisions on investment in the stock market.

We recommended that policy analysts should aim at achieving the following. First, greater stability and efficiency of the Nigeria's foreign exchange market. There is the need for government to promote greater deepening of the market and its integration with other global markets across the world. Thus, policy measures that are consistent with the stabilization and growth of the stock market, hence stock market price. Second, government and regulators of the capital market should prepare the market against such backlash of huge withdrawals as was witnessed towards the end of 2008. This implies that, policies that would encourage increase in the volume of transaction should be adopted, which would eventually boost the economic activities of the market. This trend in the global events would have a direct positive impact on the Nigeria's capital and foreign exchange markets. Third, government should intensify effort on economic reforms which would promote robustness of gross domestic product. This could be likened to the 2005 consolidation exercise in the banking and non-banking (insurance sector), and the recent reform in the banking sector. Thus, increasing certainty in the Nigerian business environment, and to ensure profitable and consistent stock market operations. This is consistent with theoretical underpinnings, and it implies that a positive development in one variable positively drives the other". A boom, for instance, in stock market prices causes exchange rates appreciation in Nigeria and vice-versa.

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