School of Management

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THE EFFECT OF ECONOMIC FACTORS ON STOCK PRICE IN A GLOBAL ECONOMY - A CASE STUDY OF THE NIGERIAN STOCK MARKET

By

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Supervisor: **Anders Hederstierna**

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ABSTRACT

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Department: School of Management, Blekinge Institute of Technology

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The study was carried out to examine the effect of economic factors on stock price in a global economy - a case study of the Nigerian stock market. The main objectives of the study was to examine some peculiarities or differences in terms of economic variables that influence stock prices in the Nigerian stock market from those of the global economy. The effect of sales on stock price in the Nigerian stock market as well as the extent to which the previous stock price influence the current stock price in the Nigerian Stock Market was also amongst others duly examined.

The study makes use of regression analysis and analysis of variance to analyze the secondary data obtained from the Nigerian Stock Market. There are numerous variables that can be identified to determine stock prices in any economy. A few of these variables were investigated and results showed in brief were that, there is a negative relationship between stock price and the price of industrial production in the country.

The result of the second regression confirms that there is a positive relationship between the stock price and Average Naira-Dollar Exchange Rate. Also further regression results showed a positive relationship between stock price and market capitalization in the country. The marginal propensity of the equation was evaluated in this thesis which revealed that the market capitalization expenditure is very sensitive to changes in the stock price, hence the relationship that the composite consumer price index was very sensitive to changes in the stock price was observed. As a matter of fact the result of the fifth regression was able to confirm that there is a positive relationship between the stock price and Maximum Lending Rate (MLR).

These above findings were observed to be in conformity to the “a priori” expectation. However, a change in the explanatory variable was observed to cause a greater change in the level of stock in the country. Regression models, where utilized to aid in drawing conclusions as to which economic factors were found to correlate with each other. The factors considered included price of industrial production, composite consumer price index, average naira dollar exchange rate, market capitalization, broad money supply and maximum lending rate with the aim of establishing their probable impact on stock price.

The need to urgently implement policies to check the current increase in the rate of inflation in the economy were highlighted with the intention of opening a window to access the effect of economic factors on stock price determination on the Nigerian economy. Based on the findings arising thereof, it is hoped that vital and important recommendation can be drawn that will bring about positive changes in the management of the Nigerian Stock Mark

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Since ‘opportunity is of little account without ability’, (Napoleon Bonaparte, 1769-1821) we express our thanks to our supervisor, **Assistant Professor Anders Hederstierna** for granting us the opportunity to develop our ability through this work. We also appreciate his patience, constructive guidance and assistance throughout the duration of this thesis.

Paul Imonikhe, **OJEAGA &** Victor Olushina, **FOLAJIN**

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List of abbreviations

OLS	Ordinary Least Squares
DGP	Data Generation Process
ADR	American Depository Receipts
ANOVA	Analysis of Variance
IRR	Internal Rate of Return
NPV	Net Present Value
VAR	Value Added Risk
VECM	Vector Error Correction Model
SPSS	Statistical Package for the Social Sciences
JMulti	Java Multivariate Time Series Analysis
ARCH	Autoregressive Conditional Hetero-scedasticity
NSE	Nigerian Stock Exchange
SEC	Securities and Exchange Commission
IPO	Initial Public Offering
NASDASQ	National Association of Securities Dealers Automated Quotations
DAX	Deutscher Aktien IndeX
FTSE	The Financial Times Stock Exchange
CAC	Cotation Assistee en continu (Continuous Assisted Quotation),
MLR	Maximum Lending Rate
ML	Maximum Likelihood

Chapter 1

Introduction

1.0 Introduction

This chapter presents the background of the research topic "The Effect of Economic Factors on Stock price Determinant in a Global Economy, Nigerian Stock Market – A Case Study". The presentation is then followed by a discussion that will lead to the problem statement of the research work and subsequently the aim of the thesis.

1.1 Overview of shares and securities.

Few investors remain impervious to the high value placed on shares and securities as a form of guaranteed future investment. Furthermore, private investment in shares and securities has risen to importance in recent years. More and more people today invest their money in stocks. One reason is the need to secure income for retirement (Clark-Murphy & Soutar, 2004; Dreman, Johnson, MacGregor, & Slovic, 2001, pp. 4-6). With the current societal developments in most countries around the World today, individuals are supposed to take increased personal responsibility for their retirement incomes and find stocks as a reasonable way to do so.

With the world's population becoming increasingly older, whereas on the other hand the percentage of the working population is in continual decline. This therefore is exerting a strain on the financing of the social security systems of most governments. One possible way of taking up personal responsibility is to invest in shares and securities. Expected return on stocks may vary for two reasons. The first is that the risk free interest rate measured by insured bank deposits or default free Treasury securities may change along with the health of the economy, productivity or Central Bank Policy. Secondly, the risk premium which is the extra return that people get for holding risky stock may also change. Since a lower risk premium often reflects either a less risky market or investors who are more willing to bear the bane of such risk, the

anticipation of good returns is the primary reason for buying and holding stocks in most cases. The possibility of making a return on the purchase of stock is the primary force for buying stocks. The present performance of the economy might contain information about the future position or direction of inflation, interest rate, sales, exchange rate, and so forth. It is on this information that investors thrive on and base their prediction about the future prospects and performance of the economy and companies. This information also sends signals to policy makers, investors and companies, who in turn react to the effect of these signals. Each reaction thus influences future earnings and hence its stock price and market value. Stock, by its very nature, cannot be seen off as an independent entity from economic realities and performance. Stock price in itself many a time reflect this interdependence with the real economy. For these reasons, it is of great interest to find out what economic factors influences the pricing of such securities and stocks in the Nigerian Stock Market.

1.2 Background Analysis and Review of previous Studies.

The Stock Exchange is a market for purchase and sale of existing securities. Essentially, it is the secondary arm of the capital market. The Capital Market in Nigeria, as it is anywhere in the world is divided into two- the primary market and the secondary market.

The primary market is the market for fresh shares while the secondary market provides a window for trading in existing securities. It will be useful to highlight the fact that different economic variables influence stock price in different stock markets[1]. It remains to be seen that where the inflation rate in Sub-Saharan African countries are considerably higher, those of the developed countries are much lower or experience quite insignificant rates. It will be refreshing to also

[1] A useful example is the fact that money supply and inflation rate are among the microeconomic factors that play a role in stock price determination.

highlight that though the economic variables that influence stock price in various stock markets are not the same; the variables as a matter of fact fall under the same economic factors. According to Myron Slovin and Marie Sushka (1999), a significant factor that determines the direction of stock prices is the volume of what is known as "founder shares"[2]. They argued that the extent to which the founder of a public company has interests in the firm determines how well the typical investor perceives the firm. In other words, the volume of equities held by the founder of a public company plays a role in the final determination of the stock. Slovin and Sushka (1997) are of the view that it is a myth or rather that it is not true to assume that the founder of a firm understands the business better than outside managers. Modigliani and Miller (1961) point out that dividend policy of a company does not influence the value of the company and therefore, the price of their shares. This means in effect that the shares prices of a company will always be constant irrespective of the various dividend policies made by the firm. They reason that the value of company depends on the company's earnings, which often result from the company's investment policy. To support their claims they make use of the following assumptions as to the operations of the firm:

- The firm or company raises funds in the perfect capital market where investors behave rationally with free availability of information while transaction and floatation cost are absent of taxes.

- The company has a fixed investment policy.

[2] Founders Shares are shares held by the founders of a company they maybe golden shares, deferred shares etc.

- That there is no risk of uncertainty. This means that investors are able to predict future prices and dividends with certainty and one discount rate is appropriate for all securities at all time periods.

- The discount rate will be identical for all shares. This price of each share must adjust so that the rate of return, which is composed of the dividend rate and capital gains on every share, will be equal to discount rate and be similar for all shares.

Campbell and Shiller (1987) relaxing the assumption of constant discounting, Campbell and Shiller (1988, 1989) and Campbell (1991) attempt to break up stock price movements (or returns) into the contributions. It is worthy of note that auto regressive conditional hetero-scedastic (ARCH) model, is used to estimate changing variances in stock returns. Traditionally applied research often assumes constant conditional variance in estimating and testing economic times series. Indeed, interest in time series models appeared to be confined (or limited) only to question of conditional means. From the above, the main objective of this research is to examine economic variables or factors that are specific to Nigeria Business/Investment environment.

1.3 Scope of study

The scope of this research examines the Nigerian Stock Exchange which is a market for purchase and sale of existing securities. Essentially, it is the secondary arm of the capital market. The Capital Market in Nigeria, consist of the primary market and the secondary market. The primary market as said earlier is the market for fresh shares while the secondary market provides a window for trading in existing securities. According to Myron Slovin and Marie Sushka (1999),

a significant factor that determines the direction of stock prices is the volume of founder shares. In other words, the volume of equities held by the founder of a public company plays a role on the final determination of the stock.

Under the trading rule of the NSE, prices are not allowed to move by more than 5 % up or down beyond its closing price. Since there are essentially two segments in the Nigerian Capital Market as mentioned above, in this wise, the method of securities valuation differs between the markets. Before the deregulation of the Nigerian Stock Market in 1993, valuation of new shares was carried out by the SEC Securities and Exchange Commission (Okafor, 2000). However since the deregulation exercise, valuation is carried out by the Issuing House(s) in consultation with the issuer. In accessing the Capital Market post-consolidation era, the Issuing House and the issuer take a lot of factors into consideration.

1.4 Research Questions

The following research question will form the core of empirical investigation of studies.

- Since we suspect some peculiarity or difference in terms of economic variable that influences prices in the Nigerian stock market from those stock prices in the global economy. Will an econometric model be a useful model that can be used?
- Do sales, index of industrial production, Average Naira-Dollar Exchange Rate, Market Capitalization, Broad Money Supply, Maximum Lending Rate and Composite Consumer Price Index affect the stock price in the Nigerian stock market? If, yes to what extent? This will be proved or shown empirically via correlation and regression model.

- To what extent does previous stock price influence the current stock price in the Nigerian Stock Market?
- To what extent does dividend, return on stock and sales or turnover determine stock price in the Nigerian Stock Market?
- What macroeconomic information influences stock pricing in Nigerian Stock Market?

1.5 Hypothesis

In this study it is reasonable to hypothesize that variables such as the index of industrial production, Average Naira-Dollar Exchange Rate, Market Capitalization, Broad Money Supply, Maximum Lending Rate and Composite Consumer Price Index in Nigeria Sale Turnover and Stock Returns Predict affect the stock market. However one cannot expect those variables to fully account for the observed predictability.

1.6 Methodology

There are various theoretical issues involved in constructing a model for forecasting. In this research work, an obvious starting point is, which model to use, given the many possibilities that are available, even once we have determined the purpose to which it is to be put (thereby, forecasting) The different type of models often require different theoretical and empirical tools (e.g. survey by Franses and Van Dijk, 2000 and Van Dijk, Franse and Terasirta, 2002).

This research work intends to validate the a priori explanations for the variables by determining the causal relationships between the exogenous and the endogenous variables. The traditional test of significance of the parameter estimates is the standard error test, which is equivalent to the student's t–test. The correlation coefficient (R) shows the relationship between the variables. The relationship could be of a direct, indirect or an outright zero correlation. The Durbin Watson test will be conducted to verify the autocorrelation of the variables. The standard error will be obtained by taking the inverse of the variance of the estimate. The standard errors for the estimate of **ρ, ß** and **þ** will be dealt with in this project, while the standard error for the estimates **δ, Ø** and ∂ are left out. Research methodology in this study will include empirical evidence of some theoretical link, which will form the core of this study. Estimation will be done by J MulTi or SPSS package.

1.7 Purpose of Study

This research study will focus on analysis of secondary data in the Nigeria Stock Exchange. The period of the analysis was between 1980 and 2008 which implies that 29 years stock price and some economic factors analysis will be conducted in the course of this study. This research study will focus on Determinant of Stock price in Nigeria Stock market at secondary level. This thesis primary concern is about identifying the factors that come to play in valuing stock at the secondary stock market in Nigeria. Portfolio and investment risk management could all be improved by knowledge of the Major factors that influence stock price nally[3]; such knowledge can increase investor confidence in capital market and generally in the financial market thereby enhancing the efficacy of corporate resources allocation.

[3] By stock price nally we mean stock price information.

Chapter 2

LITERATURE REVIEW

2.0 Literature Review

This chapter delves into the definition of basic concepts and theories in shares and securities as related to this thesis work.

2.1 Theoretical Framework

New revolution changes in information technology and higher labour productivity growth has been used as a reason to explain exceptionally high stock prices (Greenwood and Jovanovic, 1998, 1999), (Browne, 1999) in new emerging economies. Alternatively, others have had to argue that a reduction in the rate at which investors discount expected future real dividends may have caused the spurious increase in stock prices. According to Siegel (Siegel, 1999) it was suggested that a decline in transaction costs and the availability of low cost index funds has decreased the cost of holding highly diversified portfolio.

Models for the valuation of stock price, such as that of (Gordon, 1962) provide a concise way to look into the factors that affect the fundamental value of stock prices. With stock prices equal to the present discounted value of expected future real dividends, stock prices increase when either expected future real dividend growth increases or when the expected future real discount rate falls. Most existing literature has assigned a relatively small contribution to real dividend growth. For example, Shiller (1981) and LeRoy and Porter (1981) have argued that the observed

dividend series is too smooth to justify the observed volatility of stock returns. More recent studies such as Campbell (1991), Shiller and Beltratti (1992), Cochrane (1992), and Campbell and Ammer (1993) often decompose the variance of stock returns into contributions of real dividend growth and other factors. As a matter of fact particularly, Cochrane (1992) and Campbell and Ammer (1993) break stock price movements into contributions of dividend growth, real interest rates, and excess stock returns. They argue that most of the variability in stock returns is as a result of innovations in excess returns and not dividend growth or real interest rates. Also according to Barsky and DeLong (Barks' and DeLong, 1993), actual stock price movements could be rationalized by permanent changes in dividend growth, much of the previous literature for instance (Campbell, 1991, Campbell and Ammer, 1993, and Lee, 1998) among other numerous work attempts to calculate these expectations by estimating a time series model, particularly a VAR, and in turn use that model to construct future expectations. Most of these literature assumptions are based on the fact that market fundamentals were stationary.

However prior to 1981, much of the literature has had to view the present value of dividends to be the principal determinant of the level of stock prices, Balke and Woher (2005, PP. 1-6). Leroy and Porter (1981) and Shiller (1981) discovered that, assuming the case of a constant discount factor, stock prices were too volatile to be consistent with movements in future dividends[4]. Other papers however such as (Flavin 1983; Kleidon 1986; Marsh and Merton 1986 etc.) have challenged the statistical reliability of the variance bounds tests of LeRoy and Porter and Shiller, based on the grounds that stock prices and dividends are non-stationary processes, although, much of the subsequent literature have investigated and found out that stock price movements

[4] This postulate is known as the "excess volatility" hypothesis; it reiterates that stock prices exhibit too much volatility to be justified by fundamental variables.

could not be explained by dividend variability alone, as suggested by the present value model with constant discounting (Campbell and Shiller 1987). Using the constant discounting assumption, Campbell and Shiller (1988, 1989) and Campbell (1991) broke up stock price movements (returns) into the contributions of changes in expectations about future dividends and future returns. Using log-linear approximation of stock returns to derive a linear relationship between the log price dividend ratio and expectations of future dividends and stock returns. In addition they assumed that the data generating process of dividend growth and the log price-dividend ratio could be adequately characterized by a low-order vector auto regression (VAR). Thereby using the VAR to forecast future dividend growth and future stock returns, the results were that they were able to decompose the variability of current stock returns into the variability of future dividend growth and future stock returns. The movements in stock prices were found to be related mostly to revisions in expectations about future stock returns rather than to future dividend growth. Campbell and Ammer, (1993) then utilized the log-linear approximation and the VAR approach to an examination of bond returns as well as stock returns. It was realized that expectations of future excess returns contributed immensely to the volatility of stock returns than did movements in expected future dividends. Stock price decomposition(from returns on mortgage and related house rents returns) according to Campbell et al, (2006, pp. 1- 6) as applicable to stock price, highlights the stock price decompositions of Campbell and Shiller (1988, 1989) as follows, viewing a single period gross return on stocks, equation 1 below shows

$$R_{t+1} \equiv \left(\frac{P_{t+1} + V_{t+1}}{P_t}\right) \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots eqn1$$

gross return of a stock investment by R , price of stock P and v is the flow of fundamental value, then the equation (1) can be rewritten using a log-linear approximation that establishes a relationship between the current log stock-price ratio to expected future rates of return and expected future growth in returns, as depicted in equation 2 below,

$$V_t - P_t = \mathrm{K} + E_t \left[\sum_{J=0}^{\infty} \rho^j r_{t+1+j} - \sum_{J=0}^{\infty} \rho^j \Delta v_{t+1+j} \right] \ldots\ldots \text{eqn 2}$$

$$\rho = (1 + e^{-(v-p)})^{-1}$$

$$k = (1-\rho)^{-1} [\ln(\rho) + (1-\rho) \ln(\frac{1}{\rho} - 1)]$$

the discount factor is ρ, $e^{-(v-p)}$ is the long run stock-price ratio, k is the constant of linearization and i is referred to as the sum of interest rate, also the per-period premium is given by, $\pi = r - i$, the log stock-price ratio can be expressed as the sum the future expected real rates, stock premia, and stock growth, as given below in equation 3 and 4.

$$V_t - P_t = K + E_t[\sum_{J=0}^{\infty} \rho^j i_{t+1+j} E_t \sum_{J=0}^{\infty} \rho^j \pi_{t+1+j} - E_t \sum_{J=0}^{\infty} \rho^j \Delta v_{t+1+j}] \ldots \text{eqn3}$$

Or

$$v_t - p_t = k + \tilde{i}_t + \tilde{\pi}_t - \tilde{\Delta v}_t \ldots eqn4.$$

$\tilde{\pi}t$ is referred to as stock premium and πt is the per-period stock premium. The method of representing the log of stock-price ratio in terms of future expected real interest rates, premiums and growth in real stock is a version of the classical Gordon growth model of asset prices[5]. This is shown below in equation 4a.

[5] Where the constant stock-price ratio is a constant real interest rate, constant premium and constant growth rate of real returns.

$$\frac{\mathrm{v}}{\mathrm{p}} = i + \pi - \Delta v \ldots eqn.4a.$$

The above dynamic Gordon growth model developed by Campbell and Shiller was utilized to analyze the determinants of dividend-price ratio variability, it has however been utilized in the analysis of other markets. It is known that Shiller and Beltratti (1992) and Campbell and Ammer (1993), for example, used the dynamic Gordon growth model to decompose the variability of long-term bond yields. To implement the dynamic Gordon-growth model, in this thesis we use data on real interest rates to estimate the interest rate component of the stock-price ratio, $\tilde{\imath}\mathrm{t}$, and the data on real stock growth is used to estimate the stock-growth component given by , Δv. Then, given data on stock-price ratios to be,($v\mathrm{t} - p\mathrm{t}$) the accounting identity above is used to identify the premium component as shown below in equation 4b,

$$\tilde{\pi}_{\mathrm{t}} \equiv v_{\mathrm{t}} - p_{\mathrm{t}} - k + \tilde{\imath}_{\mathrm{t}} + \Delta\tilde{v}_{\mathrm{t}} \ldots eqn.4b$$

A more conversant alternative to equation (4) often used to analyze stock valuations determine the level of the stock-price ratio as depicted in equation 5 below;

$$\frac{v_{\mathrm{t}}}{p_{\mathrm{t}}} = i + \pi - g_{\mathrm{t}} + 1 \ldots eqn5$$

where i is current real interest rate, π is a constant stock premium and($g\mathrm{t} + 1$) represents expected capital gain or loss on stocks as the case may be. Previous literature recognize the fact that prices are dynamic, so therefore the valuations might appear to conflict with current stock and interest rates even though they are actually in consonance with long-term paths of these variables. In equation 5 above by joining all future considerations in one variable we obtain the expected future capital gains. On the other hand, the above framework recognizes and accounts

for the dynamics in each of the components of the stock-price ratio and also offers a very strong restriction on long term capital gains.

Emphatically, the dynamic Gordon growth model shows that long-run real capital gains tend to be identical to the long run growth rate of real stock. Therefore there exists no room for expected future price gains in stocks that are not related to future stock growth. For example we can consider a situation where two different stocks cannot have a completely different growth rate in prices without a completely different growth rate in stock which is often true. In the final analysis, if an investor expects high price growth in the future in any given stock, he (or she) must expect as well a high stock growth in that stock too.

According to Bakaert and Wu (2000) and Wu (2001) Stock market indexes have been found to often reflect value changes in stocks they can also represent the role of a possible benchmark in evaluating the performance of investment supervisors. This relationship between a stock market index and its volatility offers various findings one of which evolved is the fact that the innovations of a stock market index and innovations to volatility are often negatively related, since for instance a decrease in stock price is attributable to an increase in its volatility. Due to asymmetric relationships that often reoccur; an absolute change in volatility after a negative shock to the return series is considerably greater than the change in volatility after a positive shock of the same magnitude. Previous literature e.g. Black, (1976); Christie, (1982) argued that ‘a fall in stock price causes an increase in the ratio of debt to equity of the firm and the risk associated with the firm increases subsequently’ validates these innovation. In another case Campbell and Hentschel, (1992) argues that ‘volatility feedback is the main factor that explains the reason behind the negative relationship between return shocks and volatility’. This

innovation exerts the fact that an anticipated increase in the perceived risk induces a high risk premium on the stock and the stock price must fall subsequently. Further Empirical studies on the subject have offered mixed results however an example is that of French (1987) and Campbell and Hentschel (1992) which show that the volatility and expected return are positively related, this however supports the above volatility feedback hypothesis. This thesis however will provide some evidence for a significant negative correlation between stock market index and its known volatility.

2.2. The Stock Market

According to C.J Corrado and B.D Jordan (2002)[6] the stock market is composed of a primary market, where stock shares are first sold and a secondary market, where investors trade shares among themselves. In the primary market, Companies raise money for investment projects. Investment bankers specialize in arranging financing for companies in the primary market. Investment bankers often act as underwriters, buying newly issued stock from the company and then reselling the stock to the public. The primary market is best known as the market for initial public offerings (IPOs). In the secondary market, investors trade securities with other investors, secondary market transactions are directed through three channels; directly with other investors, indirectly through a broker, or directly with a dealer, as we know that a broker matches buyers and sellers while a dealer buys and sells out inventory. Most common stock trading is directed through an organized stock exchange or through a trading network. The organized stock exchange in the United State is the New York Stock Exchange (NYSE) which is popularly known as the Big Board, NYSE is owned by its members.

[6] See Fundamentals of investments by Corrado J. and Jordan D. (2002)

2.3 Securities

Securities are investment instrument, other than an insurance policy or fixed annuity, issued by a corporation, government, or other organization which offers, evidence of debt or equity. The official definition, from the Securities Exchange Act of 1934, is: "Any note, stock, treasury stock, bond, ,debenture, certificate of interest or participation in any profit-sharing agreement or in any oil, gas, or other mineral royalty or lease, any collateral trust certificate, reorganization certificate or subscription, transferable share, investment contract ,voting-trust certificate, certificate of deposit for a security, any put, call, straddle, option or privilege on any security, certificate of deposit , or group or index of securities (including any interest therein or based on the value thereof), entered into on a national securities exchange relating to foreign exchange , or in general, any instrument commonly known as a 'security'; or any certificate of interest or participation in, temporary or interim certificate for, receipt for, or warrant or right to subscribe to or purchase, any of the foregoing; but shall not include currency or any note, draft, bill of exchange, or banker`s acceptance which has a maturity at the time of issuance of not exceeding nine months , exclusive of days of grace, or any renewal thereof, the maturity of which is likewise limited.

2.4 Stock Market Index

Classification of Stock market indices can be done in so many ways. A broad base index often represents the performance of the totality of the stock market and also, reflects investor sentiments on the state of the whole economy. The regularly quoted market indices in any nation form what are called broad base indices which compose of the stocks of large companies listed on a nation's biggest stock exchanges, they are often referred to as points as in the case of the

Dow Jones, some examples include the British FTSE 100, the French CAC 40, the German DAX, the Japanese Nikkei 225, the Indian Sensex, the Australian All Ordinaries and the Hong Kong Hang Seng Index etc.

This concept extends beyond exchange level. For example, the Dow Jones Wilshire 5000 Total Stock Market Index represents the stocks publicly traded company in the United States; this includes all U.S. stocks traded on the New York Stock Exchange, but excludes ADRs (American Depository Receipts) and stocks traded on the NASDAQ (National Association of Securities Dealers Automated Quotations) and American Stock Exchange. The Russell Investment Group added its label to the family of indices by launching the Russell Global Index.

The movements of the prices in a market are often reflected in price indices called stock market indices, of which there exist many[7]. These indices are usually market capitalization weighted, with these weights depicting the contributive strength of the stock to the index. The makeup of these indices is reviewed frequently to include or exclude stocks in order to show the dynamic business environment.

2.5. History of Nigeria Capital Market

The Nigerian Capital Market currently has its Headquarters in Lagos and was established in 1960. The Nigerian Capital Market in December 1977 officially became the Nigerian Stock Exchange, with branches established in some of the major commercial cities in the country. Currently, there are six prominent branches of The Nigerian Stock Exchange; each branch has a

[7] They include S&P (Standard and Poor), FTSE (Financial Times and London Stock Exchange), Euronext (European Stock Exchange) indices and so on.

trading floor. The branches are; Lagos which was established in 1961, Kaduna in 1978, Port Harcourt in1980; Kano in1989 Onitsha in 1990; and Ibadan in 1990; Abuja in1999 etc. Today according to the Nigerian Stock Exchange [Online at]

' http://www.nigerianstockexchange.com/quoted_companies.jsp' there are more than 262 securities listed on The Exchange, including Government Stocks, such as Industrial Loans (Debentures/Preference) Stocks and more than 195 Equity or Ordinary Shares of Companies or private holdings, all summing to a total market capitalization of well above N875.2billion. The year 2007 was quite outstanding for the Nigerian Stock Exchange as it experienced tremendous growth with a 74.7% return on index and market turnover of over 4 times the previous year. It is expected that with a hypothetical forecast of 100% ratio by 2012, that the Nigerian Stock Market would achieve a market capitalization of 29 Trillion Naira. The transactions in The Market are regulated by The Nigerian Stock Exchange which is an autonomous and self-regulatory organization (SRO), and the Securities and Exchange Commission (SEC) on the other hand is vested with the power to administer Investments and Securities according to the investment Decree of 1999.

The Internationalization of the Stock Market took place in 1995 following the deregulation of the capital market in 1993 by the Federal Government, where the capital market was internationalized, with the removal of laws that constrained foreign participation in the Nigerian capital market. Due to this removal of the Exchange Control Act of 1962 and the Nigerian Enterprise Promotion Decree of 1989, foreigners can now participate in the Nigerian capital market both as operators and investors. There are currently no limits any more to the percentage of foreign holding in any company registered in the country. Pricing and other direct controls

have given way to indirect controls by the regulatory bodies, which are the Securities and Exchange Commission of Nigeria and The Nigerian Stock Exchange. The fact remains that, on the overall, the competitiveness of the market has improved in addition to making it more investor-friendly.

2.6. Structure of the Nigerian Capital Market

The barometer of a nation's economy and Nigeria is not an exception is the stock market, which is a leading indicator of its direction. Due to this recognized role of the market, many studies were in the past conducted by market experts. These include the Efficient Market and Random Walk Hypotheses as well as Fundamental /Technical Analysis. A brief look at the capital market in terms of meaning and its components before proceeding on the main issue is important. The market broadly speaking is the arm of the financial market which trades in medium to long term financial instruments such as stocks and bonds with maturity in excess of usually one year. Capital market as earlier described above is segmented in two units, the primary market and secondary market. The primary market, also called the new issues market, provides for the purchase of freshly issued securities of a corporate entity or government. On the other hand, the secondary market provides the mechanism for trading in existing securities. In other words, it is a securities market such as a stock exchange where existing securities, earlier issued in the primary market are bought or sold. The market, therefore, provides some liquidity to investors by ensuring easy convertibility of stocks into cash.

2.7. Some Determinants of Stock Price Movements in the Nigerian Secondary Market

2.7.1. Efficient Market Theory

When share prices fully reflect all available information on the company, it displays an efficient market situation. It was first postulated as a hypothesis by Eugene Fama in around the 1960's and asserts that stock markets are information efficient and it is impossible to practically upturn the market using such information. In other words, the theory assumes that such information will be correctly interpreted by the investors in their investment decisions. Given this fact, it is therefore expected that in an efficient market, information will be quickly and widely disseminated and cheaply available to all investors. Price change as a matter of fact will only occur at the break of new information to the market which could affect future profitability of the company and consequently future dividends.

2.7.2. The Value at Risk Theory

Today the risk of loss on a specific portfolio of financial assets is often measured by the Value at Risk (VaR). Value at risk therefore is a type of risk metric that describe the probable risk in trading in a portfolio. For instance a given stock, probability and time horizon, VaR can be described as a threshold value such that the probability that the market-to-market loss on the stock over the given time horizon exceeds this value assuming normal markets and no trading in the given probability level.

2.8. Some Drivers of Stock Price Movements in the Nigerian Secondary Market

Various explanations for large stock price movements have been proffered. According to Shiller, Robert (2005) some research have clearly depicted that changes in estimated risk, and the use of certain strategies, such as stop-loss limits and Value at Risk limits, theoretically could cause financial markets to over react. Other research has shown that other factors such as psychological factors may result in exaggerated stock price movements. These Psychological research has clearly demonstrated that people predisposed to a succession of favorable news on a company often over react positively, thereby unjustifiably driving the price up. A period of good returns many a time also boosts the investor's self-confidence, reducing his psychological risk threshold. Since Humans are social animals, they find it difficult to stick to an opinion that differs markedly from that of a majority in a group this is a psychological phenomenon that works against an objective assessment which is known as group thinking. According to Janis, (1972) and Whyte (1952) advocates of the group thinking theory it is believed that People generally prefer to have their opinion validated by those of others in the group thereby forming a basis for their decision. Some factors that tend to drive stock price are as follows.

- **Investors' Perception**

Influenced by the above theories and hypothesis, one may argue that share price on the secondary market will essentially be determined by investors' perception of the future prospects

of the company's security and, all things being equal, this should determine the price of the security.

Since the investor (individual or corporate body) is the supplier of funds in the market, the purchase of fresh securities in the primary market by investors, makes funds available to the issuer. In the process also the buying of existing securities (second hand often called 'tokunbo' shares or bonds) from the secondary market enable those who want to convert their investments to cash do so. In essence therefore, investors' participation in the market is very important, without them there is no market. The investor is in the market for the returns he or she expects to make on his investment. It follows that investors do sometimes forfeit present consumption if they perceive that their utility would be maximized in the future. Such perception may be influenced or determined by the investors' adviser who is usually a broker. However, in the final analysis, it is the investors whose funds are at risk that would determine what investment option he should take. In other words, it is the integrated decisions of investors which should ultimately influence the prices of securities.

- **Macro and Micro Economic Factors.**

If the economy and (or) political state of the country are in a bad shape, the entire market will be affected as people will have little or no money to invest in the stock market. Hence macro economic factors relates to the nation's economic and political situation, since those who have will not want to risk their money when the economic or political situation of the nation is in distress. The movement of stock prices, including other market indices is generally negatively affected. Micro economic factors on the other hand refer to features and conditions of a

particular company. If these are in bad shape, the company's share price is adversely affected not the entire market.

- **Sectorial Influence**

The performance of a certain sector may be politically influenced by certain government policy. This would encourage investors to demand for shares of a company in that sector, while their share price would rise in return. On the other hand, if government policy states that a commodity is strictly banned, certainly investors in that Company would rush to do away with their holdings and the share price falls dramatically.

- **Inflation**

This affects investors' attitude since the rate of inflation in an economy affects the investor decision as to whether to invest or not to invest. If the inflation rate is high, the tendency is that as the real income declines, the investor end up selling their assets, including stocks to enhance their purchasing power. The reverse is the case when the inflation rate is low, investors would like to acquire more assets with stocks not exclusive. In essence, a period of high inflation rate negatively affects stock prices while low inflation rate boost stock prices.

- **Interest Rate**

A rise in interest rate may encourage investors to switch from the stock market to the money market therefore there is a relationship between bond yield, the level of stock prices and the price earnings ratio. Reduced interest rate encourages demand for cash for speculative purpose

and therefore may boost stock market activities. The lower the yield on debt instruments, the higher the stock prices as well as the price earnings ratios. On the other hand the higher the yield on bonds, the lower the stock prices.

- **Market Forces**

Market forces such as change in demand and supply, both of which can change at different rates causes fluctuation in share prices. If demand for a stock rises, its price tends to rise. An increase in supply is known to reduce the stock price.

- **Investment Returns**

No company is by law forced to declare dividends. It is only when profit is made that it can declare dividend and or bonus issues. An impressive investment returns will attracts more investors to the company, if returns on investment are attractive, there will be high demand for its stocks and the price moves up. This depends solely on profitability as there is no company that can pay good investment returns in terms of dividends and or bonus issues to its share holders without a solid profitability report. The reverse is true when a company's investment return is unattractive.

- **Money Supply**

When the volume of money supply available in an economy contracts due to inflation, the value of Stock prices are negatively affected, whereas a steady rate of expansion in money supply with low inflation tend to boosts stock prices. Therefore easing the level of Federal Reserve requirements in banks and stock market prices can be propelled to heights. The tightening of

short-term interest rates such as the rediscount rate or treasury rates can hurt the stock market and the economy.

2.9 Statistical Analysis

Statistics as a mathematical science, deals with the collection of information and data for the purpose of subsequent presentation, evaluation, analysis and forecasting. The quality of statistical data can be enhanced by sampling survey and designing experiments to meet the problem statement.

Statistics today as a discipline covers a wide horizon. The evaluation of data can be divided into two by virtue of the purpose they are to be put into use. These are namely descriptive and inferential data evaluation purposes. Descriptive statistics often involves the use of graphical and numerical methods to evaluate samples. Some methods of descriptive statistics evaluation involve the use of Mean and standard deviation for the evaluation of continuous data. Inferential statistics may involve the use of hypothesis testing which is the observation of numerical data characteristics known as estimation, analyzing association in the form of correlation and modeling relationship between the data known as regressions.

This thesis is going to deal with the use of statistics for evaluation of data collected for observation for research purposes and device a methodology for their analysis. Most statistical research are either a correlation or experimental research. In correlation research variable are measured and a relationship established between them to allow for drawing reasonable conclusions. While in experimental research variables are interfered with, the effect of this is

observed on other variables. Variables are either termed dependent or independent depending on the role that they play in a research, thereby allowing for statistical significance to be drawn or inferred. How statistically significant (represented by the value p; known as p value) a result is the tendency for the result to occur in the observation thereby explaining the degree of relevance of the investigated variable to the study, this is normally set at 5 %(0.05) probability in any study. Hence results in mathematical science with a p value of $p \leq 0.05$ are said to be statistically significant, a low p- value gives a less likelihood of assuming the null hypothesis, therefore leading to a greater level of statistical significance. CI= Correlation Index, a Correlation index greater than 0.8 depicts strong autocorrelation; correlation less that 0.5 depicts weak autocorrelation. R Square is known as the coefficient of determination of size normally between 0 and 1 the R sign depends on the slope of the regression line however. While R is the correlation coefficient, the variability factor of the *Y* values around the regression line however is given by 1- R times the original variance this shows variability not captured in the data under study and the extent to which the factors affect the subject under investigation. The Durbin Watson (d) is equal to 2(1-R) this depicts the level of autocorrelation for instance If d= 2 no autocorrelation occurs. The Significance level is alpha which is equal to 0.05 or 5% if the absolute value of the test statistic is greater than the critical value (0.025 plus or minus) half of the significance level, therefore we reject the null hypothesis and accept the alternative hypothesis. If the theoretical t-value is less than the absolute value we shall reject the null hypothesis and accept the alternative hypothesis. See P-Values are not error probabilities (2003) by Hubbard R. and Bayarri M. available online at http://ftp.isds.duke.edu/WorkingPapers/03-26.pdf and Sematech statistical Handbook available online at

http://www.itl.nist.gov/div898/handbook/. and also statsoft Electronic textbook

http://www.statsoft.com/textbook/stathome.html.

Chapter 3

RESEARCH METHODOLOGY

3.0 Research Methodology

This chapter is intended to provide the reader with some vital and elaborate information in order to make an estimate of the reliability and validity of the methods adopted for the purpose of this research work.

3.1. Data

There are various theoretical issues involved in constructing non linear model for forecasting. In this research work, an obvious starting point is to determine which non linear model to use, given the many possibilities that are available, even once we have determined the purpose to which it is to be put (thereby forecasting),the different type of model often require different theoretical and empirical tools Franses and Van Dijk, Franses and Terasvirta, (2002).

Some of the different Models are;

1. The Unit root test which can be used to test for optional log vector Auto regression (VAR) Model Granger Causality test.
2. ADF, which removes all the structural effect (auto correlation) in time series.
3. Regression analysis test.

Apart from an in-depth theoretical exposition that was provided in this study, empirical evidence of some theoretical links forms the core of this project. The aspects of econometric approach used in this study are highlighted here. In this research project, secondary data was employed.

This was sourced from two main sources, the publications of the Nigerian Stock Exchange and the Annual Report and Statement of Accounts of the companies.

This study investigated the causal relationship between the share price of stocks and economic parameters such as index of industrial production, Average Naira-Dollar Exchange Rate sales etc.

3.2. Model Specification and Methodology

The theoretical and methodological aspect of the approach used in this research is aimed at validating the prior explanations for the variables to find a casual relationship by determining the causal relationships between the exogenous and the endogenous variables i.e. Stock price and economic parameters such as index of industrial production, Average Naira-Dollar Exchange Rate, Market Capitalization, Broad Money Supply, Maximum Lending Rate and Composite Consumer Price Index in Nigeria these are discussed below. Methodological issues arising from the numbers and type of variables or the test method used are also outlined.

3.3. Unit Root Test

It is important to check if the variables are stationary or non-stationary and determine the order of integration of the variables to avoid spurious and misleading results when choosing the proper econometric method. According to Hatemi-J (2002) the random variable yt is a weak form of stationarity if it has the following three properties:

1. $E(y_t) = \mu$
2. $Var(y_t) = \sigma^2$ (3.1)

3. Cov (y_t, y_{t-k}) = d_k

So, the stationary series y_t is characterized by, a mean that is a constant independent of time, a constant variance and a covariance that is dependent on the distance between the observations k only and independent of time. If one or more of these properties are not fulfilled the variable is non-stationary.

In order to make a non-stationary time series to be stationary it is important to take the differences of the variable. The variable is integrated in the order of *d*, by differencing *d* times to become stationary, denoted by I (*d*) and contains *d* unit roots. Different unit root test can be employed for choosing the order of integration. The null hypothesis of some tests is non-stationary however it is the alternative hypothesis for the other tests. According to Hatemi-J (2001) it is a good policy to use two unit root tests than the null hypothesis. Thus, we can use the Augmented Dickey Fuller (ADF) test and Kwiatkowski, Phillips, Schmidt and Shin (1992) denoted by KPSS test for determining the order of integration for each variables, as the null hypothesis since one test is the alternative for the other.

Since a variable is said to be a non stationary variable if it has unit roots. Econometricians for a long time did not realize that some basic assumptions made by the classical estimation theory about the data generating process (DGP) of the variables are in fact not satisfied by many macro time series variables like income, consumption, money supply etc. All the variables are assumed to have constant means and variances in classical econometrics. This means that, no matter where the sample selection period is started and ended, the mean and variance remains constant and would be similar and close in different samples. However, if the mean and variance change in samples for different time spans, then those classical assumptions are not satisfied. These kinds of Variables are known as non-stationary variables. Regression equations with non stationary variables have serious limitations, such as their t-ratios and the adjusted R-square been overestimated by a large magnitude. Leading all test to become invalid[8]. The question that arises then is how do we determine whether the variables in a regression are non stationary?

[8] This kind of spurious regression problem is found in problems involving time-series methods.

According to Montgomery, Peck, and Vining, G. G. (2001).It can be realized therefore from simple estimation of an equation, with the standard OLS (ordinary least squares) using the thumb rule, this then enables us to get a DW (Durbin Watson) statistic far less than the R-square, then one may suspect that the variables are non stationary and the t-ratios etc, are then overestimated.

If 1 is a root of the process's characteristics equation the linear stochastic process has a unit root, then the process will be non-stationary. If it is found that other roots of the characteristic equation lie inside the unit circle, then we can conclude that the first difference of the process will be stationary.

3.4. Augmented Dickey-Fuller Test

The most general test for determining the order of integration is ADF test. That is performed by estimating one of the following equations according to Hatemi-J (2002):

$$\Delta y_t = a_1 y_{t-1} + \sum_{i=1}^{k} b_i \Delta y_{t-i} + \varepsilon_t \quad (3.2)$$

$$\Delta y_t = a_0 + a_1 y_{t-1} + \sum_{i=1}^{k} b \Delta_i y_{t-i} + \varepsilon_t \quad (3.3)$$

$$\Delta y_t = a_0 + ct + a_1 y_{t-1} + \sum_{i=1}^{k} b_i \Delta y_{t-i} + \varepsilon t \quad (3.4)$$

Where,

a_0, a_1, c, b_i are parametric constant,

t is a trend variable,

μt or εt as the case may beis the residual (error term) that is assumed to be an error in the

process, εt ~ NID (0, εt ^{2}).

Choosing the suitable equation depends on if the series has a constant, a trend or both, that should depend on the model. It is helpful however in some cases to use the graphical analysis with the combination of tests for choosing the appropriated equation.

The optimal lag order of the model is chosen by the lowest Akaiki Information Criteria (AIC):

$$\text{AIC} = \ln \frac{\sum_{i=1}^{T} \hat{\varepsilon i}^2}{T-n} + \frac{2n}{T} \qquad (3.5)$$

Where,

ln is the natural logarithm,

εt is the estimated squared residual of the model

T is the number of observations in the sample and

n is the number of parameters estimated. (Akaike, 1973)

The ADF test hypotheses are:

H_0: $a_1=0$ therefore implying a non-stationary variable, i.e. I (1)

H_1: $a_1< 0$ therefore implying stationary variable, i.e. I (0)

If the null hypothesis is not rejected, the variable is at least integrated in order one. Therefore the

higher order of integration should be tested for finding the correct order of the integral, this process should continue till we cannot reject the null hypothesis. Since the Dickey-Fuller test is used to test whether there is a unit root present in an autoregressive model. It therefore takes into account the role of the constant term and the trend. This statistic τ has a specific distribution simply which can be displayed on the Dickey-Fuller table of statistics.

3.5 Regression Analysis Test

In this thesis data is assembled from the variables of interest and regression analysis test is utilized to estimate the quantitative effect of the causal variables on the variable that they influence. Regression analysis test is a statistical analysis utilized for the investigation of relationships between variables[9]. The statistical significance of the estimated relationships is established, which is the degree of confidence showing that the relationship is close, as much as possible to the estimated relationship.

Considering a function $y = f(x) = \beta_0 + \sum_j^{\infty} \beta_j x_j = \beta_0 + \beta X^T$

For a set of n data pairs of the form (y_i , x_i) for all $i = 1,2,3, \ldots \ldots \ldots \ldots, n.$

From the slope of a straight line $y = mx + c$ by simple comparison we can deduce that the coefficients $\beta_0 = c$ and $\beta = m$. Hence we can minimize the residual sum of squared errors estimated output and the original output.

$$E(\beta) = \|y - \hat{y}\|.^2 = ((y - X\beta).^T (y - X\beta)$$

Assuming an output of zero we consider that $\beta_0 = 0$ and $\sum y_i = 0$ then the solution to the least square can be given by $\hat{\beta}_{Is} = (X^T X).^{-1} X^T y$ where $X^T y$ and $(X^T X).^{-1}$ can be referred

[9] Since it is used to ascertain the causal effect of one variable on another.

to as the cross auto correlation and auto correlation (Asari, 2005 pp. 1-2) [Online] available at http://zadorlab.cshl.edu/asari/pdf/InfoTheory.pdf .Regression is used to test, and model casual relationship. They depend on various assumptions been satisfied. An early method of regression is the least square method which involves the fitting of data where the best fit in the least-squares sense, this is however that model for which the sum of squared residuals has its least value. A residual can be defined as the difference between an observed value and the value given by the model under consideration.

3.5.1 The Co-integration Test

After using unit root test and finding the order of co-integration for time series variables it's important to test for existence of co-integration between non-stationary variables for avoiding spurious result and not just for finding the long relationship between the variables. Co-integration deals with the long run relationship between non-stationary variables, as a rule, non-stationary time-series variables should not be used in regression models, to avoid the problem of spurious regression. The theory of co-integration introduced by Granger (1981) and expanded by Engle and Granger (1987) explains that if all variables of the vector y_t are integrated of order *d* and there exists a vector such a ß ε_t 0, that ß´y_t are integrated of order (*d-b*) for any *b*>0, the vector process is said to be co-integrated of order (*d,b*) denoted by CI (*d,b*).

Among the several methods for testing the co-integration the Johansen's procedure is quite more adaptable for this thesis because it is based however, on the residuals from the co-integration regression by using the unit root test. When a linear combination of two or more series is stationary, but two or more series are themselves non-stationary then the series are said to be co-

integrated. An example is that the stock market index and the price of its associated future contract move through time, each roughly following a random walk. The hypothesis can be tested that, there is some statistical significant connection between the futures price and the spot price; this can be achieved by testing for a co-integrating vector. Therefore if such a vector is found to have a low order of integration it can clearly signify an equilibrium relationship between the original series, which are said to be co-integrated of an order below one.

However the Engel-Granger (E-G) procedure for co-integration test falls into a two procedural category. It is argued today that the main reason why it (i.e. GETS) is not so popular is its inability to provide a formal proof that the level variables in the ECM are co-integrated. However, Ericsson and MacKinnon (2002) recently developed a residual based co-integration test schemes such as GETS. The Johansen's procedure is used, since it is based on the residuals from the co- integration regression by using the unit root test. Johansen (1988.1991) proposed a Maximum Likelihood (ML) method to estimate the long-run equilibrium relationship or co-integration vectors and derives Likelihood Ratio (LR) tests for co-integration in a Gaussian Vector error correction model. Phillips (1991), on examining the distributional properties of the ML estimator of co-integrating vectors, showed that the ML estimator was not only super-consistent but symmetrically distributed, and median-unbiased asymptotically hence an optional theory of inference applies.

3.5.2 The KPSS Test

Inference from the KPSS test is often complementary to those based on the Dickey-Fuller distribution. This test may be conducted under the null of either trend stationarity i.e. the default or level stationarity. The Kwiatkowski, Phillips, Schmidt, Shin (KPSS, 1992) test for stationarity of a time series, differs from those in common use such as dfuller and pperron, by a null hypothesis of stationarity. The KPSS test maybe used in conjunction with those tests, to investigate the possibility that a series is fractionally integrated. The Kwiatkowski, Phillips, Schmidt and Shin (1992) denoted by KPSS test is used for testing the null hypothesis of stationarity against the alternative of unit root. This test is well known among the most powerful test. The KPSS test is based on the following model:

$$y_t = \partial t + r_t + \varepsilon_t \qquad t=1,\ldots T \qquad (3.9.1)$$

Where, t is denoted as a linear trend, y_t is a zero mean stationary process with $E(\varepsilon^2_t) = \varepsilon_t^2 > 0$,

And $r_t = r_{t-1} + \varepsilon_t$ that is a random walk process. The initial value of r (r_0) is assumed as an intercept. The KPSS stationary hypothesis is based on the assumption that the variance of the residuals in the random walk process is zero, i.e. $H_0: \varepsilon_t^2{}_u = 0$. The KPSS statistics is defined as follows:

$$KPSS = T^{-2} \sum_{t=1}^{T} (S^2_t / s^2(l)) \qquad (3.9.2)$$

Where, T is the sample size,

$$S_t = \sum_{i=1}^{t}$$

e_i is the sum of the OLS residuals of the y_t regression,

$$s^2(l) = T^{-1} \sum_{t=1}^{T} e^2_t + 2\, T^{-1} \sum_{s=1}^{l} w(s, l) \sum_{t=s+1}^{T} e_t e_{t-s},$$

is a long term variance estimator of y_t, and $w(s, l) = 1 - s/(l+1)$ is an optional weighting function and here we have to use the Bartlett window definition to guarantee the non negativity of $s^2(l)$.

Chapter 4

DATA PRESENTATION AND ANALYSIS

4.0 Data Presentation and Analysis

This chapter presents data used in this thesis and an analysis of the data provided. The models used are explained and inferences are made to aid in drawing conclusion as to the subject under investigation.

4.1 Model Re-Specification

The data used for the analysis was obtained primarily from the National Bureau of Statistic (NBS). This was supplemented however with information obtained from the publications of the Central Bank of Nigeria (CBN) and World Bank.

The period of analysis evaluated by this thesis was between 1980 and 2008 which in fact implied that 29 years stock price and some economic factors analysis was conducted in the course of this study. The study aimed at validating the "a priori" explanations for the variables by determining the causal relationships between the exogenous and the endogenous variables.

The regression analysis test is the traditional test of significance of the parameter estimate, which is the standard error test (AvAshish and Srivastava, 1994). This is equivalent to the student's t–test. The correlation coefficient (R) shows the relationship between the variables. The

relationship could be of a direct, indirect or an outright zero correlation. The Durbin Watson test was conducted to verify the autocorrelation of the variables.

The standard error is obtained by taking the inverse of the variance of the estimate. The standard errors for the estimate of **ρ, ß** and **þ** will be dealt with in this project, while the standard error for the estimates **δ, Ø** and ∂ are left out.

The coefficient of determination (R^2) is used to determine the overall significance of the regression model i.e. to determine the extent to which the variations in the dependent variable can be attributed to changes in the explanatory variable. This test shall be used to measure the extent of the claimed relationship between the index of industrial production, Average Naira-Dollar Exchange Rate, Market Capitalization, Broad Money Supply, Maximum Lending Rate and Composite Consumer Price Index in Nigeria as they affect stock price.

The general Model (log linear)

See Econometrical Model and Samples: Equivalence By Coleman R. available online at

http://www.numeraire.com/download/ModelsSamplesEquivalence.pdf

MODEL I

$$Iip = f(Sp)$$

$$Iip = \delta + \rho Sp + \mu$$

Where Iip - Index of Industrial Production

Sp - Stock Price

δ and ρ - Parameters where δ=0

μ - Error term

MODEL II

Ander = f (Sp)

Ander = Ø + ßSp + μ.

Where Ander - Average Naira-Dollar Exchange Rate

Sp - Stock Price

Ø and ß - Parameters where Ø = 0

μ. - Error term

MODEL III

Mc = f (Sp)

Mc = ∂ + þSp + μ

Where Mc - Market Capitalization

Sp - Stock Price

∂ and þ - Parameters δ=0

μ - Error term

MODEL IV

Bms = f (Sp)

Bms = ∂ + þSp + μ

Where Bms - Broad Money Supply

Sp - Stock Price

∂ and þ - Parameters and ∂ =0

μ - Error term

MODEL V

Mlr = f (Sp)

Mlr = ∂ + þSp + μ

Where Mlr - Maximum Lending Rate

Sp - Stock Price

∂ and þ - Parameters δ=0

μ - Error term

MODEL VI

Ccpi = f (Sp)

Ccpi = $\partial + \beta Sp + \mu$

Where Ccpi - Composite Consumer Price Index

Sp - Stock Price

∂ and β - Parameters $\delta=0$

μ - Error term

4.2 Presentation and Interpretation of Regression

Basis for interpretation

a. CI= Correlation Index, a Correlation index greater than 0.8 depicts strong autocorrelation; correlation less that 0.5 depicts weak autocorrelation.

b. R Square = coefficient of determination of size normally between 0 and 1 the R sign depends on the slope of the regression line however. R= correlation coefficient

c. The variability factor of the *Y* values around the regression line is 1- R times the original variance this shows variability not captured in the data under study and the extent to which the factors affect the subject under investigation.

d. Durbin Watson (d) = 2(1-R) depicts the level of autocorrelation for instance If d= 2 no autocorrelation occurs.

e. Significance level is alpha = 0.05 or 5% if the absolute value of the test statistic is greater than the critical value (0.025 plus or minus) half of the significance level, therefore we reject the null hypothesis and accept the alternative hypothesis.

f. If the theoretical t-value is less than the absolute value we shall reject the null hypothesis and accept the alternative hypothesis.

g. P value – a low p- value gives a less likelihood of assuming the null hypothesis, hence a greater level of statistical significance. See P-Values are not error probabilities (2003) by Hubbard R. and Bayarri M. available online at http://ftp.isds.duke.edu/WorkingPapers/03-26.pdf also see Sematech statistical Handbook available online at http://www.itl.nist.gov/div898/handbook/ and stat soft Electronic textbook http://www.statsoft.com/textbook/stathome.html

h. F-test is conducted to test for overall significance of the Model if the critical value of F is far less than the estimated value of F there exist a significant variability, then we shall reject the null hypothesis and accept the alternative Hypothesis

Model 1.

Dependent Variable: Price of Industrial Production

Method: Regression (Random)

Sample: 1990 -2008 (Random)

Regression Summary

From the regression result in the appendix we can see that;

R-Square =0.18 R= 0.42 Adjusted R-Square = 0.15 F-Statistics = 5.17

Durbin Watson (d) = 2(1-R) = 1.16 No of Samples (n) = 25 Degree of freedom= n-2= 23

Correlation Index (CI) = 0.95 (95%) Significance Level= 5% Variability Factor (1-R) = 0.58

Substituting the coefficients from the regression appendix we obtain

Iip= δ + ρSp + μ **Iip = 12407-77.64Sp**

t- Statistics	(-2.27)	(2.64)
Standard error	(34.162)	(47.03)
Power Analysis (ρ)	(0.0147)	(0.0327)

Source: Regression Results

The regression result above shows that there is a negative relationship between stock price and the price of industrial production in the country. This agrees with the "a priori" expectation earlier stated, which expects stock price to adversely affect the price of industrial production through encouraging consumption, investment and production.

Since the estimates (ρ) of (stock price) S.e.; 0.0147 is less than half of the parameter estimates (ρ/2); 0.0327, (see regression result in the appendix) we shall therefore reject the null hypothesis and accept the alternative hypothesis. This indicates that the parameter estimate can be said to be statistically significant, which means that it is a relevant variable which affects price of industrial production. This implies therefore that the parameter estimate (i.e. stock price) is statistically different from zero hence it is a relevant variable for the determination of the price of industrial production in Nigeria.

The coefficient of determination (R Square) is 0.18 or 18% this means that the regression model is about approximately 18% determinate and it is significant hence the variations in the

dependent variable which is the price of industrial production is 18% this is attributable to the changes in the independent variable which is the stock price in Nigeria. This result thus implies that there is an existence of intervening variables within the economy which are not captured in this study. The variable not captured is estimated by the variability factor Y while other discrepancies will be as a result of unavoidable errors.

The computed d (Durbin-Watson) is 1.16, this reveals to us that there is some degree of positive autocorrelation between stock price and the price of industrial production in Nigeria which will definitely affect sales and invariably sales turnover, returns on stock driving them downwards, payments of dividends or dividends itself however is not influenced .

MODEL II

Dependent Variable: Ander

Method: **Regression (Random)**

Sample: **1990-2008**

Regression Summary

From the regression result in the appendix we can see that;

R-Square =0.37 R= 0.61 Adjusted R-Square = 0.34 F-Statistics = 13.62

Durbin Watson= 2(1-R) =1.32 No of Samples (n) = 25 Degree of freedom= n-2= 23

Correlation Index CI= 95% Variability Factor (1-R) = 0.39 Significance = 5%

Ander= Ø + ßSp + µ. **Ander = 148Sp – 847.9**

t- Statistics	(3.69)	(-1.15)
Standard error	(40.25)	(739.46)

Source: Regression Results

The result of this second regression confirms that there is a positive relationship between the stock price and Average Naira-Dollar Exchange Rate (Ander). The result also conforms to the "a priori" expectation. However, a change in the explanatory variable would cause a greater change in the level of stock in the country. The standard error S.e. of the stock price (ß); 40.25 is less than the half of the parameter estimate ($ß/_2$); 739.46, we shall therefore reject the null hypothesis and accept the alternative hypothesis. This indicates that the parameter estimate is of course statistically relevant or significant. The parameter estimate which is stock price is statistically different from zero and affects the dependent variable (Average Naira-Dollar Exchange Rate).

In this model the coefficient of determination (R^2) gives 0.37 or about 37%. This shows that the regression model is as a matter of fact significant, which implies that the variation in the Average Naira-Dollar Exchange Rate is 37% which is attributable to the changes in the independent variable – stock price.

The computed d in model two is 1.32, which also shows to us that there is some degree of positive autocorrelation between the stock price and the Average Naira-Dollars Exchange Rate (Ander) in Nigeria.

MODEL III

Dependent Variable: MC

Method: **Regression (Random)**

Sample: **1980-2008**

Regression Summary

From the regression result in the appendix we can see that;

R-Square =0.99 R= 0.99 Adjusted R-Square = 0.99 F-Statistics = 2256.08

Durbin Watson= 2(1-R) =0.02 No of Samples (n) = 25 Degree of freedom= n-2= 23

Correlation Index CI= 95% Variability Factor (1-R- square) = 0.01 Significance = 5%

Mc= ∂ + þSp + µ **Mc = 321.5 +2.8602E-08Sp**

t- statistics	(47.50)	(7.59)
Standard error	(6.0217E-010)	(42.38)

Source: Regression Results

The third regression results presented above shows that there is a positive relationship between stock price and market capitalization in the country. The marginal propensity of the equation also reveals that the market capitalization expenditure is very sensitive to changes in the stock price.

Again the standard error of the parameter estimate for stock price S.e. (ß); 6.0217E-10 is less than half of the parameter estimates ($ß/_2$); 42.38, we shall therefore reject the null hypothesis and accept the alternative hypothesis. This indicates that the parameter estimate is statistically relevant, meaning that it is relevant in the determination of market capitalization.

The coefficient of determination for this model is 0.99 or 99% which implies that the regression model is 99% relevant, hence the variations in the dependent variable that is the market capitalization is 99% and this attributable to the changes in the independent variables. The computed d (Durbin-Watson) is 0.02, which also reveals that there is some degree of positive autocorrelation between the stock price and the private market capitalization in Nigeria.

MODEL IV

Dependent Variable: Broad Money Supply

Method: **Regression (Random)**

Sample: **1990-2008**

Regression Summary

From the regression result in the appendix we can see that;

R-Square =0.81 R= 0.9 Adjusted R-Square = 0.81 F-Statistics = 100.32

Durbin Watson= 2(1-R) =0.2 No of Samples (n) = 25 Degree of freedom= n-2= 23

Correlation Index CI= 95% Variability Factor (1-R) = 0.1 Significance = 5%

Bms= δ + ρSp + μ Bms = 0.01463Sp – 617.5

t- statistics	(10.02)	(-2.30)
Standard error	(0.001461)	(268.33)
Power Analysis (þ)	(0.0001)	(0.0308)

Source: Regression Results

The regression result above shows that there is a positive relationship between stock price and the broad money supply in the country. This result is in accordance with the "a priori" expectation earlier stated, which expects stock price to affect the broad money supply.

Since the (ρ); 0.0001 is less than the parameter estimate (ρ/2); 0.0308, we shall therefore reject the null hypothesis and accept the alternative hypothesis. This indicates that the parameter estimate is statistically relevant, meaning that it is a relevant variable that affect Broad Money Supply.

The coefficient of determination gives 0.81 or 81% meaning that the regression model is significant hence the variations in the dependent variable the broad money supply is 19% this is attributable to the changes in the independent variable which is the stock price in Nigeria. This

result thus suggests that there is an existence of intervening variables within the economy which are not captured in this study.

The computed d (Durbin-Watson) is 0.2, which reveals to us that there is some degree of positive autocorrelation between stock price and the broad money supply in Nigeria.

MODEL V

Dependent Variable: Maximum Lending Rate

Method: Regression (Random)

Sample: 1980-2008

Regression Summary

From the regression result in the appendix we can see that;

R-Square =0.50 R= 0.71 Adjusted R-Square = 0.48 F-Statistics = 23.36

Durbin Watson= 2(1-R) =0.586 No of Samples (n) = 25 Degree of freedom= n-2= 23

Correlation Index CI= 95% Variability Factor (1-R) = 0.29 Significance = 5%

Mlr= Ø + ßSp + µ. Mlr = 9863 – 511.2Sp

t- Statistics	(-4.83)	(5.83)
Standard error	(105.76)	(1694.8)

Source: Regression Results

The result of the regression confirms that there is negative relationship between the stock price and Maximum Lending Rate (MLR). The result also conforms to the "a priori" expectation. However, a change in the explanatory variable would cause a greater change in the level of stock in the country.

The standard error of the S.e. (ß) of stock price; 105.70 which is less than half the of the parameter estimate (ß/2); 1694.8, we shall therefore reject the null hypothesis and accept the alternative hypothesis. This indicates that the parameter estimate is statistically relevant and that it affects the dependent variable (Maximum Lending Rate).

In this model the coefficient of determination (R^2) gives 0.50 or about 50%. This is too low but significant which implies that the variation in the Maximum Lending Rate is 50% attributable to the changes in the independent variable – stock price.

The computed d in model two is 0.42, which also shows to us that there is some degree of positive autocorrelation between the stock price and Maximum Lending Rate (MLR) in Nigeria.

MODEL VI

Regression Summary

From the regression result in the appendix we can see that;

R-Square =0.95 R= 0.97 Adjusted R-Square = 0.95 F-Statistics = 420.25

Durbin Watson= 2(1-R) =0.2 No of Samples (n) = 25 Degree of freedom= n-2= 23

Correlation Index CI= 95% Variability Factor (1-R) = 0.03 Significance = 5%

Dependent Variable: Composite Consumer Price Index

Method: **Regression (Random)**

Sample: **1980-2008**

Ccpi= ∂ + þSp + µ Ccpi = 1.974Sp -117

t- Statistics	(20.50)	(-1.03)
Standard error	(0.0963)	(113.3)
Power Analysis (þ)	(0.0001)	(0.3126)

Source: Regression Results

The regression results presented above shows that there is a positive relationship between stock price and composite consumer price index in the country. The marginal propensity of the equation also reveals that the composite consumer price index is very sensitive to changes in the stock price thereby affecting sales and the total profit turnover.

Again since the parameter estimate. (þ) of stock price; 0.0001 is less than half of the parameter estimates (þ/$_2$); 0.3126, we shall therefore reject the null hypothesis and accept the alternative hypothesis. This indicates that the parameter estimate is statistically significant, meaning that it is relevant in the determination of Composite consumer price index. This implies that the parameter estimate is statistically different from zero hence the Stock price is a relevant variable.

The coefficient of determination for this model is 0.95 or 95% meaning that the regression model is 95% significant hence the variations in the dependent variable which is the market capitalization is 95% attributable to the changes in the independent variable.

The computed d (Durbin-Watson) is 0.2, which also reveals that there is some degree of positive autocorrelation between stock price and the composite consumer price index in Nigeria.

Overall Model Test.

Considering the F- Statistics to test for the overall significance of the model

for a multiple regression model for the overall regression

$$\sum(Y) = \beta_0+\beta_1 x_1 + \beta 2\ x_{2+} \beta_3 x_{3+} \beta_4 x_{4+} \beta_5 x_{5+} \beta 6\ x_{6+}\ \mu_t$$

The Model By logarithm gives Iog (Y) = β_1 logx_1 + β2 logx_{2+} β_3 logx_{3+} β_4 logx_{4+} β_5 logx_{5+} β_6 logx_{6+} μ_t

We then estimate β_1, β2, β_3, β4, β5 parameter estimate of x_1, x2, x_3 ,x_4, x_5 ,x_6

From the package with R-Square of 0.95 we observe that 95 % of the variation of the stock price is explained by the regression model.

Testing the Significance of the Model Using the null hypothesis one tail test we assume that there is no difference between the different groups if the hypothesis is valid and true with the critical value of F at 95% significance and confidence level of 0.05 should be larger than the estimated values.

Taking the various values from regression results

If $H_0 = \beta_1 = 0, \ldots \beta_3 = 0 \ldots\ldots\ldots\ldots, \beta_6 = 0$, as against the alternative,

$H_1 \neq \beta_2 \neq 0, \beta_3 \neq 0 \ldots\ldots\ldots\ldots, \beta_6 \neq 0,$

From the ANOVAs and estimated Regressions the critical and estimated values can be obtained

Since the no of data is n = 50

The degree of freedom for the numerator is (n-1) 50 – 1 = 49

And the degree of freedom for the denominator No groups (variables) x (no of subjects (years) - 1)

6 x (29 -1) = 168

At 0.05 probability level we find that the F-statistics with (49,168) degree of freedom is

Using $F_C = 1.43$ critical value of F see online F_C calculator available at http://www.biokin.com/tools/fcrit.html.

taking the mean of all estimated F-Statistics see appendix

$$\frac{29.54+34.15+23.37+77.03+34.21+5.91}{6} = F_{est} = 34.04$$ Estimated value of F.

Since the critical value 1.43 is far less than the estimated value 34.04 there exist a significant variability, then we shall reject the null hypothesis and accept the alternative Hypothesis which means that the difference between stock price within the group are significant hence the variables under investigation influence stock price in the Nigerian economy.

4.3. The Effect of Economic Factors on Stock price Determinant in a Global Economy

Stock price has recently been experiencing a fairly stable trend as compared to the downward trend that has characterized it over the years in Nigeria largely due to neglect or general mismanagement of the economy. Currently as a matter of fact, stock price is fairly on the average just above the low threshold the reason for it not peaking is that over the year many people had no confidence in trading in them. The past economic leadership team in Nigeria seemed to lack the will to approach the enormous challenges facing the sector. Today need for building a viable stock market where local resources would enhance economic growth is highly required. While many experts believe that the NSE (Nigerian Stock Exchange) has taken a right step in the right direction to address the irregularities in the system in a bid to achieving a desirable and reliable stock market price many still feel dissatisfied that enough has not yet been done. Due to the increase in market capitalization today stock prices are beginning to have significant impact on the economy.

Chapter 5

SUMMARY RECOMMENDATION AND CONCLUSION

5.0 Summary, Recommendation and Conclusion

This chapter summarizes the work done so far in the thesis offering possible recommendations and concludes the research work.

5.1 Summary

This thesis work researched into the effect of some Economic Factors on Stock price Determinant in a Global Economy specifically emphasizing on the Nigeria Economy, with empirical findings covering the fiscal years 1980 to 2008. The CBN's monetary policies play an important role in Nigeria's economy by regulating and stabilising the amount of money in circulation in order to provide the enabling environment for investment and promote economic development. The need to foster economic development without inconveniencing the financial sector with the strain that tend to affect an economy due to the influx of capital is its objective. The effectiveness of stock price movement on the development of an economy was an issue investigated and the possible implication arising, previous literature (Osinubi, 1998 pp. 5-9) support the idea that the effectiveness of stock price has much wider implications and this arises partly because of the growing influence of ideas and structure associated with the concept of bond.

In the literature review the various propositions on economic factors on stock price determinant in a global economy were presented by different scholars. These scholars investigated both theoretically and empirically the stock price determinant framework in a global economy. Some of them discussed the issues of stock price determinant in a stable economy. Chapter three presents the methodology and in chapter four is model specification with the analysis of data collected for the purpose of this research work. The data used are secondary in nature and are collected from National Bureau of Statistics and CBN annual statistical bulletin of various years.

Also in Chapter four the results of the regression analysis were presented and interpreted. The stock price in Nigeria from 1980 to 2008 was analysed as well as their effect on index of industrial production, average naira-dollar exchange rate, market capitalization, broad money supply, maximum lending rate, composite consumer price index. A review of the research questions were as follows;

i. Since we suspect some peculiarity or difference in terms of economic variable that influences prices in the Nigerian stock market from those stock prices in the global economy. Will an econometric model be a useful model that can be used?

   Due to the peculiarities of economic variable that influenced stock prices in the Nigerian stock market from those that affect stock prices in the global economy the model utilized in the thesis were quite helpful. Since they were able to establish a significant relationship with stock price see regression results.

ii. Do sales, price of industrial production, Average Naira-Dollar Exchange Rate, Market Capitalization, Broad Money Supply, Maximum Lending Rate and Composite Consumer Price Index affect the stock price in the Nigerian stock market? If, yes to what extent? This will be proved or shown empirically via correlation and regression model?

Positive autocorrelation between stock price and the price of industrial production found in model 1 will definitely affect sales and invariably sales turnover, dividend since it will determine profitability of enterprises see explanation from regression result an increase in price of industrial production leads to a decrease in stock price since enterprises will sell stocks to raise money for further production. Stock price were found to affect Average Naira-Dollar Exchange Rate, Market Capitalization, Broad Money Supply, Maximum Lending Rate to a great extent and also Model IV shows that autocorrelation between stock price and composite consumer price index thereby affecting sales and total profitability to a great extent see regression results.

iii. To what extent does previous stock price influence the current stock price in the Nigerian Stock Market?

Previous stock price were found to a large extent not to have any influence on current stock prices however the method of evaluation of results however did not allow for a proper investigation on how previous stock price will have affected current stock price since the overall effect of macroeconomic parameters on stock price were concentrated on.

iv. To what extent does dividend, return on stock and sales or turnover determine stock price in the Nigerian Stock Market?

High returns on stock, payments of dividends which however are not implied, and high sales turnover were found to be factors that can increase stock price in Nigeria see Model 1. Since it was found out investors see payment of dividend as a positive sign that an establishment is doing well thereby leading to further demand for the establishment stocks. The huge turnover and profitability trend of an establishment over the years available from their annual evaluation results were found to also affect investors' perception thereby leading to further demand in stock price hence driving the stock price upward.

v. What macroeconomic information influences stock pricing in Nigerian Stock Market?

However, evaluated relationships like sales, index of industrial production, Average Naira-Dollar Exchange Rate, Market Capitalization, Broad Money Supply, Maximum Lending Rate and Composite Consumer Price Index affect the stock price were statistically significant in affecting stock price, since the Nigerian Economy as earlier discussed and established in further writing in this work is not yet fully capitalized, there were considerably insignificant in driving the overall economic growth. The extent to which they influence stock price can be seen from the calculation of variability factor resulting from data not captured in the study thereby showing the % of their non effectiveness in influencing stock price.

Okereke-Onyiuke (2009 pp.1-3) states that the Nigerian economy in 2008 as in the preceding year has performed below expectation with a GDP growth of only 6.77% as a against a target of

9.8% though better than 2007 of only 6.2% growth, it has however be driven by the non oil sector as usual not only owing to disturbances in the Niger Delta but the fact that non oil sector still remain the most stable sector of the economy in the analysis of the effect of the stock market on overall economic growth as carried out in this thesis the factors duly considered included price of industrial production, composite consumer price index, average naira dollar exchange rate, market capitalization, broad money supply and maximum lending rate and their probable impact on stock price, the statistical relevance, of these relationships where found to be minimal, which means that the effect of stock market on economic growth is weak and relatively insignificant this was supported by previous literature by Alile(1994), Osinubi (1998) and Akinlo; Odusola (2000), a clear explanation for this is the fact that Nigeria been an oil exporting nation has not succeeded in the indigenization of many foreign Oil companies which are in fact not quoted in the Nigerian stock market. In the course of this research work the current state of Nigerian economy was examined based on the effect of stock price by the years. Previous studies Alile (1994) and Osinubi (1998) states that the results were affected by previous "structural rigidities"[10] prevailing in the Nigerian economy emanating from years of mismanagement and neglect which has made the stock market become more or less dependent on governmental institutions and control rather than a market that is driven by efficiency through the influence of the forces of demand and supply. It however is more obvious as a result of the impending irregular reactions from the unusual variations that have exposed the stock market index to shocks in the economy contrary to what obtains in other economies of the world. The findings from this thesis drew attention to the fact that good policies were needed, although their practical implementation was more crucial to achieving economic growth Osinubi (1998, pp. 5 -7) and Nyong (1997) in previous literature state that this have in fact been known to reinforce the link

[10] By structural rigidities we mean years of non development and abnormal government policies

between the stock market and economic growth therefore it is right to state that a positive relationship exist between stock market development and economic growth.

5.2 Recommendations

Since not all the research questions can be answered in this research work it is recommended that in future, further studies in this direction should pay adequate attention to the limitations in this work. For example a more proper way of how previous stock price affect current stock price should be given more investigation. A basic challenge was deciding the method of evaluation to be used it will be advisable that further work in this area be evaluated using a different econometric method so the effectiveness can be compared to the method utilized in this research.

Having made an investigation into the determination of stock price in a global economy, taking Nigeria as a case study, some basic issues are still pressing that need to be addressed. The need for a more transparent and credible information dissemination process, that will allow for a level playing field for potential and already skeptical investors to gain access to the much needed information that they need to be able to carry out otherwise and meaningful investment is hereby recommended. The fact that many investors shy away from the Nigeria stock market today is not due to its non attractiveness but to lack of access to credible, dependable and prompt investment information. However the year 2008 was heralded by the launching of the Nigeria Journal on finance which has not yet been reeled out for public access. Also one of the numerous calls for transparency was an appeal made by the NSE President herself for the transfer of OTC (over the counter trading of financial instrument) to the Nigeria stock exchange for the purpose of

accountability and transparency (Okereke-Onyiuke ,2009 pp. 12- 13) but pundits feel that more is needed to attain a reasonable level of transparency.

The need for market development is also highly necessary as the Nigeria stock market was found not be fully developed and as such has not been able to maximize its potentials. It is hereby recommended that initiatives to broaden participation in the market should be encouraged, some recommended initiatives include expanded services such as opening of more branches and improved liquidity, these initiatives will be very useful in the areas of investors education, capacity building, international cooperation, new products development to mention but a few.

The practical implementation of the law allowing for the entry of market makers[11] into the equity sector of the Stock Market is also highly recommendable. These primary dealer market makers in conjunction with market dealers which already operate in the bond market will pave way for an even more robust trading in derivatives thereby making the market more vibrant and liquid paving way for a more viable stock market.

The fundamentals of the Nigeria Stock market remains certainly strong as can be attested to by international bodies ratings, Okereke-Onyiuke, (2009, pp. 2 - 3) states that one of such ratings was offered by the Standards and Poor services held in 2008 which reflected NG++ long term and NG A-1 short term reflecting the countries high credit worthiness rating, so therefore, a policy reversal is not recommendable but rather the practical implementation of the already enacted policies. The present democratic arrangement of government and more organized

[11] Market makers are broker firms that accept risk of holding certain number of shares of a particular security in order to facilitate trading in that security.

governance offers enormous opportunities for fine tuning the policies that could turn the Nigerian stock market into a more vibrant and highly profitable sector. The "effective implementation of the removal of multiple tax regimes resulting to excessive taxation effects by the federal government on the returns of investors" should be fully put into effect practically so as to encourage new investors into the sector. The confidence demonstrated by foreign investors in investing in the Nigeria Stock market thereby increasing foreign portfolio investment despite the financial meltdown in the excess of 151.202 billion Naira representing 6.4 % of the aggregate turnover (Okereke- Onyiuke,2009) is another reason to recommend that there should exist no policy turn around at the moment.

The need for government to encourage its agencies and parastatals to embark on a more practical way of raising funds for their developmental capital projects through the stock market is highly recommended, since this will serve as a good channel of releasing resources from other less dynamic sectors of the economy to the stock market thereby driving economic growth (Osinubi, 1998). It is to this end that it is advisable that future research in this area should pay attention on how economic policies and the political arrangement affect stock price within the Nigeria economy thereby taking into consideration the present political structure, since a political system often affect economic policies of a given nation, Nigeria not being an exception, some policy issues and recommendations can in fact be deduced, which might reinforce therefore a possible link between the stock market and economic growth in Nigeria.

The Stock markets being an economic structure often operate within the periphery of macroeconomic influence, Okereke-Onyiuke, (2009, pp. 1-5) states that a favorable situation is

needed for any market to develop, this is called an 'enabling environment' it is therefore necessary, to recommend that the microeconomic factors affecting the stock market growth must be enabling ones in order for the stock market to realize its full potentials in its present 'operating environment'[12]. With the existence of a positive relationship between stock market development and economic growth, it is necessary to recommend that there should be sustained effort to stimulate productivity in both the public and private sectors. A further privatization of the determination of stock price is also highly recommendable due to authorities interference in security pricing which is detrimental to the growth of the market, a possible way of addressing this anomaly would be as stated by Okereke-Onyiuke, (2009, pp.12 - 14) to deregulate the determination of stock prices by privatization of industries and allowing market forces to decide its final value where the principles of demand and supply are enshrined see also (Osinubi, 1998, pp. 3-5). Finally due to the current high cost in raising funds in the Nigerian market, there is need to stimulate competition and make the stock market more attractive to investors by carrying out a downward review of the cost of raising funds, which however till date, has been found to be very high. By so doing companies will be able to easily make public notification to sell shares to raise money for expansion and developmental reasons.

5.3 Conclusion

The Nigerian stock market today faces enormous challenges especially due to the economy downturn emanating from the further devaluation of the Naira, inadequate infrastructure though already undergoing improvement and the decline in international crude oil prices. Though a prospective future lies ahead given the recent and continuous fine tuning of policies especially

[12] Operating environment is the immediate environment where the Stock Exchange exerts its influence over operating organizations by regulating the market as an unbiased umpire (Ojeaga P. 2009).

the removal of all laws that tend to hamper the effective and efficient functioning of the stock market. More is needed to improve the situation.

Furthermore, with known progress made as regards the modus operandi of the market in line with what obtains in most market in the more developed countries as regards standards and also the given present favourable democratic structure on ground, it has been observed that, the above played a positive role in contributing to the overall growth and development of the stock market. From the result of the findings in this thesis and previous research literature it was deduced that stock price volatility is a crucial problem that affects the economy and as such appropriate measures should be put in place to control, stimulate or rescue the economy in order to maintain the current production and improve economic growth in Nigeria.

Today the depreciation of the dollar in the international exchange market, has in turn contributed to an observed upward pressure on global consumables and energy prices also, this has had its effects by appreciating the naira, when the naira appreciates however this is known to scare away potential foreign investors from investing in Nigeria thereby affecting stock price, this is quite opposite what obtains in the developed countries like the U.S. since Nigeria is not a manufacturing economy and depends basically on raw exports for survival. Okereke-Onyiuke (2009, pp. 6 - 13) states that this can be further validated by the fall in the real effective exchange rate of the U.S dollar in the international market beginning from the mid 2007 which reflected foreign investors concerns over the liquidity of and the returns on U.S. bonds and equities, as this financial downturn took its toll on the future markets the perception of investors of the U.S. growth prospect diminished. Also the effect of the global meltdown on the Nigerian economy

from the second quarter of 2008 affected the equity market capitalization which dropped from 12.64 trillion Naira on May 3rd 2008 to as low of 6.21 trillion Naira on December 16th 2008 and closing on at 9.56 trillion Naira this necessitated a correction by the tightening of liquidity and excess supply of stocks as a result of profit taking by investors. Hence the current economic recession in the U.S. will continue to impact negatively on the Nigerian economy since it is its largest trading partner (Okereke-Onyiuke, 2009, pp. 2-8). In an open economy like Nigeria's, exchange rates play a crucial role as can be seen. It can be concluded however that though the depreciation of the Naira will make Nigerian products relatively cheaper in the global market this in turn is expected to increase the demand for them, thereby increasing exports. An increase in export demand will obviously fuel domestic investments and create employment, the depreciation of the Naira can both increase the GDP and devalue stock price, through increased spending which however validate our findings thereby establishing a relationship between them.

From the results of the regression models utilized in this thesis it can be concluded that stock price correlated with the price of industrial product, composite consumer price index which drives sales hence increasing sale turnover, while on the other hand it is also strongly related however to the average naira dollar exchange rate, market capitalization, broad money supply and maximum lending rate, therefore, there is the underlying need for the government to urgently implement policies to check the current unwavering growth rate of inflation in the economy as a matter of course.

APPENDIX 1

RAW DATA USED FOR THE ANALYSIS

ECONOMETRIC ANALYSIS AND RESULT

Years	IP	SP	X1	X2	X3	X4	X5	X6
mar-90		356.0	128.2	7.9388	8197193519.0	46228.3	18.5	287.1
jun-90		417.4	126.1	7.9424	9608574298.0	51234.5	18.5	298.5
sep-90		468.2	130.3	7.9743	10779271567.0	66842.0	18.5	294.6
dec-90		513.8	137.8	8.7071	11829295058.0	64902.7	18.5	295.3
mar-91		601.0	135.8	9.4521	13834541956.0	79265.6	15.5	307.0
jun-91		651.8	138.7	10.1722	15004116078.0	82605.9	15.5	336.3
sep-91		737.3	141.1	10.2416	16974265411.0	78402.9	15.5	341.5
dec-91		784.0	139.5	9.865	18048680448.0	86152.5	15.5	363.1
mar-92		856.1	140.6	17.6107	19025465124.4	94329.6	17.5	406.8
jun-92		883.4	142.8	18.4563	20014821008.5	79009.0	17.5	499.3
sep-92		943.5	147.4	19.3497	24253656252.3	97545.5	17.5	528.9
dec-92		1107.6	142.5	19.6609	26526822178.0	135280.1	17.5	540.3
mar-93		1251.6	145.2	24.8801	28215556351.5	140725.8	17.5	634.0
jun-93		1358.6	145.6	21.8861	32655893132.65	161002.3	17.5	780.6
sep-93		1611.5	147.5	21.8861	39264420145.0	176822.3	17.5	837.5
dec-93		1657.8	146.8	21.8861	42947723570.44	198479.2	17.5	871.3
mar-94		1792.8	147.5	21.8861	47675215184.0	195604.4	13.5	955.5
jun-94		1894.1	144.1	21.8861	50149346149.0	204562.1	13.5	1105.1
sep-94		1944.2	144.2	21.8861	51706979745.0	247650.4	13.5	1341.5
dec-94		2205.0	129.4	21.8861	59528249616.0	266944.9	13.5	1540.1
mar-95		2551.13	124.3	21.8861	70561960527.0	271553.0	13.5	1732.3
jun-95		3586.47	127.2	21.8861	107674973702.0	288251.0	13.5	2094.9
sep-95		4858.06	127.3	21.8861	160420400000.0	301228.1	13.5	2278.9
dec-95		5092.15	128.7	21.8861	165401415357.0	318763.5	13.5	2334.6
mar-96		5261.65	127.5	21.8861	185523511886.0	286352.1	13.5	2458.2
jun-96		5798.72	125.6	21.8861	214948381128.0	282921.3	13.5	2699.2
sep-96		6501.88	125.5	21.8861	252955321084.75	280111.1	13.5	2818.0
dec-96		6992.1	1323.0	21.8861	279096691622.17	27961.8	13.5	2668.8
mar-97		8561.38	1384.0	21.8861	370073293902.23	324607.5	13.5	2830.7
jun-97		8459.29	141.9	21.8861	374262682163.42	367821.3	13.5	2929.0
sep-97		7130.79	139.5	21.8861	305144228588.06	391718.2	13.5	2860.8
dec-97		6440.51	142.3	21.8861	276111743197.3	431196.8	13.5	2941.4
mar-98		6298.5	136.6	21.8861	272625675434.98	379694.3	13.5	2990.6
jun-98		5892.08	138.3	21.8861	255033987283.66	407180.2	13.5	3204.7
sep-98		5692.67	129.5	21.8861	251884045272.34	408394.5	13.5	3211.3
dec-98		5672.76	131.3	21.8861	256936524708.36	522577.1	13.5	3291.8
mar-99		5456.22	129.8	86.6623	246297007914.73	578102.2	19.0	3395.7
jun-99		5977.89	132.1	94.4056	280899256054.3	601446.7	20.0	3469.9
sep-99		4890.77	126.4	94.4056	233432316378.94	658213.3	20.0	3283.1
dec-99		5266.43	128.0	97.3891	294104956884.55	699733.7	18.0	3299.2
mar-00		5966.24	136.2	100.6081	333186022756.45	842300.2	18.0	3347.2

jun-00	6466.72	136.2	101.5142	361135292082.72	921506.5	17.0	3673.6
sep-00	7298.88	139.9	101.8619	417644818062.2	980064.5	18.0	3792.4
dec-00	8111.01	143.4	107.3823	466054664196.26	1098079.5	14.0	3778.4
mar-01	9544.75	144.0	110.1556	541545261201-.57	1282331.2	16.2	3956.4
jun-01	11094.33	144.0	111.975	646629719605.74	1326492.0	18.5	4263.5
sep-01	10594.99	145.0	111.1	607426427547.58	1328222.8	20.4	4517.3
dec-01	11104.5	147.0	112.4864	648449489344.26	1315869.2	20.5	4401.7
mar-02	11557.15	144.0	115.5579	663312110187.73	1423345.5	20.5	4644.1
jun-02	12618.82	144.0	119.045	724015711636.83	1502054.9	20.5	4784.4
sep-02	12451.83	145.0	125.9653	723199572049.94	1606419.1	18.5	4967.9
dec-02	12137.72	149.0	126.3883	784734565479.54	1599494.6	16.5	4937.3
mar-03	13762.5	145.0	130.352	846930410918.83	1918925.07	20.12	4916.4
jun-03	14537.8	145.0	127.401	896880374984.84	2124315.7	22.9	5454.5
sep-03	16252.67	147.0	128.1736	1028460434011.64	1961066.5	22.4	5879.6
dec-03	20128.94	147.0	136.1067	1324837998703.78	2012218712522.85	21.6	6112.9
mar-04	23294.4	146.0	136.1067	1628166090004.34	2024093365392.0	21.1	6765.2631
apr-04	26120.1	150.4	136.1067	1833027586157.77	2104376631157.7	21.1	6806.0528
maj-04	28178.7	154.8	136.1067	1923448345911.98	2119428632363.4	21.1	6980.8658
jun-04	29439.0	157.0	136.1067	20659452734263.3	2127803045269.2	20.7	7178.9872
jul-04	27464.9	153.4	136.56	1919368923266.97	2135404580122.3	21.0	7062.4452
aug-04	24027.5	150.9	136.84	1687178803325.91	2269097752025.59	20.4	6992.52
sep-04	24046.47	151.0	136.45	1687508396878.65	2161205975032.8	20.2	7656.8094
dec-04	27448.71	150.0	134.56	1925937530480.36	2263510587183.9	20.42	7557.7487
mar-05	23938.29	152.0	132.86	1704521120026.65	2467904510716.0	20.04	7866.585
jun-05	26877.9	155.0	132.89	1987126354179.23	2721400258515.4	19.17	8291.9633
sep-05	24635.91	159.0	129.61	1405666874156.6	2778801105921.9	19.11	9230.1264
dec-05	24085.76	159.0	129.06	2954740215149.9	2627205014704.0	19.54	8455.1221
mar-06	23336.6	159.0	128.23	2510752971429.5	2896852642575.0	18.64	8699.8603
jun-06	24436.7	159.4	128.3	2723465432122.2	2732184298724.4	18.97	8742.19634
sep-06	25425.3	157.3	129.3	2352186534228.2	2763298764623.0	19.58	8623.68965
dec-06	25225.3	160.1	127.4	2846542426534.2	2654321975348.6	19.35	8732.54365
mar-07	26389.1	159.2	128.1	2723465424864.7	2618763543271.7	21.2	9156.6534
jun-07	25342.0	157.2	130.2	2834198543289.6	2786523198342.8	20.4	8623.4163
sep-07	24376.0	150.4	128.2	2821986034275.6	2808762436761.3	19.8	8752.3652
dec-07	29563.0	154.1	123.1	2817456291986.0	2310975379825.3	18.3	7653.2831
mar-08	23865.2	150.2	130.1	1865298645368.1	2142189296543.1	19.0	6124.2354
jun-08	23476.2	147.2	127.56	2054321983162.0	2176296543987.1	19.76	7626.5258
sep-08	25478.3	140.0	128.3	2510930765466.0	2518659362874.8	18.9	8376.298
dec-08	23152.2	144.0	129.3	1946536677255.0	2383957636748.8	19.35	8762.2875

Note: M2 = Cumulative growth rate of broad money supply

X1 = Index of Industrial Production

X2 = Average Naira-Dollar Exchange Rate

X3 = Market Capitalization

X4 = Broad Money Supply

X5 = maximum lending rate

X6 = Composite Consumer Price Index (All items) 1985 = 100

SP = Stock price (all share index)

IP = Investor's perspective

Appendix II

Model 1 Anova

sp vs x1

n	50

Groups	N	Mean	SE	Pooled SE	SD
SP	25	1735,406	293,9836	207,8809	1469,918
X1	25	137,444	1,6215	207,8809	8,108

Source of variation	Sum squares	DF	Mean square	F statistic	P
Groups	31918547,898	1	31918547,898	29,54	<0.0001
Residual	51857383,529	48	1080362,157		
Total	83775931,427	49			

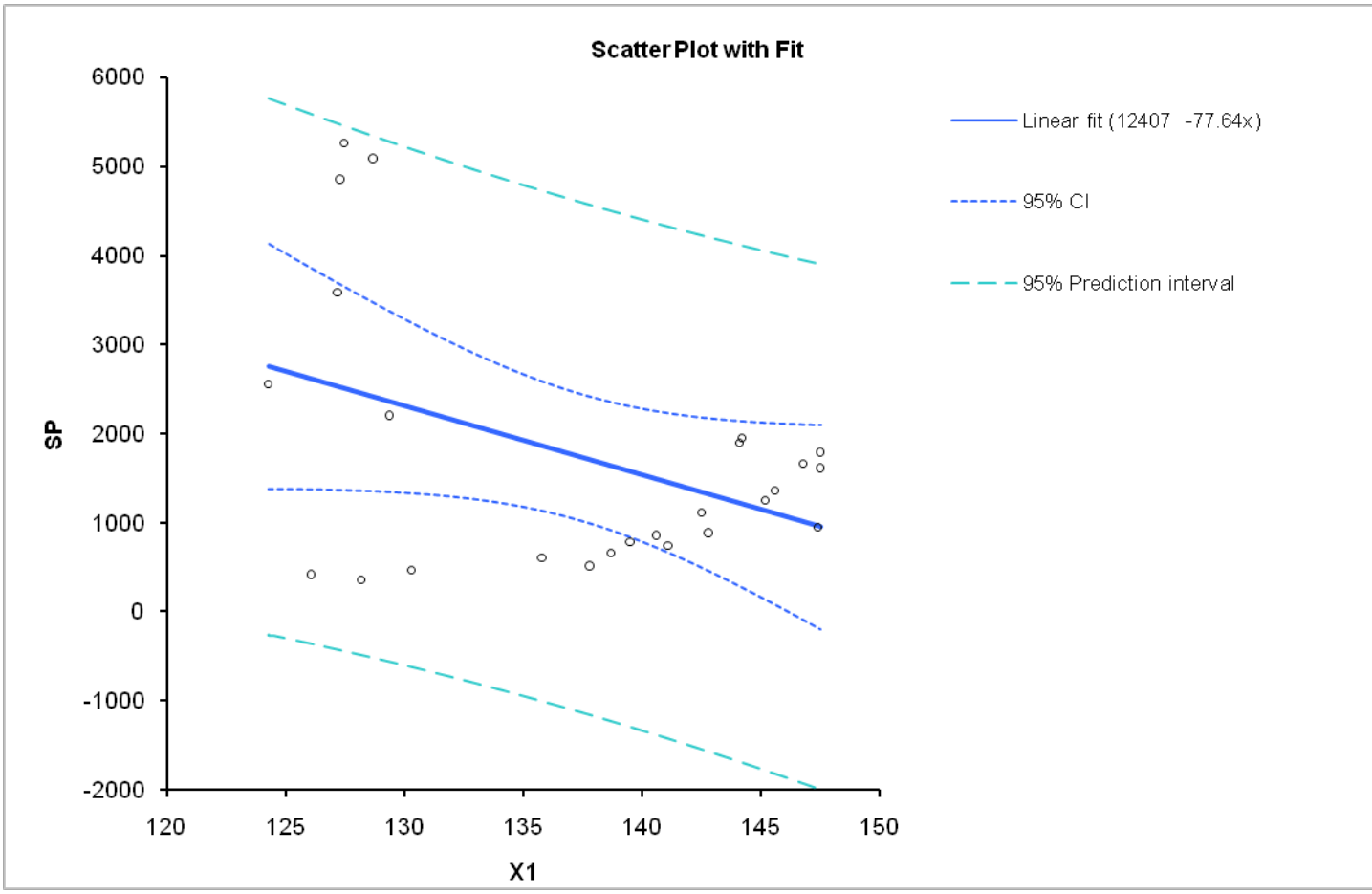
Tukey Contrast	Difference	95% CI	
SP v X1	1597,962	1006,860 to 2189,065	(significant)

Model 1 regression	n	25

R^2	0,18
Adjusted R^2	0,15
SE	1356,880

Term	Coefficient	95% CI	SE	t statistic	DF	p
Intercept	12407	2677 to 22136	4703	2,64	23	0,0147
Slope	-77,64	-148,31 to -6,97	34,162	-2,27	23	0,0327

Source of variation	Sum squares	DF	Mean square	F statistic	P
Model	9509999,185	1	9509999,185	5,17	0,0327
Residual	###########	23	1841122,034		
Total	###########	24			



Model 2 Anova

n	50

Groups	N	Mean	SE	Pooled SE	SD
SP	25	1735,406	293,9836	207,8795	1469,918
X2	25	17,395	1,2071	207,8795	6,036

Source of variation	Sum squares	DF	Mean square	F statistic	p
Groups	36894523,482	1	36894523,482	34,15	<0.0001
Residual	51856680,293	48	1080347,506		
Total	88751203,775	49			

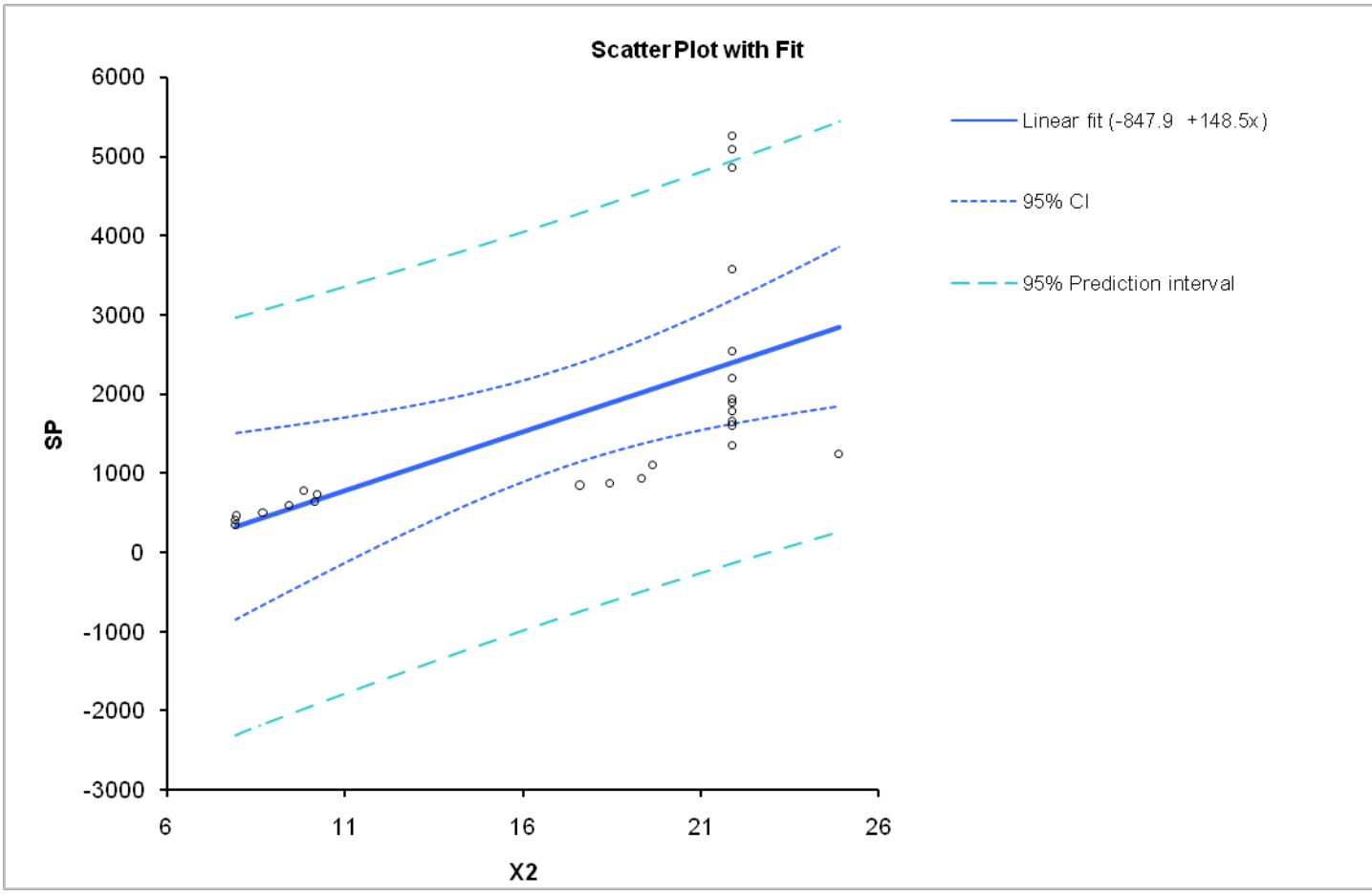
Tukey Contrast	Difference	95% CI	
SP v X2	1718,011	1126,913 to 2309,110	(significant)

Model 2 Regression

n	25
R^2	0,37
Adjusted R^2	0,34
SE	1190,059

Term	Coefficient	95% CI	SE	t statistic	DF	p
Intercept	-847,9	-2377,6 to 681,8	739,46	-1,15	23	0,2633
Slope	148,5	65,2 to 231,8	40,25	3,69	23	0,0012

Source of variation	Sum squares	DF	Mean square	F statistic	P
Model	###########	1	###########	13,62	0,0012
Residual	###########	23	1416241,400		
Total	###########	24			



Model 3 Anova	n	50

Groups	N	Mean	SE	Pooled SE	SD
SP	25	1735,406	293,9836	##########	1469,918
X3	25	##########	##########	##########	##########

Source of variation	Sum squares	DF	Mean square	F statistic	p
Groups	##########	1	##########	23,37	<0.0001
Residual	##########	48	##########		
Total	##########	49			

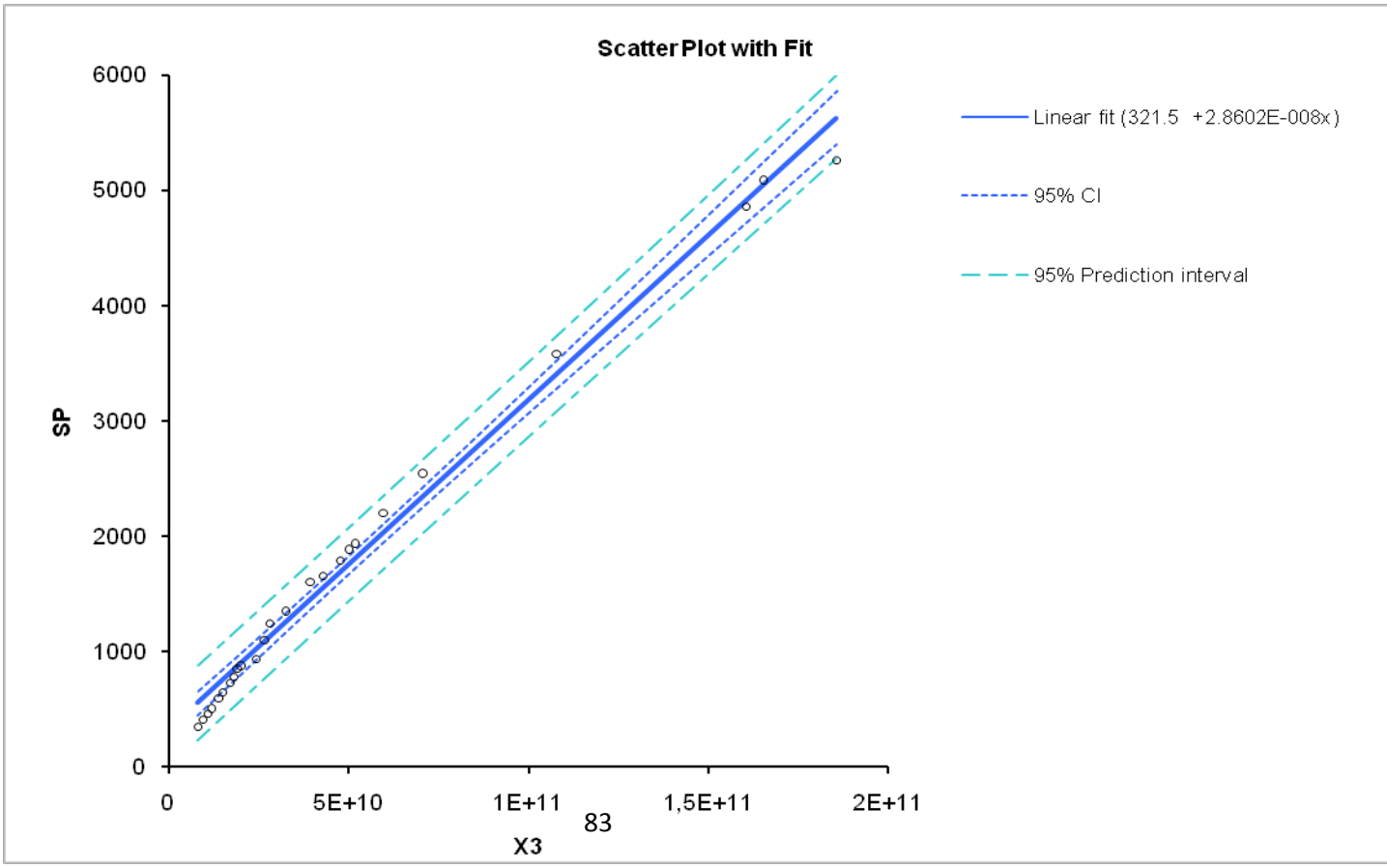
Tukey Contrast	Difference	95% CI		
SP v X3	##########	##########	##########	(significant)

Regression 3	n	25

R^2	0,99
Adjusted R^2	0,99
SE	150,841

Term	Coefficient	95% CI	SE	t statistic	DF	p
Intercept	321,5	233,9 to 409,2	42,38	7,59	23	<0.0001
Slope	2,8602E-08	2,7356E-08 to 2,9848E-08	6,0217E-010	47,50	23	<0.0001

Source of variation	Sum squares	DF	Mean square	F statistic	p
Model	###########	1	###########	2256,08	<0.0001
Residual	523318,603	23	22752,983		
Total	###########	24			



Anova Model 4

n	50

Groups	N	Mean	SE	Pooled SE	SD
SP	25	1735,406	293,9836	12814,4838	1469,918
X4	25	160789,508	18120,0321	12814,4838	90600,160

Source of variation	Sum squares	DF	Mean square	F statistic	p
Groups	###########	1	###########	77,03	<0.0001
Residual	###########	48	###########		
Total	###########	49			

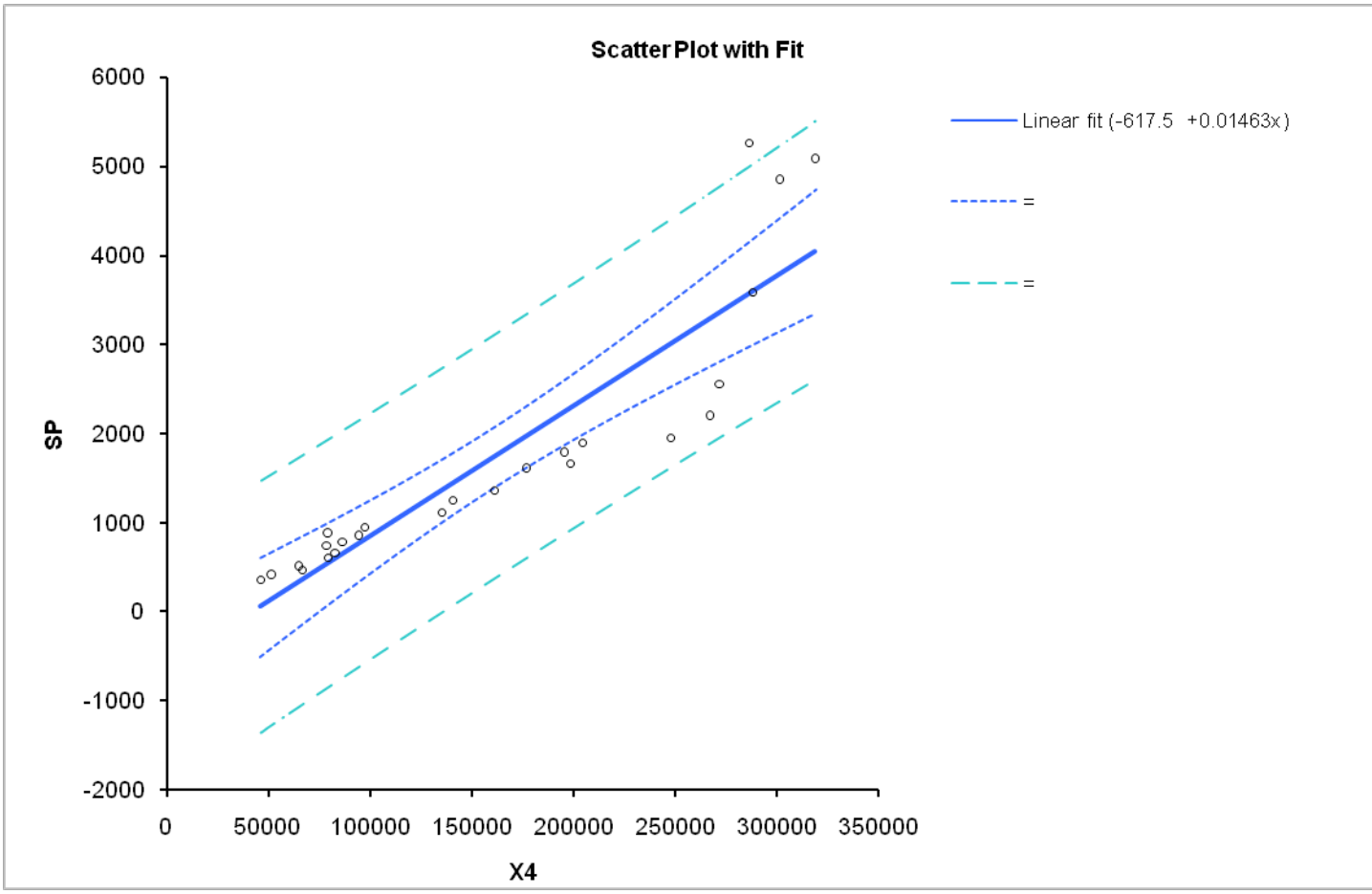
Tukey Contrast	Difference	95% CI		
SP v X4	-159054,102	-195491,659	to -122616,544	(significant)

Regression 4	n	25

R^2	0,81
Adjusted R^2	0,81
SE	648,445

Term	Coefficient	95% CI	SE	t statistic	DF	p
Intercept	-617,5	-1172,6 to -62,4	268,33	-2,30	23	0,0308
Slope	0,01463	0,01161 to 0,01766	0,001461	10,02	23	<0.0001

Source of variation	Sum squares	DF	Mean square	F statistic	p
Model	###########	1	###########	100,32	<0.0001
Residual	9671065,946	23	420481,128		
Total	###########	24			



n	50

Anova 5

Groups	N	Mean	SE	Pooled SE	SD
SP	25	1735,406	293,9836	207,8780	1469,918
X5	25	15,900	0,4082	207,8780	2,041

Source of variation	Sum squares	DF	Mean square	F statistic	p
Groups	36958778,246	1	36958778,246	34,21	<0.0001
Residual	51855905,967	48	1080331,374		
Total	88814684,213	49			

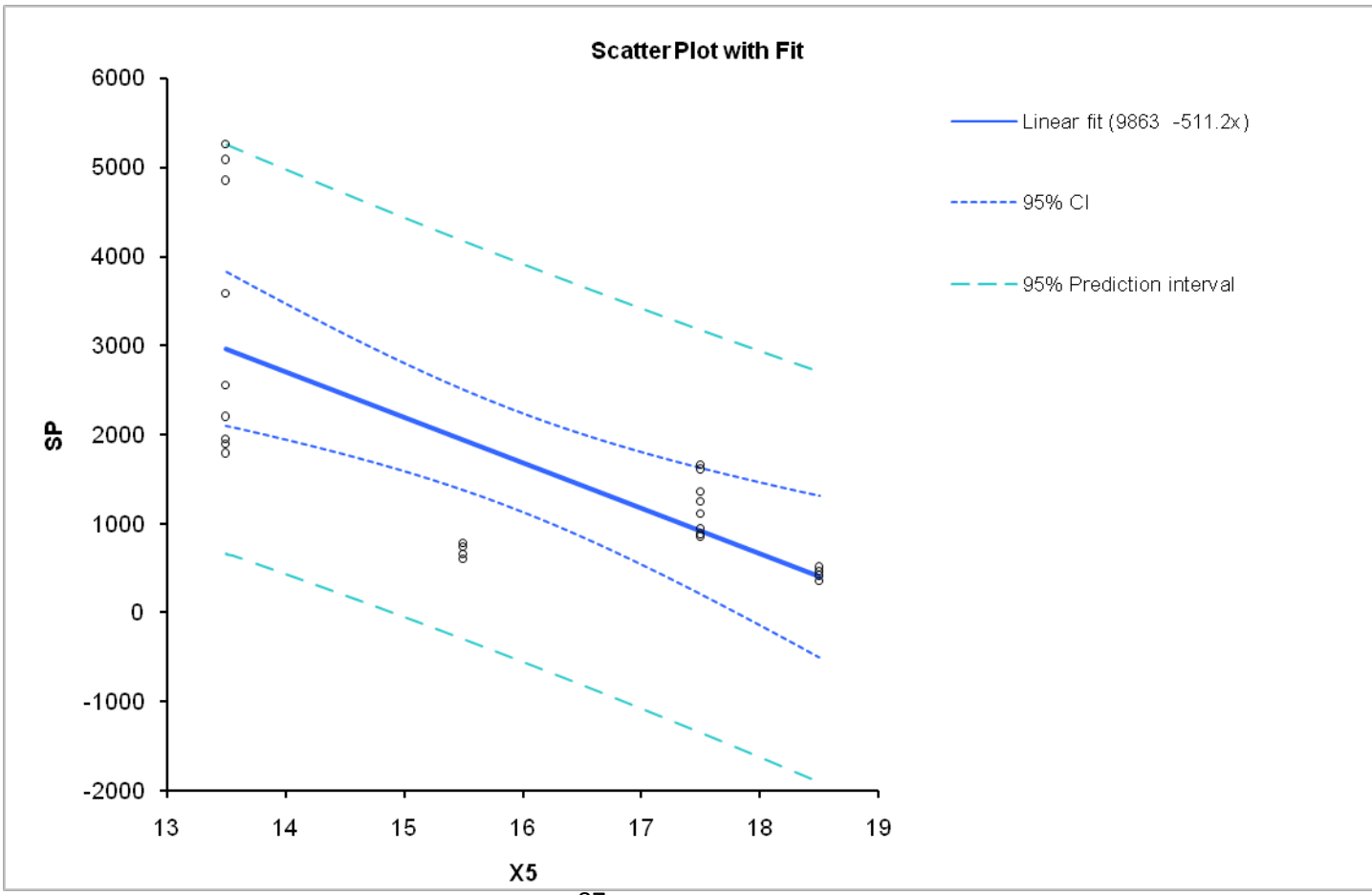
Tukey Contrast	Difference	95% CI	
SP v X5	1719,506	1128,412 to 2310,601	(significant)

Regression 5	n	25

R^2	0,50
Adjusted R^2	0,48
SE	1057,571

Term	Coefficient	95% CI	SE	t statistic	DF	p
Intercept	9863	6357 to 13369	1694,8	5,82	23	<0.0001
Slope	-511,2	-730,0 to -292,4	105,76	-4,83	23	<0.0001

Source of variation	Sum squares	DF	Mean square	F statistic	p
Model	###########	1	###########	23,36	<0.0001
Residual	###########	23	1118456,747		
Total	###########	24			



Anova 6	n	50

Groups	N	Mean	SE	Pooled SE	SD
SP	25	1735,406	293,9836	231,7978	1469,918
X6	25	938,528	145,0315	231,7978	725,158

Source of variation	Sum squares	DF	Mean square	F statistic	p
Groups	7937689,805	1	7937689,805	5,91	0,0188
Residual	64476290,018	48	1343256,042		
Total	72413979,823	49			

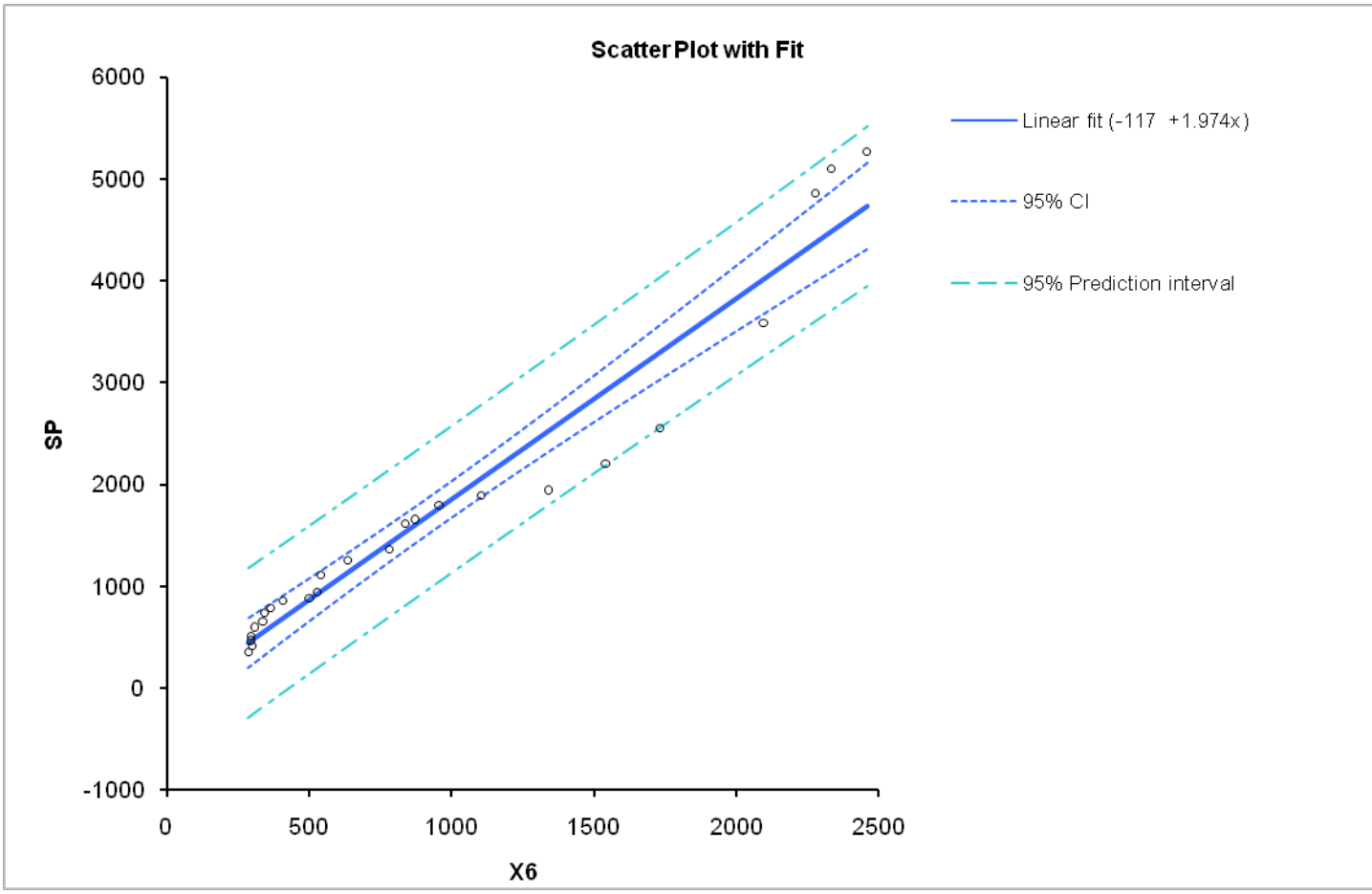
Tukey Contrast	Difference	95% CI		
SP v X6	796,878	137,769	to 1455,988	(significant)

Regression 6	n	25

R^2	0,95
Adjusted R^2	0,95
SE	342,037

Term	Coefficient	95% CI	SE	t statistic	DF	p
Intercept	-117	-351 to 117	113,3	-1,03	23	0,3126
Slope	1,974	1,775 to 2,173	0,0963	20,50	23	<0.0001

Source of variation	Sum squares	DF	Mean square	F statistic	p
Model	###########	1	###########	420,25	<0.0001
Residual	2690755,919	23	116989,388		
Total	###########	24			



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