

To what Extent did Changes in Stock Prices influence Investors' Confidence on the Nigerian Stock Exchange?

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Abstract

When investors commit more than necessary in the market, it only show how much they trust the growth of the market. But when the market does not growth as fast as the level of commitments of the investors, it becomes necessary to question the motivations of their trust. This is the crux of this research study. Employing the panel least squares to study a panel of fifteen (15) firms that operate in six sub-sectors, this study aims at revealing the major basis of the investors' confidence in Nigerian stock exchange, especially after the crisis. The six sub-sectors considered in this study are Brewery, Petroleum Marketing, Banking, Insurance, Building Materials, and Food and Beverages. Among the major findings of this study is the fact that investors' confidence in Nigerian Stock Exchange is mainly driven by the opinion of fellow investors. This opinion of fellow investors on its own is not based on calculated study of the market but on fears and optimisms about the market. This conclusion is based on the fact that the study established that the confidence or loss of confidence of investors in the market was neither influenced by movements of the firms' fundamentals nor the overall macroeconomic environment.

Key Words: Efficient Market Hypothesis, Investors' Confidence, Capital Assets Pricing Model, Arbitrage Pricing Theory, and Nigerian Stock Exchange

1. Introduction

The stock market is an investment roller coaster which rides on four wheels – **market fundamentals, psychology, globalization, and the macroeconomy**. Over the past decade, investors have found the Nigerian stock exchange a fertile ground to invest their fund. According to Oladipupo (2010), the Nigerian capital market of the pre-crisis period, happened to be one of the most profitable investment havens in the economy. This is revealed in the consistent rise in the annual market capitalization of the Nigerian Stock Exchange (NSE) especially over the past decade, until the significant decline recorded after the market crash in 2008 in the aftermath of the global financial crisis. The liquidity that a stock exchange provides, affords investors the ability to quickly and easily sell securities. This is an advantage of investing in stocks, compared with other less liquid investments. People invest in stocks for an opportunity to make gains depending on the valuation (potential market prices). The value of a share is reflected in the price for which it sells in the market; hence the price may either encourage or discourage patronage.

Statistics from the Nigerian stock market show that activities as well as the fortunes of the capital market steadily rose from the turn of the millennium, up until the second quarter of 2008 (see SEC quarterly bulletin 2006-2008). Economic Report (2008) records the volume of trade (in billions) on the floor of the NSE as 5.3, 7.1, 11.9, 12.5, 26.2, 37.8, 35.9, 37.7 and 68.6 respectively for the first quarter of 2006 through the first quarter 2008. For the first time ever, in 2004, the total market capitalization of the Nigerian stock Exchange (NSE) crossed the ₦2,000 billion mark. This feat was largely attributed to the consolidation mandate of the Central Bank of Nigeria, in which commercial banks and insurance companies responded to the directives in 2004 and 2005 respectively, to increase their capital bases to a minimum of ₦25 billion for banks while ₦2 billion, ₦3 billion, ₦5 billion and ₦10 billion respectively for life insurance, non-life insurance, composite insurance and re-insurance companies. In response to these mandates, there were many public offers (IPO's) by several banks and insurance firms to meet the capital base requirement. Doubtlessly, this increased the spate of activities in the stock market as well as it increased the awareness of the stock market operations. Since that time, the market capitalization (especially on equities) continued to rise until the second quarter of 2008, when for the first time in years, the capitalization nose-dived and the general share prices fell and thereafter continued to fall. CBN (2008) reports in the first quarter that the volume and value of traded securities rose by 82.0 and 70.1 percent to 68.6 billion shares and ₦990.4 billion, respectively compared with the preceding quarter.

Despite its miniature stature when compared with its counterparts all over the world, the Nigerian stock market proved to be one of the most efficient in terms of profitability as it consistently posted high returns some few years before it crashed, and especially in 2007, in which it posted year-end returns of 74.8 percent on all investments (Meristem, 2008). While the boom lasted, the momentum for stock price movement grew strongly and investors compared virtually every form of investment to the stock market, and joining the investment train

became an all comers' affair. With the boom came a massive influx of both individual and corporate investors, and with the increase in the demand for stocks in the market, the general price of stocks continued to rise with some reaching record heights. This is most evident in the banking sector which (Onyema, 2011) reports as controlling about 36 percent of the stakes of the entire market, and which consistently out-performed other sectors in the market in terms of volume as well as value of trade (see SEC quarterly bulletin 2006- 2010).

Between 2004 and 2010, while the companies listed and the numbers of shares quoted in the Nigerian stock exchange have relatively been the same, the capitalization within the same period has differed and varied considerably. The massive increase in activities on the floor of the market saw the market capitalization rise steadily, up until the market crashed in the second quarter of 2008 (see appendix 1). This trend is especially came to fore, beginning with the Central Bank of Nigeria (CBN) bank consolidation policy in 2004, where for the first time since the inception of the market, the capitalization hit the ₦2 trillion mark. This increase was partly the effect of the responses to meet the mandate of minimum capital bases for both banks and insurance companies. The market consistently enjoyed increases, reaching an all-time year-end high of about ₦13.295 trillion in 2007 but latter crashed to about ₦9.56 trillion and further to ₦7.03 in 2008 and 2009 respectively (CBN, 2010). These figures represent a 28.09% loss between 2007 & 2008 and a further 26.46% between 2008 and 2009 but closed at ₦9.92 trillion in 2010. The market capitalization (on equities) grew from a little over ₦4000 billion in 2006 to over ₦10000 billion in 2007 and further to a record peak of ₦12.64 trillion by march, 2008 (Adeputu, 2012).

As is the case with every bubble, that of the Nigerian capital market burst (in the second quarter of 2008). There have been advocates from across various quarters for the Nigerian capital market, which is the barometer of the nation's economic growth to be given full attention by the government and private stake holders (Nwachukwu, 2012). Though the crash of the Nigerian capital market may not be completely alienated from the effect of the global financial crisis that started with the US housing bubble, its aftermath has nevertheless left dents and unanswered questions on the Nigerian investment environment. The divestment from the market by foreign investors, who are reported by (Onwuamaeze, 2008) to control about 15 percent of the total investment in the stock market, is majorly reported as the cause of the crash. He stated further that the move depressed stock prices and forced the local investors, who had never witnessed a market meltdown, to panic and sell off their shares. This also caused the market capitalisation to drop even further. As prices continued to fall, many investors in the market suffered losses and as a result, the once bubbling market now suffers low patronage as investors now seek alternative investment opportunities, hence the call for attention by stakeholders.

The value placed on a share, is the price at which it sells in the market, which may either encourage or discourage patronage. Harper (2010) submits that there are numerous factors that contribute to the determination of the price of stocks in the market, among which are the firms' fundamentals and some technical factors. On its part, Bernard (1994) is of the opinion that the value of securities is determined by its rate of returns on equity (ROE), growth rate of ROE, book value, and growth rate of book value. These submissions are based on the widely accepted standard finance theories. According to VanBergen (2011), the incessant intraday struggle stock market between the bulls (rising prices) and the bears (falling prices) is what drives market rallies and precipitates market declines. Regardless of the style of analysis or system employed by traders, one primary aim of their trading endeavours is to understand the degree of control held by the bulls or bears at any given time, and to predict who should hold power in the near to distant future. Unfortunately, traders' natural desire to follow the crowds often gets in the way of seeing this clearly.

The efficient market hypothesis (EMH) developed by Fama (1965) suggests that stocks always trade at their fair value on the stock exchanges. This hypothesis assumes that markets are "informationally efficient", such that no individual investor can consistently achieve returns that is in excess of the average market returns. On the other hand, studies like Kufepaksi (2010) and Odean (1999) in the field of behavioural finance tend to show that deviations from the fair price are rather common, and sometimes quite large. Investors believe that the true asset value is high when they observe others buying (Avery & Zemsky, 1998; Chari & Kehoe, 2004; Cipriani & Guarino, 2008) and the opposite when the reverse is the cases. Such behaviour is referred to as 'herding' by Shiller (2000) in describing a situation where investors follow a trend. They explain 'herding' as asset purchases by a few agents that encourages others to buy too, not because the true value of the asset increases when many buy, but because investors come to believe that true asset value is high when they observe others buying. This seemed the case in the NSE with the massive influx of investors into the market. This can also be likened to what Keynes (1936) referred to as "Animal spirits". This could lead investors to buy/invest in stocks which ordinarily they would not. Specifically, this study intends to evaluate the effect of price changes on investor confidence in the market before and after the crash.

2. Related Literature

2.1 Related Theories

The efficient market hypothesis (EMH) was developed by Fama (1965). The assumption of full information is the crux of the EMH; an idea that presupposes that all the relevant information is fully reflected in the prices of stocks. It asserts that markets are “informationally efficient”, and as such, no one can consistently achieve returns that is in excess of the average market returns. Fama (1970) revealed that there are three versions of the hypothesis namely; the weak, the semi- strong, and the strong forms.

- ❖ The weak-form claims that prices on traded assets (e.g., stocks and bonds) already reflect all past publicly available information.
- ❖ The semi-strong-form claims both that prices reflect all publicly available information and that price instantly change to reflect new public information and
- ❖ Lastly, the strong-form additionally claims that prices instantly reflect even hidden or, “insider” information.

In other words, the value of gain from information to an i th individual must be zero i.e. $V(\eta_i) - V(\eta_0) = 0$, implying that no one would pay anything for the information set of historical prices. Fama (1976, 1991) defines efficient capital markets as those where the joint distribution of security prices at a period, given the set of information that the market uses to determine security prices, is identical to the joint distribution of prices that would exist if all relevant information available at that period were used.

The modern portfolio theory (MPT) was introduced in Markowitz (1952). It is an investment strategy that seeks to construct an optimal portfolio by considering the relationship between risk and return. It is a mathematical formulation of the concept of diversification of investment, aiming at selecting a collection of investment assets that have collectively lower risk than any individual asset. The theory recommends that the risk of a particular stock should not be looked at on a standalone basis, but rather in relation to how a particular stock's price varies in relation to the variation in price of the market portfolio. When single period returns for the various securities are treated as random variables, it can be assigned expected values, standard deviations and correlations. These can be used to calculate expected returns and volatility of any portfolio so constructed with those securities. Here, volatility and expected returns are treated as proxies for risk and reward respectively. Markowitz believes that certain portfolios (efficient frontier of portfolios), will optimally balance risk and reward.

Tobin (1958) expanded Markowitz's MPT, adding a risk-free asset to the analysis. This he claims makes possible the leveraging of portfolios on the efficient frontier, and thus bringing about the notion of a super-efficient portfolio and the capital market line which he claims are able to outperform portfolio on the efficient frontier. According to MPT, an investor can thus reduce portfolio risk by simply holding combinations of instruments (securities) which are not perfectly positively correlated.

The Capital Asset Pricing Model (CAPM) was independently developed by Sharpe (1964), Linter (1965) and Mossin (1966) and it marks the birth of asset pricing theory. They further modelled it to include the risk free rate. As the efficient frontier only includes the portfolio of risky assets, a risk free asset with a zero risk return can be combined with risky assets added to the efficient portfolio and investors can then go beyond the frontier by borrowing and lending at risk free rate. A capital market line that used to linearly predict the market return can be drawn by lining up a point of a portfolio with only risk free rate to the other point that touches the efficient frontier, known as a tangency portfolio.

Sharpe's model starts with the idea that individual investment contains two types of risks. First is called systematic risk, which refers to market risks that cannot be diversified away e.g. interest rates and recessions. Second, unsystematic or specific risk, which is the risk specific to individual stocks and is diversifiable away as an investor increases the number of stocks in his or her portfolio. Modern portfolio theory (MPT) shows that specific risks can be removed through diversification. But according to McClure (2006), it is impossible to get rid of all the risk in investment choices; no matter the extent investors diversify their investment. He also noted that CAPM, evolved as a way to measure this systematic risk because according to him, the trouble is that diversification still doesn't solve the problem of systematic risk; even a portfolio of all the shares in the stock market can't eliminate that risk.

CAPM assumes that a major stock index can be used as a benchmark to determine risk premium and beta for calculating the required rate of return of a stock. The formulae can be shown as follows, $R_s = R_f + \text{Beta} (R_m -$

R_f), or by noticing the future expectation as this: $E(R_s) = R_f + \text{Beta} (E(R_m) - R_f)$. To see the relationship between share and market returns, it can be formulated as follows: $E(R_s) - R_f = \text{Beta} (E(R_m) - R_f)$ (Liando, 2007).

The CAPM's starting point is the risk-free rate which typically is a 10 year government bond yield. To this is added a premium that equity investors demand to compensate them for the extra risk they accept. The beta (β) according to CAPM is the only relevant measure of a stock's price with the fluctuations (ups & downs) of a particular stock's price with that of the stock market as a whole. If a stock's price moves exactly in line with the stock market, the stock's beta is exactly one (1) i.e. they grow and fall at the same rate. Consequently, a stock beta of 1.5 implies that the stock will rise (fall) by 15% as the market rises (falls) by 10% (McClure, 2006). The beta, compared with the equity risk premium, shows the amount of compensation that equity investors need for taking an additional risk. The amount over the risk-free rate is calculated by the equity market premium multiplied by its beta. Thus, by knowing the individual parts of the CAPM, an investor could gauge whether or not the current price of a stock is consistent with its likely return. The theory says that the only reason an investor should earn more, on average, by investing in one stock rather than another is that one stock is riskier.

These following assumptions are believed to define the relationship between risk and return, which in turn determines the security prices. These assumptions are:

- (a) All investors are risk-averse individuals, who maximize the expected utility of their end of period wealth,
- (b) The investors are price takers and have homogenous expectations about asset returns that have joint normal distribution i.e., they cannot influence prices,
- (c) There exists a risk-free asset such that investor may borrow or lend unlimited amounts at the risk-free rate,
- (d) The quantity of asset are fixed, also all assets are marketable and perfectly divisible,
- (e) Assets markets are frictionless and information is costless and simultaneously available to all investors, and
- (f) There are no market imperfections such as taxes, regulations, or restrictions on other sales.
- (g) All investors aim to maximize economic utilities
- (h) All investors are broadly diversified across a range of investments.

The Arbitrage Pricing Theory (APT) model was developed by Ross (1976) and later extended by Huberman (1982), Chen and Ingersol (1983), Chen (1983) and Lehmann and Modest (1988) among many others. It is a general theory of asset pricing that holds that the expected return of a financial asset can be modelled as a linear function of various macroeconomic factors or theoretical market indices, where sensitivity to changes to each factor is represented by a factor-specific beta coefficient. The basic idea of the APT is that in equilibrium all portfolios that can be selected from among the set of assets under consideration and that satisfies the conditions of (a) using no wealth and (b) having no risk must earn no return on average. These portfolios are called arbitrage portfolios. To form an arbitrage portfolio that requires no change in wealth, the usual course of action would be to sell some assets and use the proceeds to buy others (Javed, 2010). The APT model is different from the CAPM in that it is far less restrictive in its assumptions. Underlying the arbitrage pricing theory is the acknowledgement that more than one systematic factor would affect the returns on a security. It proposes that, the return on a stock would depend on a number of expected and unexpected events which may occur during the time the stock is held by an investor in his portfolio.

2.2 Empirical Studies

A study was done by Osei (2002) with the objective to ascertain asset pricing characteristics as well as assessing the influence of annual earnings announcement on the prices of stocks in the Ghana stock market (GSM). He adopted the standard market model that assumes a linear relationship between the returns of a given security to the returns of the market portfolio. He found that the market drifts up for good news and down for bad news.

Finally, he established that the drift continues beyond the announcement week i.e. week zero which is inconsistent with the EMH.

Sumoye et al. (2009) carried out a study to find the determinants of share prices using five variables (earning per share, dividend per share, GDP, lending interest rate and foreign exchange rate). They analyzed using a total of 12 companies with a seven years data (2001-2007). Using a linear regression, they concluded that the forces of demand and supply had direct effect on stock price. They also discovered that the effect of the other factors (negative or positive) was not static. For instance, lending interest rate effect could be positive or negative depending on the aim of the central Bank Nigeria (CBN) in deploying it as one of the tools for implementing monetary policy.

In terms of scholars' beliefs, certain psychological factors are found to affect investors' decision making process, prominent among which is overconfidence. Trading in the capital market is an activity which has immense uncertainty such that it is likely to generate overconfident behaviour. Kufepaksi (2010) submits that psychological research demonstrates that when people encounter a difficult problem involving uncertainty, they tend to be so overconfident that they make more errors if it is compared to when they confront an easier problem. According to Alpert and Raiffa (1982), people are poorly calibrated when estimating probabilities. The confidence intervals people assign to their estimates of quantities are far too narrow. Empirical research reveals that when investors show overconfident behaviour, they tend to send a prediction value which is relatively high, so it moves away from its fundamental value which entails excessive prediction error. According to Gervais and Odean (2001), overconfidence may in part stem from two other biases, namely; self- attribution and hindsight bias. For example, investors might become overconfident after several quarters of investing successes. Overconfident behaviour which has generated prediction errors is proved to contribute significantly to the failure of getting profits in the capital market. Odean (1999) further reveals that overconfident investors tend to assess the accuracy of information so excessively that they are less cautious and tend to neglect the risk. Overconfident investors tend to buy (sell) the securities with exceedingly high (low) price and do the transaction so excessively that it subsequently makes them loose. Nevertheless, other empirical researches also demonstrate that overconfident behaviour does not always end with transaction losses (Hirshleifer and Luo, 2001; Gervais and Odean, 2001). Close related to overconfidence are:

Optimism and wishful thinking- This is the tendency to expect the best in all things i.e. the confidence in the success of a course of action. Weinstein (1980) is of the view that most people display unrealistically rosy views of their abilities and prospects. Buehler, Griffen and Ross (1994) submits the findings that of a number of persons surveyed, over ninety percent (90+%) predicted that tasks will be completed much sooner than they were actually completed. It is optimism and wishful thinking that drives investors to stake their fund by painting a juicy picture of outcome, thus ignoring sign if there be any that would discourage such investment.

Representativeness- Much of the time, representativeness is a helpful heuristic, but it can generate some severe biases. Gilovich, Vallone and Tversky (1985) reports that, representativeness could lead to another bias known as sample size neglect. It implies that in cases where people do not initially know the data- generating process, they will tend to infer too quickly on the basis of too few data. According to Rabin (2002), the belief that even small samples will reflect the properties of the parent population is sometimes known as the "law of small".

Belief Perseverance- Once people have formed an opinion; they cling to it too tightly and for too long (Lord, Ross and Lepper, 1979). They submit that people are reluctant to search for evidence that contradicts their beliefs and that even when they find such evidence; they treat it with excessive scepticism.

Anchoring-When forming estimates, people often start with some initial, possibly arbitrary value, and then adjust away from it. The submission of Kahnman and Tversky (1974) is that people "anchor" too much on initial value.

3. METHODOLOGY

Model Specification

Many schools of thought exist with respect to studying stock price behaviour, but for the purpose of this study we shall adopt the fundamentalist and the technical/ macro-economic schools of thought.

The fundamentalist school use returns to portfolio (such as dividends and profits). Durand (1955) submits that book value, dividends, earnings, capital etc are determinants of a stock's price. It implies that changes in the value of these fundamentals can bring about changes in stock price. Thus, we have an equation of the form:

$\Delta SP = f(\text{Fundamentals})$, that is:

$$\Delta SP = f(\text{DIV}_{t-1}, \text{PROFIT}_{t-1}) \quad (1)$$

where,

ΔSP = Change in Stock price; DIV_{t-1} = Declared dividend at time t-1; PROFIT_{t-1} = Profit at time t-1 (Profit after tax)

We also find that there is a mix of external factors (like exchange rate, inflation etc.) that may alter the value of a firm's fundamentals. These are the technical/macro-economic factors in the economy in which such firm operates.

Shapiro (1996) cited in Gonsel and Cukur (2007) supports the inclusion of exchange rate, explaining that its changes may affect the competitive position of the company and hence industries in the international arena. Another reason is that the market participants also comprise of foreign investors, whose desire to invest in the market or other markets will be determined by the prevailing exchange rate in the economy. We thus infer that:

$$\Delta SP = f(\text{INF}, \text{EXR}, \text{GDP}_r) \quad (2)$$

where,

INF = Inflation Rate; EXR = Exchange Rate; GDP_r = Growth Rate of National Output

Building upon the hypothesis of both schools of thought (fundamentalist & macro-economic), we combine equations 1 & 2 to get

$$\Delta SP_i = f(\text{DIV}_{it-1}, \text{PROFIT}_{it-1}, \text{INF}, \text{EXR}, \text{GDP}_r) \quad (3)$$

When firm fundamentals are on the rise (or on the high side) especially with the announcement of dividends which is a return on investment in the stocks of a company, people are encouraged to patronize the shares of such firms. On the other hand, when the value of a firm's fundamentals are on the decline (or on the low side) such as non payment of dividend when losses are recorded by the firm, people are not encouraged to invest in such shares in the market. Volume of trade (VOT) thus reflects the supply and demand for firms' stocks. While a stock with low volume is said to be illiquid, one with larger than normal volume is an evidence that traders are confident about the direction of the stock's movement and are willing to put money on the line (Nicholson, 2011). Economic theory tells us that with fluctuations in prices, the demand for the commodity fluctuate likewise; therefore we will include VOT as one of the determinants of prices of stocks in the model. Hence, the final model may be stated econometrically as

$$\Delta SP_i = \alpha_0 + \alpha_1 \text{DIV}_{it-1} + \alpha_2 \text{PROFIT}_{it-1} + \alpha_3 \text{VOT}_i + \alpha_4 \text{INF} + \alpha_5 \text{EXR} + \alpha_6 \text{GDP}_r + u_i \quad (4)$$

Because our major concern here is to evaluate the major motivation for the rate of transaction in the Nigerian stock market (NSE), we shall make the volume of transaction (VOT) the dependent variable in our model

$$\text{VOT}_i = \alpha_0 + \alpha_1 \text{DIV}_{it-1} + \alpha_2 \text{PROFIT}_{it-1} + \alpha_3 \Delta SP_i + \alpha_4 \text{INF} + \alpha_5 \text{EXR} + \alpha_6 \text{GDP}_r + u_i \quad (5)$$

where

i = the company/firm in each sector; α_0 = the intercept of the model; $\alpha_1, \alpha_2, \alpha_3, \alpha_4, \alpha_5,$ and α_6 = the slopes or parameters of the model; u_i = the stochastic variable, and all other variables are as earlier explained above.

The study will cover a seven year period ranging between January 2004 and December 2010, but sub-divided into two time periods with May 2008 as the threshold point in order to effectively evaluate the motivation to transact or the drivers of transactions in the respective time periods into which the study period is sub-divided. On a monthly basis, the period from 2004:1 through 2008:5 will represent the period before the Nigerian capital market crash, while the period from 2008:6 through 2010:12 represents the post crash period.

Estimation Procedure

This study shall adopt the Panel Least Square method of estimation in line with Ljungqvist and Wilhelm Jr. (2003) that used the Panel Data Ordinary Least Square method in analysing the Initial Public Offer pricing in the dot-com bubble. Though this study is not directly focused on pricing of shares, price has effect in such a way that it may encourage or discourage the demand for and sales of shares and ultimately, volume of the share that is traded within a particular time period. Combining time series of cross-section observations, panel data give more informative data, more variability, less collinearity among variables, more degrees of freedom and more efficiency. Panel data are better suited to study the dynamics of change and can better detect and measure effects that simply cannot be observed in pure cross-section or pure time series data. Panel data enables us to study more

complicated behavioural models and can enrich empirical analysis in ways that may not be possible if we use either only cross-section or time series data (Gujarati, 2004).

4. EMPIRICAL FINDINGS

The study period on monthly basis covers the years 2004 through 2010. However, for the purpose of achieving the purpose of this research, the regression is run in three time periods – first for the entire duration of the study (2004:1-2010:12), second, for the period before the market crash (2004:1-2008:5) and lastly, after the crash (2008:6-2010:12). Observations from the empirical results show the following:

Considering change in stock price (DSP) or ΔSP in the model for the full length period (2004:-2010:12) and with a common coefficient for the entire market, volume of trade (VOT) was found not to respond to changes in stock prices. Also, considering the periods before and after the crash separately, DSP was still found insignificant i.e VOT did not respond to DSP in either of the periods.

Likewise using cross-section specific coefficient for the entire period, none of the cross section's VOT responded to its DSP significantly. However, for the period after the crash, VOT responded to DSP in just two (WAPCO & NB) of the 14 cross- sections responded albeit inversely with coefficients of -0.026 and -0.0045 respectively. This is contrary to apriori expectation since conventional theory assumes that changes in stock prices is a major motivation to transact by either the buyer or the seller both of whose willingness to trade or lack of it affects the volume transacted.

DIV representing DIV_{t-1} in the model which stands for the dividend at previous time period was found significant but inversely to the market VOT with a coefficient of -0.00025. For the periods before and after the crash, DIV was significant, and like for the full length period had inverse relationship with coefficients -0.00029 & -0.00023 respectively, thus implying that a unit rise in DIV results in reduction in the market VOT for the both time periods in the respective magnitude. However, with cross-section specific coefficient for the full length period; only the DIV of CONOIL, CADBURY, WAPCO and ASHAKA were found to influence their VOT and positively too with the highest and lowest being WAPCO and CONOIL respectively with coefficients 0.0028 and 0.00099. With only 4 out of about 14 cross-sections found significant and positively related to the VOT, it implies that the effect of the other 10 which are insignificant outweighs the 4 positively significant cross sections hence the entire market is significant but negatively related to the market volume. For the period before; the DIV of CADBURY, NESTLE, WAPCO and ASHAKA had impact on their respective volumes traded. While those of CADBURY and ASHAKA were positive with coefficients of 0.0027 and 0.0013, those for NESTLE and WAPCO were negative to different magnitudes. The only reasonable explanation for this could be that on the average, trading in the NSE was not based on the expected returns on investment (dividend) but on trend. This is suspected owing to the fact that within the study period, some firms for some consecutive years did not declare dividend to their shareholders which ought to have been the major motivation to continue to transact or patronize these stocks.

PAT representing profit after tax in the model is the primary motivation for any investment such as in the stock market. For the full length period, it was found significant with a direct positive relationship with the market volume traded though with a mere 0.000000026 positive response to a unit rise in the entire market PAT. Still considering the larger market, it was found significant in both the period before and after the market crash but with the magnitude in the period before surpassing the period after the crash albeit small with coefficients 0.000000039 and 0.000000022 respectively. Considering the cross sections for the full period (2004:1-2010:12) individually; four (4) which include CONOIL, ASHAKA, NB and AIICO had significant impact on their volumes with solely AIICO recording a positive impact of about 0.00000024 unit increase in transaction in response to a unit increase in its PAT. For the periods before and after the crash; the PAT of WAPCO had significant and positive impact on its volume in both time periods with coefficients of 6.49E-08 and 3.63E-08 respectively. Contrastingly, ASHAKA had significant but inverse impact on its volume also in both periods as it did in the full length period while NB was only significant in the period before with an inverse relationship with its volume. With the PAT of ASHAKA and WAPCO significant in both periods it may imply that the building sector which they both are part of, is a major contributor of the profit in the market. Though the larger market PAT had significant positive impact on the market VOT in all the time periods considered, it could mean that the decision of investors to continue patronizing most of the stocks in the market on the average is based on the profit announced by firms of which only a portion of it is distributed as dividend and the remaining retained in the business.

On the impact of macroeconomic variables for the entire length of the study period (2004:1-2010:12) using a common coefficient i.e the larger market, all (EXR, GDPR & INF) were observed to have significant impact on

the market volume transacted during the period. While rise in EXR and GDPGR brought about an inverse rise in the market volume traded, rise in the value of inflation brought about a rise in the volume traded. In contrast with apriori expectation, all three macro variables reveal results that are opposite of what theory submits. A rise in exchange rate (EXR) and growth in national output (GDPGR) were expected to bring about a rise in the VOT while a rise in the rate of inflation (INF) is expected to negatively affect VOT especially from the point of the buyers whose resources (money) is expected to be depleted by a rise in the rate of inflation. For exchange rate, economic theory submits that its rise should increase the money available for local use; hence instead of having an inverse impact on VOT, it should rather have a positive impact. Likewise, a rise in national output (GDPGR) all other factors remaining constant should increase available resources that could be spent on investment. Using cross-section specific coefficient for the full length period reveals that only in a handful of the cross-sections did the macroeconomic variables have significant impact on the volume of shares that were traded on the exchange. For instance, it was observed that as with the result observed using common coefficient, GDPGR is significant and with inverse relationship with VOT in ASHAKA and AIICO. Breaking the cross-sections into the two sub time periods, it is still observed that GDPGR growth in ASHAKA and AIICO maintained the inverse impact they had in the full length period in the period before the crash with magnitudes of -0.023450 and -0.016519 respectively to a unit rise in GDPGR. But unlike in the full length period, it had a single positive impact in the WAPCO volume traded. It did not reveal any impact when considering the period after the crash. With no significant impact (especially positive) in the period after the crash could imply that investors sought alternative areas where their wealth may be invested. Also, it could imply that the singular positive impact observed in the WAPCO shares traded, is insignificant hence the negative impact that was observed when the market was viewed as a unit.

Considering the variable (INF) for the full period using cross-section specific coefficients, three cross-sections namely; MOBIL, WAPCO & AIICO were observed to be positively significant to their volumes traded in the market, and with only that of NB found inversely related to its volume. However, looking at the two sub-time periods, only two cross sections were found significant in alternate directions in the period before the crash both of which also had significant impact in the full length period. ASHAKA maintained its positive impact as in the full length period with a coefficient of 0.023242, while NB also maintained its negative impact with a coefficient of -0.022771 within the same period (before the crash). Inflation had no effect in period after the crash. With positive impact recorded in the full length period, after the crash and no impact in the aftermath of the crash; it could imply that investors were willing to stake their wealth, not minding the level of inflation. This may be due largely to over-optimism on the future prospects of the market or belief perseverance.

Finally, looking at exchange rate (EXR) over the full term in cross-section specific coefficient, it had a positively significant impact on the volume of ASHAKA and NB with coefficients of 0.004087 and 0.004870 respectively but an inverse reaction in the volume traded of AIICO shares. However, in the two sub periods, it only had impact in one firm apiece and in both cases, positively. But comparing this with that of the entire market (common coefficient) where it was observed to be significant with an inverse relationship with the market volume, it could mean that the few recorded positive impact in the respective period was little compared with the combined effect of the other seemingly insignificant cross-sections as evidenced from the results obtained in the various periods.

Policy Implications of Findings

The study came out with the following key findings:

- ❖ Changes in stock prices had no impact on the volume of trade in any of the time periods
- ❖ There are evidences to show that expected returns was not the major motivation to transact in the market
- ❖ There is a possibility that the stocks in some sectors were greatly mispriced (overpriced or underpriced) thus leading to massive increase in the desire to invest/transact in and exit the market.
- ❖ The macro-economic variables and environment did not alter the confidence in the market as existing theory would have had it behave given its trend.

The implication of the first key finding is that the frequent price changes did not in any way alter the confidence or lack of it that investors had in the market in either respective time periods. This is contrary to the expectation

that volume will respond positively to price rise and negatively to falling prices. The second finding implies that the desire to transact/invest in the market was not motivated by the expected returns on investment due to the overall observed inverse relationship between rise in dividend and volume of stocks traded in the respective time periods under study. This could mean that in the two sub-periods, buyers and sellers of stocks alike were driven by the crowd and trend or even by ill advice by agents who themselves are delegated to act/transact on behalf of their clients (stock owners). The third finding may imply that there could have been false declaration of fundamentals' value by some firms which led to the clamour for their shares in the market and which further attracted investors to the market not wanting to be left out in the spoils it portends overlooking critical factors and signs that could have made them act otherwise. Finally, with all the macroeconomic variables altering the volume in ways contrary to how they should given their values/trend, it shows that investors overlooked the macroeconomic situations because of a preconceived expectation that may not be backed by existing theory (anchoring).

5. CONCLUSION AND POLICY RECOMMENDATIONS

Given a temperate macroeconomic environment, three variables in our model namely; DSP, DIV and PAT which make up the firm and market fundamentals were expected to be the drivers of the desire to, or discouragement from transacting on particular stocks in the stock market. Stock price which is the closest measure of the value of a stock and DSP which is a measure of its dwindling value hence is expected to be a significant driver of the volume of the shares that is trade in the market. The implication of the insignificance of the change in stock prices to drive volume of shares traded in the larger market as well as in most of the firms when viewed from the individual firm perspective is that better policies aimed at ensuring that the value of fundamentals are the major determinants of the frequency at which they are traded. The observation that profit after tax (PAT) is significant and positively related to the volume traded where as dividend at previous time period had an inverse relationship with traded volume, among other things that the investors rely more on the announced profit of which only a fraction goes to the shareholders while the remaining parts are retained for the running of the businesses. This could also mean that firms in the market falsely declare their profits in order to attract investors especially when public offers are made. The inverse relationship between the dividend declared at previous time period and the present volume of stocks traded could be occasioned by the non-payment of dividend for consecutive periods even in the face declaration of profit by some firms. The summary of the interplay and relationship between and among the variables DPS, VOT and PAT is possibly that what actually drives the VOT is market sentiments, also known as "herds behaviour" or "animal spirits" as supported by Akerlof and Shiller (2009). As such there are evidences to show that investing in these stocks was simply following the trend and ignoring signs that showed that such investment portends dangers. Van Bergen (2011) supports this with the submission that "Such optimistic thinking leads the public to overextend itself in acquiring the object of the mania, while lenders fall over each other to feed the fire. Eventually, fear arises in investors as they start to think that the market is not as strong as they initially assumed."

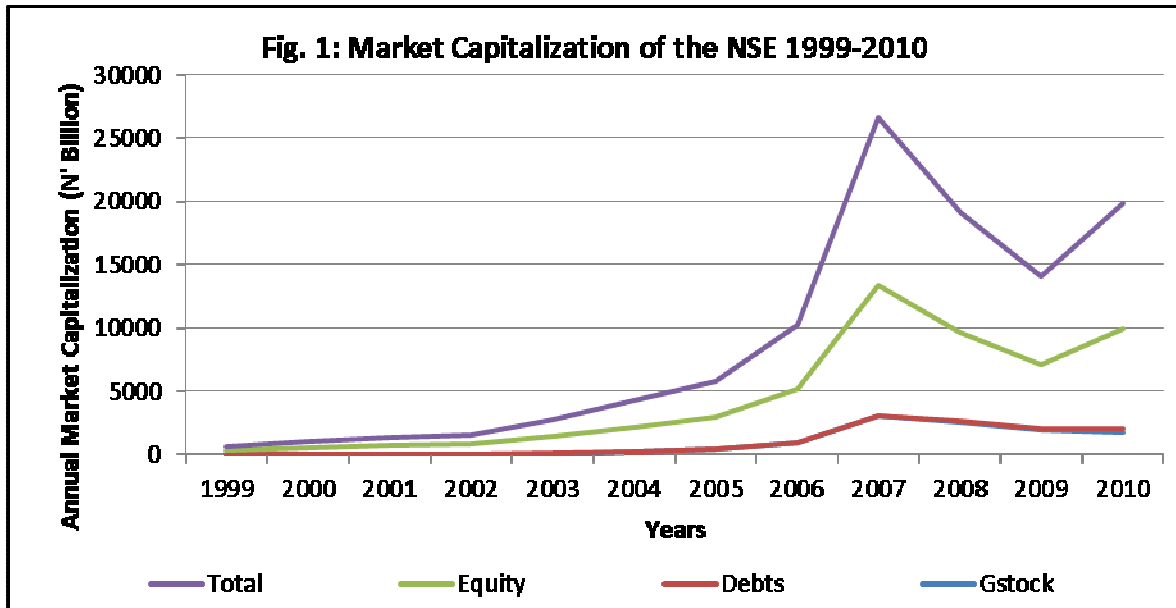
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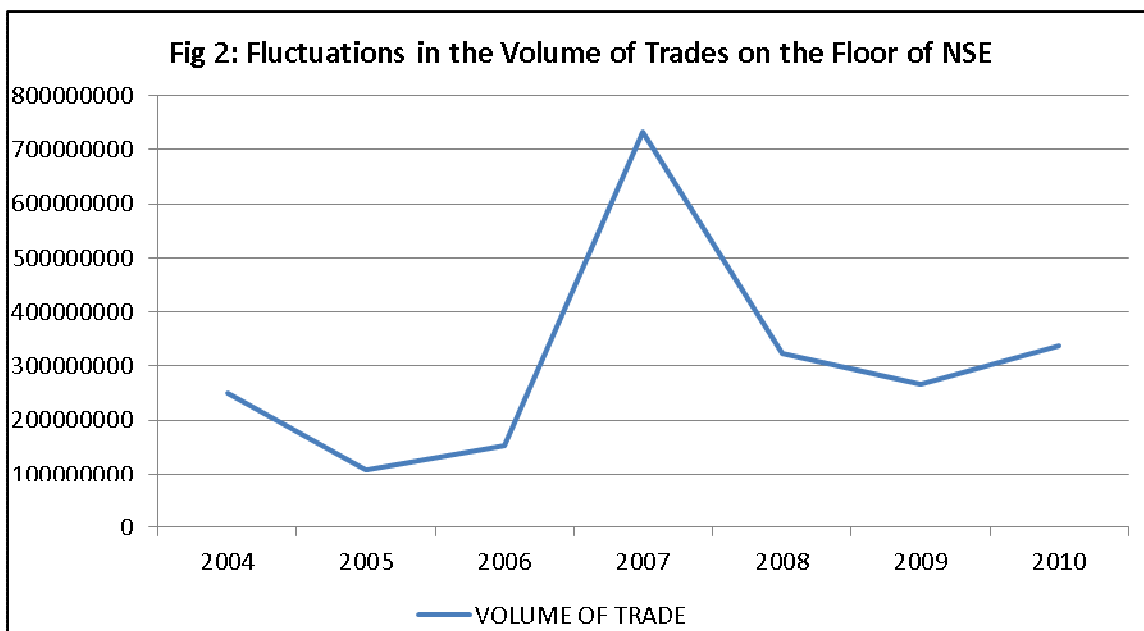
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APPENDIX



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