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**THE RELATIONSHIP BETWEEN INTRINSIC  
AND MARKET VALUES OF LISTED  
COMPANIES IN THE NAIROBI SECURITIES  
EXCHANGE**

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## **The Relationship Between Intrinsic and Market Values of Listed Companies in the Nairobi Securities Exchange**

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### **Abstract**

**Purpose:** The aim of the study was to establish whether there exists any relationship between the intrinsic and market values of listed companies in the Nairobi Securities Exchange.

**Methodology:** An explanatory research survey design was used to show how the study variables relate to each other. The target units of analysis for this study were all the sixty one (61) companies currently listed in the NSE thus the study used a census methodology to gather data. The study used secondary data from the financial statements of the companies listed in the NSE. The study used Statistical Package for Social Sciences (SPSS) to generate the descriptive statistics and also to generate inferential results. The simple linear regression model was used to measure the relationship between the independent variable (intrinsic value) and the dependent variable (market value) which is explained in the model.

**Results:** The linear regression analysis used to demonstrate the relationship between the stock market value and the intrinsic value indicated that there exists a positive relationship between the two. The positive relationship of market value and intrinsic value is further confirmed by Pearson's Bivariate correlation which means that an increase in unit change of intrinsic value of the company results to a unit change in market value of the company. ANOVA results of the study presented the model used to determine the relationship between market value and intrinsic value to be statistically significant.

**Unique contribution to theory, practice and policy:** It is recommended that investors should consider the intrinsic value when making investment decisions, for instance they should be aware that high intrinsic values lead to high market values and low intrinsic values lead to low market values.

**Key words:** *Market, securities exchange, intrinsic*

## **1.0 INTRODUCTION**

### **1.1 Background of the Study**

The primary objective of a profit making organization is to maximize shareholders wealth through profits maximization which increases the firm's market price (Sakthivel, 2011). Investors invest in many types of securities in capital markets with stocks being one these securities. To find reliable information about stocks, investors use different investment analysis methodologies, broadly classified into two categories, fundamental and technical analysis. Investors need to calculate the intrinsic value of a stock to determine whether a stock is underpriced or overpriced. Investors should sell overpriced stock, because stock market price will most likely fall in the future and buy underpriced stocks, which have chances of market price appreciation in the future (Shleifer and Vishny, 2003).

Stock prices fluctuate from time to time. This fluctuation is influenced by external and internal factors. The external factors include the economy and industry state, government fiscal and monetary policies, inflation rate, opinion of investors and stock traders and market forces. The internal factors consists of company's future earnings potential, the management style, company's policies made by board of directors, products portfolio, brands and copyrights (Usman, 1990; Jones, 1998).

Stock prices often represent the company value, so that shareholders often compare the stock market price with the true stock price before deciding to buy or sell stocks. This true value (intrinsic value or fundamental value), can be calculated using fundamental security analysis (Hartono, 2000). Financial reports are used in fundamental analysis (analyzing a company's financial statements and health, its management, competitive advantages, its competitors and markets ). Stock market data is used in technical analysis ( forecasting the direction of prices through the study of past market data, primarily price and volume from the stock market).

In regard to stocks, market price is the most recent price at which the stock was traded. The significance of market value is providing information necessary in determining an object or property's value in the open market, assuming that both buyer and seller agree to a sale, but are under no obligation to make that sale. If an investor has stock certificates, knowing the market value of those stock shares is important in the event a sale of those stocks is made.

The goal of company or stock valuation is to give owners, potential buyers and other interested stakeholders an approximate value of what the company or stock is worth. In finance, intrinsic value refers to the actual value of a company or stock determined through fundamental analysis without reference to its market value. It is also frequently called fundamental value. It is ordinarily calculated by summing the future income generated by the company, and discounting it to the present value (Foerster and Sapp, 2006). Intrinsic value assesses what a company or stock is worth by taking into account the quantitative and qualitative factors. Knowing the intrinsic value gives investors information about the worth of a business before taking any ownership in it.

## 1.2 Research Problem

The market prices of stocks are available on a daily basis in the securities exchanges as investors buy and sell stocks. The market prices are determined by market forces of demand and supply. The stock intrinsic value as determined by fundamental analysis of a firm may be different from the actual market price. The relationship between the stock market price and the calculated stock intrinsic value enable investors to make the decision on whether to buy or sell stocks of a firm. Stocks can be overvalued, fairly valued or undervalued. Future firm's fundamentals determine intrinsic stock value, so that forecasts and sell or buy recommendations should be related. The analysis of the relationship between stock intrinsic value and market price is of utmost importance to all stakeholders, especially the common equity investors (Abate, James et al., 2004).

The Nairobi Securities Exchange (NSE) has witnessed growth both in the number of firms listings as well as trading activity, trade volumes and price volatility. The heightened activity in the NSE has resulted in the need to predict the intrinsic values of stocks and compare with the market prices in order to form informed decision on whether to sell or buy a firm's stocks. The question on every investors mind is whether the intrinsic value matches the market price of stocks in order to buy or sell stocks. Consequently, investment analysts and academic researchers have come up with many models to determine stock intrinsic value. It is argued that for a stock to be properly valued, its intrinsic value and the market value should be the same. The job of the analyst is therefore to identify undervalued and overvalued stocks by comparing the intrinsic and market value in order to arrive at a sell or buy recommendation. Though a firm's stock value can be analyzed along multiple company's qualitative and quantitative dimensions, this study confines to the financial quantitative aspects and engaging in an analysis of the firms listed in the Nairobi Securities Exchange in Kenya. The stocks' price and return were the units of the study's analysis.

## 2.0 LITERATURE REVIEW

### 2.1 Theoretical Review

#### 2.1.1 The Capital Asset Pricing Theory

Sharpe (1964) formalized the Capital Asset Pricing Theory which resulted in the formulation of Capital Asset Pricing Model (CAPM) which estimates the cost of capital and evaluating the performance of managed portfolios. The CAPM formula is as detailed below;

Expected Return =  $R_f$  + Beta ( Market Return - Stock Return ).

Where;

$R_f$  = Risk Free Interest Rate

Beta = Asset's market beta

The theory makes strong assumptions that lead to several conclusions. According to CAPM, all investors should hold the market portfolio, leveraged or de-leveraged with positions in the risk-free asset. Not only does the market portfolio sit on the efficient frontier, but it is actually Tobin's super-efficient portfolio.

CAPM also introduced beta and relates an asset's expected return to its beta. The risk and return model has been in use the longest and is still the standard in most real world analyses.

The capital asset pricing model assumes that there are no transactions costs, all assets are traded and investments are infinitely divisible (an investor can buy any fraction of a unit of the asset). It also assumes that everyone has access to the same information and that investors therefore cannot find under or overvalued assets in the market place. Making these assumptions allows investors to keep diversifying without additional cost. While diversification reduces the exposure of investors to firm specific risk, most investors limit their diversification to holding only a few assets. Even large mutual funds rarely hold more than a few hundred stocks and many of them hold as few as ten to twenty.

There are two reasons why investors stop diversifying. One is that an investor or mutual fund manager can obtain most of the benefits of diversification from a relatively small portfolio, because the marginal benefits of diversification become smaller as the portfolio gets more diversified. Consequently, these benefits may not cover the marginal costs of diversification, which include transactions and monitoring costs. Another reason for limiting diversification is that many investors and fund managers believe they can find undervalued assets and thus choose not to hold those assets that they believe to be fairly or overvalued. At the limit, their portfolios will not only include every traded asset in the market but will have identical weights on risky assets. The fact that this diversified portfolio includes all traded assets in the market is the reason it is called the market portfolio, which should not be a surprising result, given the benefits of diversification and the absence of transactions costs in the capital asset pricing model. If diversification reduces exposure to firm-specific risk and there are no costs associated with adding more assets to the portfolio, the logical limit to diversification is to hold a small proportion of every traded asset in the market. If this seems abstract, consider the market portfolio to be an extremely well diversified mutual fund that holds stocks and real assets, and treasury bills as the riskless asset. In the CAPM, all investors will hold combinations of treasury bills and the same mutual fund.

### **2.1.2 Efficient Market Hypothesis**

Ross (1976) states that a market is efficient with respect to a set of information if it is impossible to make economic profits by trading on the basis of this information set and that consequently no arbitrage opportunities, after costs, and after risk premium can be tapped using ex ante information as all the available information has been discounted in current prices.

Müslümov e t a l (2004) noted that capital markets with higher informational efficiency are more likely to retain higher operational and allocation efficiencies.

According to Samuelson (1965) and Fama (1970), under the „Efficient Market Hypothesis“ (EMH), stock market prices must always show a full reflection of all available and relevant information and should follow a random walk process. Successive stock price changes (returns) are therefore independently and identically distributed. Based on the information set, Fama (1970) categorizes the three types of efficient markets as weak-form, semi-strong-form, and strong-form efficient if the set of information includes past prices and returns only, all public information, and any information public as well as private, respectively. The implication here is that all markets can be weak-form but the reverse cannot be the case.

### **2.1.3 Information Signaling Theory**

The concept of signaling was first studied in the context of job and product markets by Akerlof and Arrow and was developed into signal equilibrium theory by Spence (1973), which says a good firm can distinguish itself from a bad firm by sending a credible signal about its quality to capital markets. The signal will be credible only if the bad firm is unable to mimic the good firm by sending the same signal. If the cost of the signal is higher for the bad type than that of the good type firm, the bad type may not find it worthwhile to mimic, and so the signal could be credible. Ross (1977) shows how debt could be used as a costly signal to separate the good from the bad firms. Under the asymmetric information between management and investors, signals from firms are crucial to obtain financial resources. Ross assumes that managers (the insiders) know the true distribution of firm returns, but investors do not. Signaling of higher debt by managers then suggests an optimistic future and high quality firms would use more debt while low quality firms have lower debt levels. In this way, a good firm can separate itself by attracting scrutiny while the bad firm will not mimic because the bad firm will not want to be discovered.

### **2.2. Empirical Review**

KPMG-BS Study (1998) assessed top companies on Economic Value Added (EVA), sales, Profit after Tax (PAT), and Market Value Added (MVA) criteria in India. The survey used the BS 1000 list of companies using a composite index comprising sales, profitability and compounded annual growth rate of those companies covering the period 1996-97. Sixty companies were found able to create positive shareholder value whereas 38 companies were found to destroy it. Accounting numbers failed to capture shareholder value creation or destruction as per the findings of the study. Twenty four 24 companies destroyed shareholder value by reporting negative MVA.

Anand, et.al (1999) revealed that EVA, REVA (Refined Economic Value Added) and MVA are better measures of business performance than Net Operating Profit After Tax (NOPAT) and Earnings Per Share (EPS) in terms of shareholders' value creation and competitive advantage of a firm. Since conventional management compensation systems emphasize sales / asset growth at expense of profitability and shareholders' value. Thus, EVA is a measure that shifts focus on an organizational culture of concern for value.

Johnson and Xie (2004) analyze the convergence of stock price to fundamental value. They advert to Frankel and Lee study published in 1998, which show that fundamental Value-to- Price ratios (V/P ratio) predict future stock returns for up to three years. This empirical regularity is known as a V/P effect and it is consistent with the notion that extreme V/P ratio identify stocks that are initially mispriced but whose prices converge to fundamental value estimates over time. Johnson and Xie find whether price convergence explains the V/P effect and how price discovery occurs. The results of their research work imply that only 23 % of the top and bottom V/P quintile stocks exhibit price convergence over the ensuing 36 months. Price convergent subsample returns are disproportionately concentrated around future quarterly earnings announcements. The collective evidence supports mispricing, rather than risk, as an explanation for the V/P effect.

Malik Madhu (2004) examined the relationship between shareholder wealth and certain financial variables like EPS, RNOW and ROCE. By using correlation analysis, it was found that there was

positive and high correlation between EVA and RONW, ROCE. There was a positive but low correlation between EVA and EPS. By using coefficient of determination ( $r^2$ ), EVA was compared with Traditional performance measures and it was found that not a single traditional performance measure explains to the fullest extent variation in shareholder wealth.

Panigrahi (2005) examined how the Economic Value Added (EVA) is superior to Market Value Added (MVA). This has been examined by financial performance of ITC Ltd, which has adopted the EVA as its performance measurement. This study found that by increasing Economic Value Added (EVA), Shareholder Wealth is created and established the fact that the Economic Value Added (EVA) is superior to the Market Value Added (MVA).

Foerster and Sapp (2006) analyze the dependence between the actual values and estimated intrinsic values of the Standard & Poor's Composite Index. They analyze data with one month period using a comprehensive database of U.S. economic and price-based factors during 1871-2005. The intrinsic value of a stock is estimated by dividend discount model, which is based on an estimated 30-year rolling equity premium and corresponding cost of equity combined with perfect foresight of dividends. They find, that stocks are undervalued, on average, by approximately 26% over the entire sample. Prior to 1945, the stocks were permanently undervalued and they displayed more bond-like characteristics since. Since 1945, stocks were, on average, fairly valued but with long periods of undervaluation and overvaluation. Since 1945, the Federal Reserve System model also finds equities were undervalued, but its predictive ability decreases when one considers other factors.

Bhayani (2006) studied economic value added of Cholamandalam Investment and Finance Co. Ltd for the period of 1998-99 to 2002-03. The company has been successfully able to create value for its shareholders. The company's earnings are much higher than the overall cost of capital. The traditional performance indicators are showing quite high values of ROCE, EPS growth as compared to EVACE. It is observed that the traditional parameters indicated quite a rosy and healthy picture of the company during all five years of the stuffy.

Capozza and Israelsen (2009) find how quickly equity prices converge to intrinsic value. They focus on markets where information costs, transactions costs and the economic impact of information can vary widely. They find that 15-30% of the difference between the stock price and the estimated intrinsic value is removed in a year. Moreover, levels of predictability vary with firm characteristics like leverage, size and number of analysts. While momentum is stronger for larger firms with more analysts, reversion to the intrinsic value is greater for smaller firms with more analysts. They reach that the value of information is the net payoff from trading on the information. Information is less costly to acquire for some securities, especially large firms and widely followed firms. Net revenue from information is higher for more levered firms and more liquid firms. Private information is more valuable than public information so that corporate insiders have an information advantage. Barriers to entry increase the value of information, for example market makers and specialists.

### 3.0 METHODOLOGY

An explanatory research survey design was used to show how the study variables relate to each other. The target units of analysis for this study were all the sixty one (61) companies currently listed in the NSE thus the study used a census methodology to gather data. The study used

secondary data from the financial statements of the companies listed in the NSE. The study used Statistical Package for Social Sciences (SPSS) to generate the descriptive statistics and also to generate inferential results. The simple linear regression model was used to measure the relationship between the independent variable (intrinsic value) and the dependent variable (market value) which is explained in the model.

#### 4.0 DATA ANALYSIS, FINDINGS AND DISCUSSION

##### 4.1 Descriptive Statistics.

##### 4.1.1 Measures of Central Tendency

Results on Table 4.1 indicate that the firms in the NSE provide the mean intrinsic value of 408,499,559,627.89. Calculation of the intrinsic value was done by multiplication of the number of issued shares as at 31<sup>st</sup> December 2012 by the stock intrinsic value. Intrinsic value is the actual value of the company through stocks analysis. From the results the intrinsic value indicates that firms in the NSE have high stocks and are worthy to invest in.

Results further indicated that the stock the market value had a mean of 123,913,265 and that of terminal value was at -0.633. The stock market value was calculated again by multiplication of the market price with the number of issued shares as at 31<sup>st</sup> December 2012. The high market value as indicated by the results shows the companies listed in the NSE are companies whose values are high. This gives investors viable information prior investing their money in the stock market in companies listed in the NSE.

Average dividend and stock return recorded a mean of 2.195 and 0.633 respectively. This indicates that dividends are fairly declared in the companies without affecting prices and that there are dividends and stock returns have a relationship as both are benefits received from trading stock.

**Table 4.1: Descriptive Statistics**

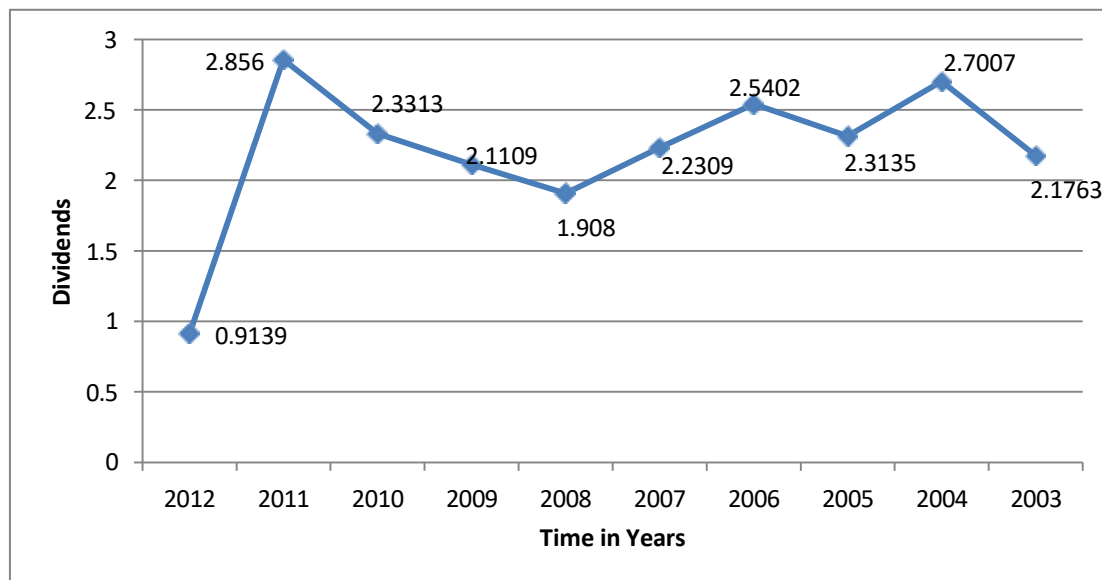
| Variable             | Minimum   | Maximum     | Mean        | Std. Deviation |
|----------------------|-----------|-------------|-------------|----------------|
| Intrinsic value      | -3.15E+09 | 4.085E+11   | 13608045967 | 62016256405    |
| Market Value         | 123913265 | 2.09555E+11 | 24700343877 | 46432041550    |
| Terminal Value       | -8.34     | 0.24        | -0.6333     | 1.2813         |
| Average dividend     | 0.03      | 13.37       | 2.195       | 2.89498        |
| Average stock return | -0.24     | 8.34        | 0.6334      | 1.28163        |

##### 4.2 Trend Analysis

This section provides graphical representation of the movement and changes of the dividend and stock return over the years 2007 to 2011.

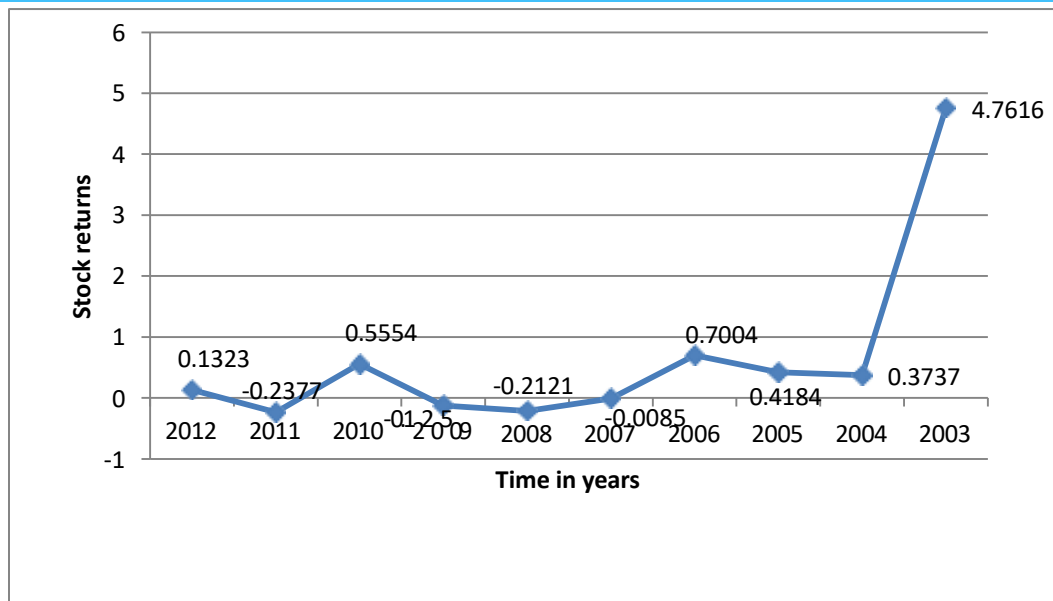
Figure 4.1 shows that the trend in dividends was inconsistent. Dividend decreased in year 2003, increased in year 2004 later recording a decrease in year 2005. Thereafter dividends increased simultaneously in year 2006 and another decrease in years 2007 and 2008 which followed an increase in dividends from year 2009 up to 2011. The trend in dividends recorded a sudden drop in year 2012. The drop recorded in year 2007 can be explained by the elections that were to be

held in that year. During periods of elections which was in year 2007, there is increased political uncertainty which affects dividends. Year 2008 also experienced a drop in dividends as a result of post election violence and at that time the country's economy was still recovering from the calamity. The drop in year 2012 can be explained by investors pulling out of the companies as a result of fear of losses as experienced in the 2007 post election period since year 2012 was the expected year of Kenya's general election. This can also be as a result of a dividend declaration, if the latter was made in the long term and investors feels that the dividends are too low, the investors pull out from the company.



**Figure 4.1: Trend Analysis in Dividends**

The trend analysis presented in Figure 4.3 shows that stocks recorded a very high return in year 2003 and an inconsistent trend from year 2004 up to year 2012. Slight increase in returns were recorded in years 2006 and 2010. This can be explained by an increase in investors in those which causes an increase in stock prices thus increasing the stock returns. From the trends the highest decline throughout the years was recorded in year 2008 and year 2011. Decline in year 2008 can be explained by the post election violence in the country. This event caused many investors to become pessimistic which might have led to some selling the stock and others avoided trading in the stock market and consequently sell the stock, causing the price to decline.



**Figure 4.2: .Trend Analysis in Stock Returns**

### 4.3 Inferential Statistical Analysis

Inferential analysis conducted generated correlation results, model of fitness, and analysis of the variance and regression coefficients.

#### 4.3.1 Pearson's Correlation

Pearson's correlation shows the relationship between the independent and the dependent variable, which in this case the dependent variable is the intrinsic value while the independent variable, is the market value. If the significance number found is less than the critical value also known as the probability value (p) which is statistically set at 0.05, then the conclusion would be that the model is significant in explaining the relationship; else the model would be regarded as non significant. In statistics significance testing the p-value indicates the level of relation of the independent variable to the dependent variable. A positive correlation indicates that the independent variable relate positively or sufficiently support the dependent variable.

Correlation of the variables presented in Table 4.2 indicates that the intrinsic value has a positive of 0.357 correlations and a significant value of 0.015. The results indicate that there exists a positive relationship between market value and the intrinsic values of companies listed in the NSE.

**Table 4.2: Pearson's Bivariate Correlation**

| Variable     | Correlation         | Market Value | Intrinsic value |
|--------------|---------------------|--------------|-----------------|
| Market Value | Pearson Correlation | 1            |                 |

|                 |                     |       |    |
|-----------------|---------------------|-------|----|
|                 | Sig. (2-tailed)     |       |    |
| Intrinsic value | Pearson Correlation | 0.357 | 1  |
|                 | Sig. (2-tailed)     | 0.015 |    |
|                 | N                   | 46    | 46 |

#### 4.3.2 Regression Analysis

Table 4.3 below shows the fitness of the regression model in explaining the variable under study. The results indicate that the intrinsic value which is the only independent variable for the study was satisfactory in explaining market value, the dependent variable. This conclusion is supported by the R square of 0.128. The results further shows that intrinsic value explains 12.8 % of market value. The model that was used is as follows;

$$Y = a + \beta_i X_i + e$$

Where;  $Y_i$ : is the market value

$X_i$ : is the intrinsic value,

a: is a constant,

$\beta_i$ : is the regression coefficient of the model,

e is the model error term.

**Table 4.3: Fitness of Model**

| Indicator                  | Coefficient |
|----------------------------|-------------|
| R                          | 0.357       |
| R Square                   | 0.128       |
| Adjusted R Square          | 0.108       |
| Std. Error of the Estimate | 43858254032 |

ANOVA statistics presented on Table 4.4 indicate that the overall model was statistically significant. This was supported by an F statistic of 6.437 and a probability (p) value of 0.015. The reported p value was less than the conventional probability of 0.05 significance level thus its significance in the study. These results indicate that the independent variable, intrinsic values are good predictors of companies' market value.

**Table 4.4: Analysis of Variance**

| Indicator  | Sum of Squares | df | Mean Square | F     | Sig.  |
|------------|----------------|----|-------------|-------|-------|
| Regression | 1.2381E+22     | 1  | 1.2381E+22  | 6.437 | 0.015 |
| Residual   | 8.46E+22       | 44 | 1.92355E+21 |       |       |

Total 9.70171E+22 45

Regressions of coefficient results indicate that there is a positive relationship between market value and the intrinsic value whose beta coefficient 0.267 and a significant value of 0.015. This indicates that the market value is determined by the intrinsic value of the company. These further means that an increase in unit change of intrinsic value of the company results to a unit change in market value of the company.

**Table 4.5: Regression of Coefficient**

| Variable        | Beta        | Std. Error | T     | Sig.  |
|-----------------|-------------|------------|-------|-------|
| Constant        | 21060674227 | 6623771334 | 3.18  | 0.003 |
| Intrinsic value | 0.267       | 0.105      | 2.537 | 0.015 |

## 5.0 CONCLUSIONS AND RECOMMENDATIONS

### 5.1 Conclusions

Results from the study led to the conclusion that intrinsic positively relates to the market values. Therefore a change in the intrinsic value will definitely results to a change in the market value. An evaluation of an intrinsic value of stocks makes up a market, which then provides information as to the possible stability and reliability of a price trend. When prices are rising far above intrinsic value, the market may be more susceptible to reversal than when prices are rising from a level far below intrinsic value. Further conclusions can be made on that for fairness to prevail on a company, the market price and intrinsic value must be harmonized.

It was concluded that the average dividend payout for all companies was two point one nine percent while the average of stock returns was zero point six three percent. The dividends and stock returns are dispersed further from the mean 2.8 and 1.2. Further conclusion can be made on the stocks returns and dividends, as the latter are higher when the market rates are higher. From the results of trends in stock returns and dividends, recorded increase in the same shows that companies in the NSE have good returns on both equity and capital. Additional conclusions on the inconsistent trends in dividends and stock returns shows that the market price are subject to the market price over performing or underperforming which leads to at times benefits and at times losses of the investors.

### 5.2 Recommendations

Research focused on the relationship between market value and the intrinsic value of stock, thus the results of the study presents a recommendation to investors on how companies in the NSE perform so as to make informed decisions in their investments. Further recommendations are made to shareholders, in that the more the shareholder holds his shares, the more his returns and the less dependent the returns will be to the intrinsic value.

It is recommended that investors should consider the intrinsic value when making investment decisions, for instance they should be aware that high intrinsic values lead to high market values and low intrinsic values lead to low market values. They can therefore use market timings to know when to invest and when to exit from the market. Investors should exit from stocks that

have low intrinsic value because they may make losses as such stocks will have low market values and returns.

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