DIVIDEND YIELD STRATEGY IN THE NAIROBI SECURITIES EXCHANGE

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DECLARATION

I declare that this work has not been previously submitted and approved for the award of a degree by this or any other University. To the best of my knowledge and belief, the Research Project contains no material previously published or written by another person except where due reference is made in the Research Project itself.

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ABSTRACT

This study aims to test the viability of dividend yield investing as an alternative investment strategy to exploit observed overreactions in the market. The study adopts the Dogs of the Dow investment strategy that entails a buy and hold strategy of the highest dividend yielding stocks in the market. A back-testing approach is adopted from the period 2006 to 2015. The findings from this analysis show that there appears to be limited effectiveness of the DDS portfolio in beating the market or generating abnormal returns. As such, the study concludes that the Dogs of the Dow is not viable as an alternative investment strategy. The study further posits that any observations to the contrary may be as a result of data mining as was proposed by Fischer Black (1993).

TABLE OF CONTENTS

LIST OF ABBREVIATIONS

- DDS- Dogs of the Dow Strategy
- NSE- Nairobi Securities Exchange
- EMH- Efficient Market Hypothesis
- DJIA- Dow Jones Industrial Average
- S&P 500- Standard and Poor's Index
- NASI- NSE All Share Index
- NSE 20- NSE 20 Share Index
- MM- Modigliani and Miller
- PPP- Penultimate Profit Prospect
- RP 4- Reverse Procedure 4
- TV- Terminal Value
- TRI- Total Return Index
- OMI- Overall Market Index
- FTSE100- Financial Times Stock Exchange 100 Index
- T-Bill- Treasury Bill
- R_f – Risk Free Rate
- CBK- Central Bank of Kenya
- CMA- Capital Markets Authority
- RP-4 Reverse Procedure 4

CHAPTER ONE: INTRODUCTION

1.1.BACKGROUND

In Kenya, there are currently 64 firms listed on the Nairobi Securities Exchange (NSE) - the country's sole securities exchange. The primary role of such a financial market is to channel funds from households, firms and government that have saved surplus funds by spending less than their income to those that have a shortage of funds due to their desire to spend more than their income (Mishkin, 2009).

Investors participating in such a market share the common goal of achieving the highest rate of return while simultaneously exposing themselves to the lowest level of risk (Rowlett, 2012). That is, investors want to generate above-market returns but without taking extra risk. While this objective is easy to identify and outline, achieving it on a consistent basis is quite difficult. The traditionally held notion by academicians has been that investors can only beat the market by assuming above market risk. This viewpoint is best captured in the efficient markets hypotheses (EMH). EMH traces its origin to the works of Maurice Kendall (1953). The study showed that share prices followed a random walk thereby making future price movements unpredictable. It was this unpredictability that led to the conclusion that one should not be able to consistently beat the market. This viewpoint is shared by Fama (1970), Sarna (2010) Black-Scholes (1973) and others. This viewpoint is however not without its doubters. The most critical opponent of EMH has to be Robert Shiller (2000) who shows that market participants tend to have an overreaction tendency that misprices stocks. Such mispricings can be exploited to generate superior returns. Laura (2010) argues that there will always be the lure to try and beat the market without assuming high risk due to the rewards and reverence associated with those who achieve such a coup.

In the pursuit of this milestone, several strategies have been formulated. Market participants can be broadly categorised into two: active and passive (Maginn, Tuttle, McLeavey, & Pinto). Passive investors are those who conform to EMH while active investors are those who believe that there are inefficiencies within the market that they can exploit in order to 'beat' the market. Active management strategies can be classified into two: fundamental analysis and technical analysis. Fundamental analysis is the use of detailed financial statement data such as P/E to

establish mispricings in the market. Technical analysis, also known as chartist theory, is the analysis of historical price movements to establish patterns that can be profitably exploited. For the purpose of this study, we shall pay particular attention to the Dogs of the Dow Strategy.

The DDS is essentially a dividend-yield investment strategy. A dividend yield strategy falls under fundamental analysis as it bases its stock selection on a company fundamental; dividends. The DDS can also be termed as a value investing strategy. This is primarily due to the fact that the strategy tends to select stocks with low prices, relative to the dividend pay-out, so as to create a high dividend yield. Value strategies tend to buy lowly priced stocks that are believed to be under-priced.

The DDS strategy traces its origins to the works of John Slatter (1988). Slatter studied the total returns of the ten highest dividend yielding stocks on the DJIA from 1973 to 1988. From that 15 year period, he was able to conclude that stocks with huge dividends outperformed the overall DJIA as well as the S&P 500 (Slatter, 1988).

To use the DDS, an investor first selects a market index. Original studies were based on the DJIA but latter studies have shown that the strategy is not limited to the DJIA. These include Visscher and Filbeck (2003), Wang et al (2011), Andre and Silva (2001), etc. The investor then ranks all the stocks in that index in terms of their dividend yield before selecting the 10 highest-yielding stocks. At the beginning of the calendar year, the investor buys these stocks in equal proportions. That is, each stock gets allocated 10% of the investable funds. A later study by Wang et al (2011) has shown that any starting period can be selected depending on the varying dynamics of different markets. At the end of the year, the investor rebalances the portfolio by selling off those stocks that are no longer among the top 10 highest-dividend-yielding stocks and using the proceeds to buy the new entrants. The fund remains closed. No additional funds are added into the portfolio while proceeds from selling off stocks are reinvested.

The DJIA is a price-weighted stock market index created by Charles Dow which comprises of 30 large cap companies based in the United States. Alongside the S&P 500, it acts as a representative of the overall US economy. For mature dividend-paying companies, such as those in the DJIA, an analysis of their dividend history provides better insight on investor return. Unlike growth stocks, these stocks are unlikely to generate huge capital appreciation. This leads

to many investors turning to the dividend yield as a measure of value in their quest for under-priced stocks.

A dividend policy refers to management's long-term decision on how to deploy cash flows from business activities—that is, how much to invest in the business, and how much to return to shareholders (Nitta, 2006). The dividend yield is computed as Dividend/Price (Fama & French, 1988).

1.2. PURPOSE OF THE STUDY

For the purposes of this study we shall solely focus on institutional investors rather than individual investors. This shift in focus away from individual investors allows us to eliminate behavioural tendencies that are inherent within individual investment decisions. As noted by Maginn et al (2007), individual investment decisions require an analysis of personality factors in order to assess willingness of an individual investor to take on more risk.

This study aims to contribute to the existing body of literature in the following ways. First, the study shall seek to extend the DDS to the NSE. The DDS has been replicated in other markets with varying degrees of success. It will be the primary objective of this study to establish whether the study can be emulated on Kenyan stocks. There has been significant research on dividends and dividend policies, particularly on telecommunication companies quoted on the NSE (2014), but I am unable to find a rigorous analysis of the DDS in the Kenyan market. The Nairobi Securities Exchange is of interest owing to the key role it plays as an African financial centre. This importance is further accentuated by the significant weighting accorded to the Kenyan market in the MSCI Frontier Markets Africa Index (MSCI, 2015).

The study shall also seek to evaluate the viability of the DDS as an alternative investment tool for tactical asset allocation managers during stress periods. That is, periods of high volatility and instability in the financial markets leading to dismal performance of equity portfolios. A tactical asset allocation is an asset allocation technique that reflects short-term capital market expectations (2007). This should prove particularly useful in the Kenyan market where political events tend to be highly correlated with stock market performance. Reginah (2012) notes that the

NSE recorded a growth of 185% from December 2000 to December 2007 but shrunk in the period 2008-2009 due to the post-election crisis.

1.3. PROBLEM STATEMENT

The NSE has witnessed significant volatility in recent periods (Retirement Benefits Authority, 2013). Among the most notable investors in the Kenyan financial market are pension schemes which have been adversely affected by this volatility (Mutuku, 2012). As noted by Gachiri (2015), Alexander Forbes Financial Services Investment Performance Report points out that the average return for schemes dropped to 15.5% in 2014 from 21.4% in the previous year. The survey goes on to attribute the decline to a dip in the equities market as highlighted by the drop in NASI from 44.05% in 2013 to 19.2% in 2014.

The performance of a stock market is influenced by a number of factors. Key among these factors is political activities such as general elections. The Kenyan financial market has traditionally been viewed as being highly correlated with general elections. Following the 2007 elections, the NSE-20 dropped by 35% in 2008. This poor run continued into 2009. By end of February, the index had declined by 23.2% from the previous month, 26.8% over the last three months and by 46% on a year-on-year basis to mark one of the largest depreciations in SSA (Mwega, 2010). These downturns in economic performance led to wealth erosion with market capitalisation falling from KES 851 billion in 2007 to KES 763 billion, a depreciation of approximately 11% (Reginah, 2012). Stockbrokers were not spared the pain either with two major stockbrokers going under.

These events highlight the need for fund managers and investment banks in Kenya to evaluate alternative investment techniques to cope with such market downturns. To this end, we shall test the effectiveness of the DDS in the Kenyan market as a viable alternative investment tool especially during political events.

1.4 RESEARCH OBJECTIVE

The primary objective of this paper is to identify whether a dividend yield strategy such as the DDS can be successfully adopted by fund managers in Kenya. We shall pay special focus to the performance of such a strategy during election periods.

1.5 RESEARCH QUESTIONS

1. Does a high dividend yield strategy provide superior returns to those generated by the overall market?
2. Does the DDS strategy outperform the market during periods of political uncertainty, such as during general elections?
3. Does the DDS strategy work better for large-cap, blue chip companies?
4. Do variations in the duration and size of the DDS portfolio lead to returns that are superior in a statistically-significant sense as compared to those of the market?

CHAPTER TWO: LITERATURE REVIEW

The DDS traces its origins to the American market. The study was first undertaken by John Slatter (1988). Slatter established that over the 15 year period between 1973 and 1988, the DDS portfolio recorded an annualised average return of 18.4% as compared to the overall DJIA index which posted an average return of 10.8%. This superior performance was then tested by O'Higgins and Downes (2000) and Knowles and Petty (1992) over long time horizons from 1957 to 1991. Both investigations concluded that the DDS did indeed beat the market.

In addition, both parties further went on to modify the DDS portfolio by reducing the portfolio size from 10 to 5. O'Higgins and Downes (2000) formulated the "Beat the Dow 5" where they suggested that an investor could opt to buy the 5 lowest priced stocks of the Dow 10. This was in fact a high yield/low price strategy that sought to reduce the initial capital requirements due to lower prices and fewer stocks. The rationale behind this is that past experience has shown that lower priced stocks tend to record higher growth performances as compared to highly priced stocks (Osoro & Ambrose, 2013).

Knowles and Petty (1992) took a different approach to their Dow 5 portfolio. They suggested selecting the 5 highest-yielding stocks as opposed to the 10 originally proposed by Slatter. They tested this 5-stock portfolio over a 33-year period and established that their Dow 5 offered a return of 15.4% as compared to the 14.2% and 10.4% offered by the Dow 10 and the DJIA Index respectively.

Another approach explored by O'Higgins (Beating the Dow) was the Penultimate Profit Prospect (PPP). The rationale was based on the belief that an out-of-favour Dow stock priced low enough had very good odds of becoming a winner. However, the lowest-priced stock was not picked due to past experience that showed that stocks in real financial difficulty tended to drop precipitously before dividend action was taken. The PPP strategy simply entails picking the second lowest-priced stock of the ten highest-yielders. Over the period 1973-1998, the PPP gave an average annual return of 26.3%. This was higher than the return offered by their version of the Dow 5 (20.7%), the traditional Dow 10 (17.9%) and the DJIA (13%).

Another major variation to the Dow 10 was proposed by The Motley Fool (1999). The strategy, popularly referred to as the Reverse Procedure 4, entails dividing the yield by the square root of

the price to come up with a ratio for each stock within the index. The investor then ranks these ratios from the highest to the lowest. Skipping the stock with the highest ratio, the investor selects the following four stocks and invests in them in equal proportion.

The DDS has been emulated in other markets across the globe with varying degrees of success. Sue Visscher and Greg Filbeck (2003) examined the effectiveness of DDS for the Canadian investors on the Toronto Stock Exchange. They noted that over a 10 year period, the DDS consistently outperformed the market with an average annual excess return of 6.6% which was sufficient to compensate for taxes and transaction costs. The study further revealed that the DDS produced higher risk-adjusted returns than the TSE35, as measured by both the Sharpe ratio and the Treynor measure.

Visscher and Filbeck (1997) also undertook a similar analysis in the British Stock Market. An analysis of the LSE showed that the DDS outperformed, on both unadjusted and risk-adjusted bases, the FTSE100 in only 4 out of the entire 10 year period. The study therefore concluded that the DDS was ineffective for British investors.

In Japan (2015), the DDS was found to offer statistically significant superior returns on a risk-adjusted basis, at a 95% confidence level, when compared to the NIKKEI225. A similar analysis against the TOPIX30 (2007) from 2002 to 2006 found that although the DDS offered superior returns, the difference was too marginal to justify such a strategy. A similar conclusion was arrived at on the Stock Exchange of Thailand (2013) where the DDS excess returns as compared to the SET50 were deemed to be statistically insignificant.

Latin American studies were conducted by Andre and Da Silva (2001). The study established that the DDS, over the period 1994-1999, does indeed add some value on both an absolute basis as well as on a risk-adjusted basis in Latin American nations, except in Brazil. The results, though positive, were not statistically significant to justify the use of the DDS in those respective markets.

A more recent analysis of the DDS (Chong & Luk, 2010) aims to determine whether the strategy works better in large cap companies as compared to small cap companies. The study evaluates the performance of the DDS in the general stock market (the HKSE) and in the Hang Seng Index. The Hang Seng Index is an index within the HKSE that is composed solely of large cap

companies. The study notes that over the 15 year period (1992-2007), the DDS generated a negative return of -1.28% per annum in the general market. However, in the Hang Seng Index, the DDS generated a return of approximately 8% per year.

The failure of the DDS in the general HKSE was attributable to several factors. Survivorship bias was noted as being one of these reasons. Given that the Asian Financial Crisis occurred during the study period, it is quite possible that small firms that are captured in the HKSE but not in the Hang Seng Index failed to survive the crisis thereby generating losses for their shareholders. Another viewpoint is that the dividend decisions of small firms tend to vary from those of large companies. Small firms tend to have a relatively unstable dividend policy where dividend pay-outs could be influenced by the financial needs of a large single investor. This makes unsuitable for dividend yield investing. The study notes that the composition of the Hang Seng Index was mainly composed of defensive stocks such as public utilities or those that receive a significant portion of their returns from rental income. Such companies, the study argues, were able to maintain a relatively stable dividend policy during the crisis.

Despite the well documented success of the DDS in enhancing portfolio returns, there still continues to be raging debate over the effectiveness of the strategy. The general use of dividend yields, and by extension dividends, to predict stock returns is one that has faced criticism from leading scholars in the field of finance. Therefore, it is important to point out some of the key areas of cognitive dissonance in existing literature.

One of the pioneers in the empirical analysis of the effects of dividend yields on common stock returns were Black and Scholes (1974). The major conclusion from their study was that empirical testing did not show that an investor who concentrates his portfolio in high yield securities increases or decreases his return as compared to one concentrating on low yield securities either before or after taxes. A key variation in their studies is their restatement of the hypothesis from (a) to (b). (a) states that increasing the dividend will increase the price of a company's shares; and (b) states that increasing the dividend will reduce the expected return on a company's shares.

In addition, the study also opted to use a variation of the CAPM as opposed to a cross-sectional study to avoid the difficulty of determining whether any observed relationship is causal, and if it is, in which direction does such causality run. To determine the existence of a causal

relationship, the study employed the use of efficient and unbiased estimators. The study has however faced some criticism over its approach.

Rosenberg and Marathe (1979) attribute the ambiguous conclusion in the Black and Scholes study to (i) the loss of efficiency arising from the grouping of stocks into portfolios and (ii) the inefficiency of their estimation procedures. By use of a more robust two-stage generalized least squares procedure, Rosenberg and Marathe show that there actually exists a positive and significant relationship between dividend yields and common stock returns. These varying conclusions cannot be attributed to cross-sectional differences in the dividend yield as both studies use an average dividend yield over the prior twelve 12 month period as a proxy for the expected dividend yield. It can therefore be argued that the Black-Scholes criticism of the DDS is fallible owing to the fact that there is indeed a direct causal relationship between dividends and stock returns.

Modigliani and Miller (1961) argue that in an ideal world with no institutional factors, a corporation's dividend policy should not affect its value, or the value of its shares. This is anchored on the assumption that investors are indifferent between dividends and capital gains. This approach would imply that the introduction of differential taxes on dividend income and capital gains should serve to make the shares of low-dividend companies more valuable and as such management should opt to lower pay-out ratios if they are to increase the value of their shares. This is due to the favourable tax-treatment of capital gains as opposed to dividends. The study however introduces a new argument that corporations can attract themselves to a particular 'clientele' and that these varying clienteles would, in equilibrium, all offer a similar valuation to the corporation.

We first assume that a firm is capable of choosing a dividend policy independent of its investment decision owing to the availability of other sources of funds. Due to the varying tax-rates facing different investors as a result of the nature of their core business, there are those classes of investors who would prefer higher dividend pay-outs and those that would prefer lower dividends. As such, firms would alter their dividend policies to match the preference that is most in demand. This would continue until there is equilibrium in the market for either set of preferences such that a firm can no longer affect its value by altering its dividend policy. At this equilibrium point, the market would therefore cease to give a premium to a particular firm as a

result of its dividend policy. The implication to the DDS from this assertion is that dividends bear no inclination towards the share price of a firm once the equilibrium point has been reached. An investor would thus be unable to obtain any superior returns by focusing solely on dividends.

There have been some later empirical tests on the DDS that have refuted the earlier findings by some of the proponents of the DDS. Grant et al (1997) point out that even though the traditional DDS does indeed provide statistically superior returns, against the DJIA, it is not economical. After adjusting the Dow 10 portfolio for higher risk, extra transactional costs and an unfavourable tax treatment, the excess returns in the DDS portfolio decrease to 0.95 percentage points. The study goes on to suggest that earlier findings could have been as a result of data mining where analysts deliberately sought out for an anomaly in the market. This would coincide with the viewpoints of Fischer Black (1993) that suggest that most of the anomalies that have plagued literature on investments seem likely to be as a result of data mining due to the high number of researchers actively seeking a profit opportunity in the market. The study goes on to suggest that even if the DDS was indeed economically significant, 'investor learning' would simply erode any premiums that could be accrued through such a strategy.

In assessing the issue raised by Grant et al of data mining, it is worth noting that compound returns tend to be extremely sensitive to beginning and ending dates. While arguing that the use of a similar time-frame as the earlier studies would result in bias, Grant et al achieve exactly what they sought to avoid. Furthermore, the study uses treasury bills to overcome data limitations that arise when a company ceases to exist in between a test period. The assumed rate for the Treasury bill is taken to be the annual mean return of the entire post-war period. From 1945-1980, the real rate on treasury bills was in fact negative. This implies that the rate used in the study is lower than it actually should be to allow for a more unbiased comparison with earlier studies that had a shorter timeframe. A more robust approach would have been for the study to adopt year-specific treasury rates that better reflect the prevailing macro-conditions.

The Efficient Market Hypotheses as proposed by Eugene Fama (1970) argues that markets are inherently efficient in that market prices fully reflect all available information. There are various notable arguments and implications that arise from this hypothesis. The main argument is that share prices tend to be largely unpredictable as they react immediately to any material information that may arise in the market. The share price movements are deemed to follow a

'random walk' where each subsequent price change is independent. The implication here is that there is no point for an investor to seek out extra information pertaining to a given stock as such information is already freely reflected in the share prices and as such it would generate no private profit for the investor. On the other hand, the DDS is premised on the belief that there are inexplicable patterns of abnormal stock-market returns that enable an active investor to generate private profit by studying the dividend yields of various stocks. The contravention of the EMH is not limited to dividend yields solely, but also apply to P/E ratios as noted by Basu.

In an analysis of the effectiveness of the EMH, Basu (1977) shows that security prices and that the returns on stocks with low Price-Earnings ratios tend to be larger than warranted by the underlying risks, even after adjusting for any additional transactional costs and differential tax treatments. As such, the study concludes that P/E ratios may be reliable indicators of future investment performance. This is in direct contravention to the EMH assertion that fundamental analysis does not work and that share prices fully reflect all information in the market. The long term duration of the study (1957-1971) also serves to counter Fama's claims that any anomalies present within the market are purely short term and that EMH does indeed survive the test of time. This criticism of the EMH is also supported by the works of Ray Ball (1978). The study by Ball shows that there exists a high correlation between dividend yields and stock returns. A later study by Fama and French also goes on to show that the power of dividend yields to predict stock returns increases with the time horizon.

There are several plausible explanations for the observations of the regular and persistent abnormal returns in the market. The first one, as already pointed out, would be that the patterns are a result of extensive data mining (Black) owing to a biased analysis. Such a bias may also arise as a result of a pre-set mind-set as opposed to an objective analysis of the facts at hand. A second explanation would be that financial theory may simply be wrong. Financial theory has been consistent in its assertion that regular above-market returns are not possible, at least not in the long run (Hirschey, 2000). A more popular explanation of the success of the DDS is the overreaction hypothesis. This hypothesis is not consistent with efficient markets hypothesis. We look at the overreaction hypothesis below.

De Bondt and Thaler (Bondt & Thaler, 1985), proponents of behavioural finance, use theories from the field of psychology to explain the variation in performance and returns for growth and

value stocks. Their study shows that stocks that generate the lowest returns over a prior period tend to outperform the market in the subsequent period. This is attributed to the tendency of investors of becoming too optimistic in face of good news and too pessimistic to bad news. That is, people tend to overreact. To put it simply, De Bondt and Thaler simply extended Isaac Newton's notion that "what goes up must come down" to the financial markets. A study by Domian et al (1998) shows that the DDS may simply be an extension of the overreaction hypothesis owing to its biased selection of prior period 'losers'.

Domian et al argue that there is sufficient evidence that the Dogs which went on to become "winners" were indeed "losers" prior to the stock market crash of 1987. The same study goes on to show that during 1964-1997, the portfolios of the ten highest yielding Dow stocks underperform the market in the twelve months prior to formation of the portfolio and outperform the market in the twelve months following formation. The implication of such an assertion is that the DDS is not really a value investment strategy focussing on yield effects but rather a winner-loser phenomenon. The study therefore concludes that the DDS is no longer selecting the true dogs and as such it is ineffective.

The major underlying argument within the overreaction hypothesis has to be the information effect. The notion that mispricings arise due to the nature of information that gets to the market. This basically means that investors tend to realize, in a latter period, that they beat down the price of a stock too much or that they shoved up the price too much. In analysing whether the overreaction hypothesis does indeed hold true when it comes to dividend yield investing, we ought to eliminate any information bias that may arise and conduct a study based solely on information that was already in the market prior to the analysis. That is, we use ex-ante information. Litzenberger and Ramaswamy (1982) undertook a study based on pre-mentioned parameters and found that the dividend yield does indeed survive the challenge posed by overreaction hypothesis.

The study (Litzenberger & Ramaswamy, 1982) aims to eliminate the information effect by coming up with a prediction rule solely based information that would have been available to the investor ex-ante. By so doing, the study ensures that any results from the study would not be attributable to the favourable or unfavourable information that would otherwise have been

present. The study goes on to show that even by using ex-ante information only, there still exists a positive but non-linear association between common stock returns and dividend yields.

One notable observation in the DDS framework is that it is plagued by the issue of survivorship bias. Survivorship bias can simply be defined as the logical error of solely concentrating on the variables that have 'survived' a given process. That is, an analyst will solely evaluate the performance of only those variables that are in existence as at the date of rebalancing due to their enhanced visibility. Jeremy Siegel (1998) argues that evaluating the performance of mutual funds over longer time horizons is difficult owing to the inherent survivorship bias in such data. Oftentimes such data will focus only on the subsets of the mutual fund that survived during the target period ignore those that did not. As such, the returns reflected by such an analysis will tend to be 'rosier' than they would be if all the subsets of such a fund were included in the analysis. A switch to the DDS portfolio finds that the same issue is also prev: 'ent. Selection of stocks into the portfolio is dependent on the constituents of the overall index. As such, any readjustments to such constituents would inherently affect the study. This could also explain for some of the variations in results observed between the results of Hirschey (2000) and O'Higgins (2000). Such an argument however ultimately critics the strategy by asserting that the favourable results found by O'Higgins were indeed time-specific. That is, the results are by chance due to a specific period of time.

From the aforementioned literature, it is quite clear that there still lacks a general consensus in the field of finance as to whether or not dividend yield investing generates returns that are superior to the market. It is on this basis that we therefore seek to extend the DDS to the Kenyan market.

CHAPTER THREE: METHODOLOGY

3.1 INTRODUCTION

As clearly outlined in the literature review, the motivation for this study is driven by the continued discord between financial theory and actual observed returns. It is also apparent from the discourse outlined in the prior section that there is a lack of consensus in financial theory as to the effectiveness of the dividend yield strategies.

It is with this in mind that we seek to extend the DDS framework to the NSE with an aim of establishing whether such a strategy will generate superior returns in the Kenyan securities market. This study will emulate the general framework adopted by Visscher and Filbeck (2003) and by Carol et al (2011). This approach is ideal as it allows for the adjustment of the higher risk levels assumed by the DDS so as to eliminate the return premium attributable to the extra risk assumed by higher dividend-yielding stocks.

This section will be outlined as follows. First, the study will explain the research design that will be adopted in the course of the research. The second part will outline the population and sampling design to be used. This section will also define the unit of analysis to be used for the study. The third section will highlight the relevant hypotheses to this study. The final section will be data and analysis. This section will outline the nature and source of the data to be used for the study.

3.2 RESEARCH DESIGN

This is an explanatory study. As per Saunders, Lewis and Thornhill (2009), an explanatory study is one that seeks to establish the causal relationship between variables. In this study, the dividend yield shall be the explanatory variable used to expound on stock returns.

The study will adopt an empirical research design. As noted by Kothari (2009), an empirical research is one whereby the research relies on observation alone, often without the due regard for system and theory. The ultimate goal of such a research is to formulate conclusions that can be substantiated through observation or experiment. The classification of this research as being empirical is due to the fact that the underlying goal of the study will be to prove, through

experimental research, whether higher dividends can actually generate higher returns. However, it is important to note that experimental researches are usually associated with probabilistic sampling techniques (Saunders, Lewis, & Thornhill). We can therefore re-classify this study as being quasi-experimental because the study will use pre-defined units of analysis.

The study will use both longitudinal and cross-sectional studies in data analysis. The cross-sectional study will seek to compare the performance of the various portfolios that shall be constructed at a single point in time e.g. the position of the various portfolios as at 31st December 2004. The longitudinal study will seek to study the evolution of the portfolios over the entire duration of our study so as to determine if the DDS is an effective long-term strategy for fund managers; and if so, which modified portfolio offers the highest return.

A quantitative research approach will be adopted for the purposes of the experimental study. As such, the data used in the study will primarily be quantitative in nature.

3.3 HYPOTHESES

The following hypotheses are formulated from the research questions outlined in Chapter One.

Research question one: Are the returns generated by a high dividend-yielding portfolio, such as the DDS portfolio, superior to those of the market?

> H_0: The returns generated by a high dividend yield portfolio are not superior, in statistically significant sense, to returns generated the overall market.
>
> H_1: The returns generated by a high dividend yield portfolio are superior, in a statistically-significant sense, to returns generated by the overall market.

Research question two: Does the DDS strategy outperform the market during periods of political uncertainty, such as during general elections?

> H_0: The returns generated by a high dividend yield portfolio are not superior, in statistically significant sense, to returns generated by the market during major political events such as general elections.

H_1: The returns generated by a high dividend yield portfolio are superior, in statistically significant sense, to returns generated by the market during major political events such as general elections

Research question three: Does the DDS strategy work better for large-cap blue chip companies?

H_0: The returns generated by a high dividend yield portfolio for stocks within the NSE-20 are not superior, in statistically significant sense, to returns generated by the NSE-20 Index.

H_1: The returns generated by a high dividend yield portfolio for stocks within the NSE-20 are superior, in statistically significant sense, to returns generated by the NSE-20 Index.

Research question four: Do variations in the duration and size of the DDS portfolio lead to returns that are superior as compared to those of the market?

H_0: Modifications to the DDS portfolio in terms of the number of stocks and holding period does not generate returns that are superior, in a statistically significant sense, to those generated by a traditional Dow 10 portfolio.

H_1: Modifications to the DDS portfolio in terms of the number of stocks and holding period generates returns that are superior, in a statistically significant sense, to those generated by a traditional Dow 10 portfolio.

3.4 POPULATION AND SAMPLING DESIGN

Population, also known as universe, refers to all the items under consideration in any field of inquiry (Kothari, 2009). All the stocks listed on the NSE over the 10-year period 2005 to 2014 shall form the investment universe. The study shall however not discriminate against those stocks that fell out from the stock market over that period for whatever reason. This, it is hoped, will eliminate the effects of survivorship bias that would have otherwise been inherent in the study (Siegel, 1998).

The study will seek to adopt a purposive sampling technique. This non-probabilistic sampling technique is deemed appropriate as it enables the researcher to incorporate personal judgment in selection of the stocks that best meet the pre-set parameters with regards to our unit of analysis (Saunders, Lewis, & Thornhill, 2009).

The unit of analysis in this study will be the dividend yields of the various stocks listed on the NSE. The dividend yield for any given period will be taken as an arithmetic mean of the observed weekly dividend yields that occur over that period.

3.5 DATA AND ANALYSIS

The quantitative data used in the study will be secondary data. Kothari (2009) defines secondary data as data that has already been collected by someone else for their own purposes. The use of such secondary data is due to the nature of this study. Given that the study has a backward-looking time horizon, the historical information requirements of the study will be best served by use of historical records from reliable sources. The NSE will be the primary source of all historical data to be used in the study. As the entity mandated to operate and manage the sole trading platform in Kenya, it is believed that NSE information should be reliable and accurate.

The January effect is a market anomaly attributable to the 'tax-loss-selling' hypothesis as first proposed by Wachtel (1942). The basic notion is that December, being a tax month, results in companies realizing losses on their stocks so as to relieve their tax burden. They then re-purchase these stocks in January which results in a price appreciation run in January hence the name January effect.

Subsequent studies in the Kenyan market (Kuria & Riro, 2013) have shown that the NSE does indeed suffer from the aforementioned January effect. As such, the study will not adopt a normal calendar year but will instead run a 12-month period starting from April-March. This is aimed at eliminating, or at least reducing, the January effect in our analysis which would have been significant had the study opted for a normal calendar year.

The data analysis technique shall be re-modified slightly for each of the four hypotheses so as to better accommodate the unique needs of each of the hypotheses. The modifications shall be with regards to the samples selected. The general framework shall however be consistent to allow for

better comparison, analysis and inference of the observed results. The major variations across the four hypotheses shall be as to what constitutes our investment universe.

For hypotheses one, the investment universe shall be created by selecting the stocks with the highest dividend yields over the given period. The returns of these high dividend yielding stocks will then be compared against the returns from the overall market as measured by an Overall Market Index (OMI). OMI will adopt a similar market capitalization system weighting system that is similar to NASI. The decision to use OMI as a proxy for NASI is driven by the fact that NASI was not existent until 2007 thereby making it unsuitable for this study. The number of stocks selected will be determined by the size of the portfolio being created. That is, for a traditional Dow-10 portfolio, the study will use the 10 highest dividend yielding stocks for portfolio A.

For hypotheses two, the investment universe will be created by using the highest dividend yielding stocks during election periods. For the purposes of this study, we shall consider the following election years: 1992, 1997, 2002, 2007 and 2013. The returns observed from our DDS portfolios will be compared to those that would have been generated had an investor opted to invest the same dollar amount in the overall market

For hypotheses three, the investment universe shall be based solely on the stocks composed within the NSE-20 for a given period. The NSE-20 is deemed to be an appropriate representative of the large-cap blue chip companies listed on the NSE. As with the other two hypotheses, the number of stocks used shall be determined by the size of the portfolio. Returns from here shall be compared against those from the overall market, as well as those of the NSE-20.

Hypotheses four does not require its own explicit framework as it is well represented by the various size and duration modifications undertaken in the other hypotheses. The general framework for the study is outlined below.

Beginning in April 2006, a certain number (N) of stocks with the highest annual dividend yields for the previous year shall be identified from our investment universe, where N= 4 or 10. An equally weighted portfolio consisting of (N) stock will then be constructed and held for a duration of (M) months where M= 12, 48 and 72. The portfolio will then be reformulated every M-months over the 10 year period. For each portfolio, we shall compute:

(1) The terminal value of an initial investment of KES 100,

(2) The Sharpe Ratio,

(3) the Batting Ratio

Our first step shall be to compute the terminal value (TV) so as to allow for comparison of absolute returns of the DDS portfolio, the NSE-20 portfolio and the overall market. In calculating the TV, we will first seek to calculate the individual stock returns over the relevant period (t). Given that the DDS is essentially a buy and hold strategy, we propose to use a holding period yield as shown below.

$$R_i = \frac{P_1 - P_0}{P_0}$$

The portfolio return is then computed as follows:

$$R_p = \sum_{i=1}^{n} w_i R_i$$

The terminal value then entails adjusting the Return of the portfolio to incorporate the initial investment of KES 100, as follows:

$$TV = KES\ 100 * [1 + R_p]$$

For example, if Stock X is selected for inclusion into any of the portfolios, we shall first calculate its individual return (R_i) over the relevant period. That is, what return did Stock X generate, on an absolute basis, over the given period? These absolute returns will then be summed up for all stocks in the portfolio to come up with a terminal value for the entire portfolio. It is this overall terminal value that will be compared against a benchmark. That is, what return would the investor had made he solely opted to invest in the comparable benchmark, such as the entire market or the NSE-20 Share Index.

Step two will entail adjusting the higher risk assumed by the higher dividend yield portfolios. Dimson et al (2011) argue that there is a possibility that the higher returns generated by value stocks could be a reward for the greater risk assumed by such stocks. Another viewpoint is that

the relatively small size of the DDS portfolio does not allow for sufficient diversification of risk (McQueen, Shields, & Thorley, 1997). The Sharpe Ratio will be used to adjust the returns of the high dividend yield portfolios for their assumed higher risk when comparing the returns of such portfolios against the market. The Sharpe Ratio (1994) quantifies a fund's return in excess of the risk-free proxy relative to its standard deviation. That is, it is a measure of a fund's excess returns per unit of risk.

The proxy for the risk-free rate (R_f) will be taken as the arithmetic average of the 91-day T-Bills issued within the given period. Such data will be sourced from the Central Bank of Kenya. Standard deviation will be computed from the observed weekly rates of return (R_i) over the given period.

$$Sharpe\ Ratio = \frac{Excess\ Returns}{Standard\ Deviation}$$

$$Excess\ Returns = R_i - R_f$$

$$Standard\ Deviation = \sqrt{\frac{\{(E(X^2) - E(X))^2\}}{T-1}}$$

The returns obtained from step two will be compared and analysed in a similar manner to those obtained through step one so as to determine whether the DDS does indeed generate superior returns on a risk-adjusted basis. That is, are any observable superior returns of a high dividend yield simply attributable to higher assumed risk as proposed by McQueen et al (1997).

Step three will entail computing the information ratio. The information ratio is also a risk-adjustment measure used in performance evaluation. This measure is deemed useful for this study as it is used in evaluating active portfolio management which is the strategy adopted by the DDS. The tracking error is defined as the standard deviation of the differences between a

portfolio's return and the benchmark's total returns. In calculating our mean active return, we will determine the excess return of the DDS portfolio relative to the OMI.

$$Information\ Ratio = \frac{Mean\ Active\ Return}{Tracking\ Error} = \frac{\sum_{t=1}^{T}(R_i - R_b)\ /T}{\sqrt{\frac{1}{T-1}}\ \sum_{t=1}^{T}(e_t - \bar{e})}$$

The purpose of step three is to justify the use of such a strategy for an active fund manager. The decision criterion here is simply, the higher the information ratio the better the manager's performance. To gauge such a trend, the study will seek to employ the batting ratio.

The Batting ratio measures a manager's ability to consistently beat the market. It is calculated by dividing the number of months in which the manager beat or matched an index by the total number of months in the period. While the ratio has no prescribed threshold, we shall impose an arbitrary threshold of 50. That is, the manager should at least beat or match the market 50% of the time.

$$Batting\ Ratio = \sum_{t=1}^{T} I(R_i \geq R_b)/_T * 100$$

I is an indicator function that assumes a Bernoulli distribution. Therefore:

- I (True) = 1; the return of the DDS portfolio is greater than or equal to that of the OMI.
- I (False) =0; the return of the DDS portfolio is less than that of the OMI.

CHAPTER FOUR: RESEARCH FINDINGS AND DISCUSSIONS

4.1 INTRODUCTION

This section focuses solely on data analysis, presentation and interpretation. Data analysis is hereby presented as per the order of the outlined research objectives. A back-testing approach of the DDS was adopted in a bid to determine whether investors can generate superior returns by solely focussing on dividend yields so as to exploit overreactions in the securities market. All the data used in the analysis was secondary in nature and was primarily sourced from the NSE. Additional information on bonus issues and stock splits was sourced from the CMA Quarterly Market Reports. The average of the 91-day T-Bill in a given period, sourced from the CBK, was used as a proxy for the risk free interest rate. The analysis tool used for this study was Microsoft Excel.

The analysis entailed first determining an absolute return from a buy-and-hold strategy as per the steps outlined in the methodology. For the purposes of this study, several assumptions have been made.

Return from a particular stock X is driven by two factors: share price appreciation or growth in the number of stocks. Number of stocks that an investor is entitled to can increase because of three main reasons: bonus issues, stock splits or rights issues. Given that the DDS is essentially a closed portfolio where the investor puts in money at Time t_0 and liquidates the portfolio at time t_1, an attempt is made to eliminate share proceeds arising from a rights issue. The downside of such a strategy is that the investor's shareholding arising from lack of participation in a rights issue falls for that given stock.

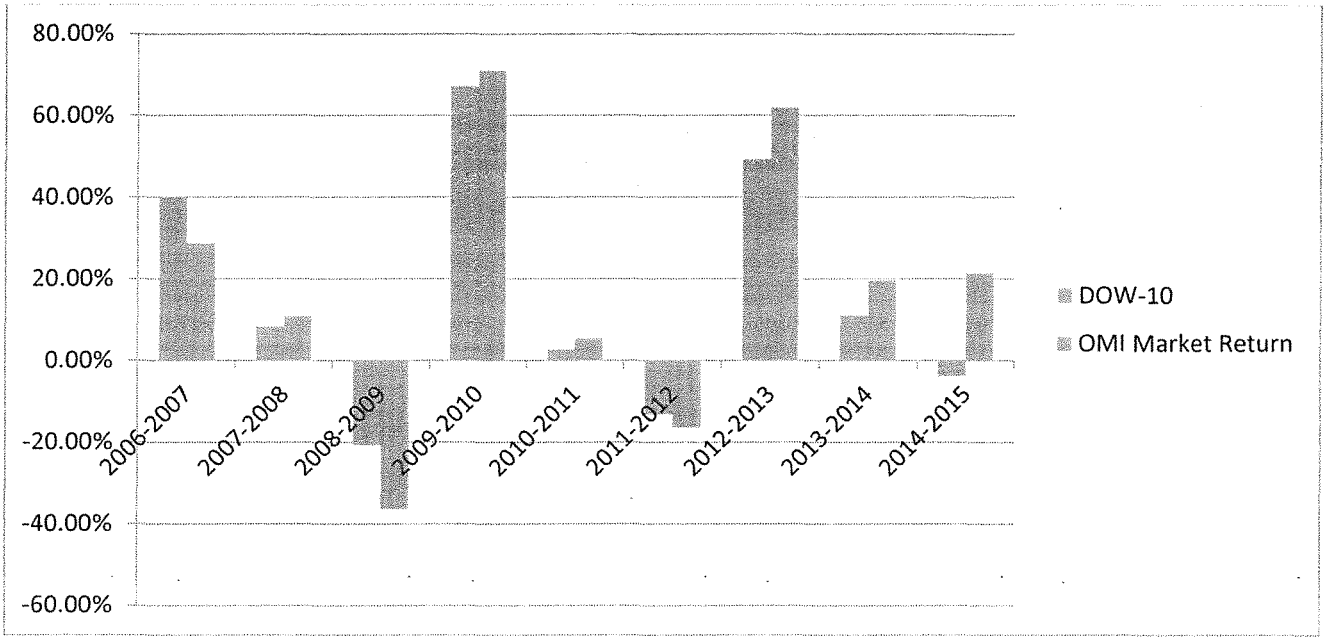
4.2 TESTING THE DDS IN THE OVERALL MARKET

High dividend yields portfolios are constructed as per the DDS recommendations. An arithmetic average of the dividend yields of all stocks for the prior period over a 52-week range is used to select the portfolios for inclusion into the Dow-10 portfolio.

Figure 1 below reports the 12-month buy-and-hold absolute returns for both the Dow-10 portfolio and the overall market. Out of the 9 periods, the simulated results show that both the Dow-10 portfolio generated positive returns in 6 periods with the market performing marginally better with 7 positive periods. The negative returns recorded in 2008-09 are excpected owing to the PEV skirmishes that rocked the country in that period bringing economic activity to a standstill. The dismall performance in 2011 is attributable to the weak prevailing macroeconomic conditions that plagued the country at the time (Nairobi Securities Exchange, 2012).

A preliminary look at Figure 1 disputes some of the assertions put forward by Eugene Fama with regards to market efficiency while confirming the views proposed by Robert Shiller. The public does indeed invariably overreact to news. The negative events surrounding 2008 and 2011 lead to massive declines in market returns. The periods immediately after these events witness significant positive jumps in returns that outmatch the levels witnessed before the negative events. This preliminary assertion gives credence to the assumptions underlying the DDS.

FIGURE 1: ABSOLUTE RETURNS (ENTIRE MARKET)



While the DDS and the overall market both record the same number of positive returns, the magnitude of those returns varies. We represent this variation in performance using the batting ratio table below:

TABLE 1: BATTING RATIO

ONE YEAR RANGE	DOW-10	OMI Market Return	WINNER
2006-2007	39.92%	28.81%	DDS
2007-2008	8.19%	10.86%	MARKET
2008-2009	-20.74%	-36.43%	DDS
2009-2010	67.23%	71.09%	MARKET
2010-2011	2.70%	5.40%	MARKET
2011-2012	-13.15%	-16.50%	DDS
2012-2013	49.30%	61.98%	MARKET
2013-2014	11.08%	53.39%	MARKET
2014-2015	-3.82%	21.37%	MARKET

The batting ratio shows that a manager using the DDS would have performed worse than a manager investing in the entire market on an absolute returns basis. As such, the use of the DDS as a main investment strategy would be detrimental to an investment manager. A more intriguing observation is the performance of the DDS during stress periods where the market experienced negative events. In 2008-09 and 2011-12, the market experienced subdued performance. It is worth noting that during both of these instances; the DDS beat the market. Another observation is that in the periods that immediately follow these stress periods, the market performs better. The subdued performance by the DDS in these 'restoration phases' could be attributed as a cost paid by the investor for a slightly less subdued performance during the negative event. During the two negative events within our sample period, the DDS provides returns that are superior to those generated by the overall market.

These findings therefore suggest that a switching strategy could potentially be beneficial to an investor. The investor could opt to use the DDS during stress periods and then switch back to their original investment plan during the restoration phase. This is however hinged on the ability of the investor to accurately forecast future negative events. A focus on such a strategy is done further on in the analysis.

4.2.1 The Safaricom Effect

Market Returns have been computed by use of a proxy index (OMI) owing to the fact that NASI was not in existence until 2008. Market weighted indices tend to have a bias towards large cap counters at the expense of small cap counters. This is done so as to capture the general feeling in the market rather than those enjoyed by a few players in the market.

The Kenyan market witnessed its largest IPO in 2008 with the listing of Safaricom shares on the NSE. The downside of such a large issue is that a market weighted index tends to over-capture the effects of such a stock thereby making it susceptible to the main limitation is sought to avoid. In OMI, Safaricom was seen to constitute as much as 25% of the overall portfolio therefore making it overly dominant.

The periods 2012-2015 saw SCOM enjoy a strong bull run as the stock grew from an intial price of KES 3.20 to 16.60. This strong performance coupled with its dominant weightings in the market index significantly skewed the analysis against the DDS. As such, an attempt is made to eliminate the effects of the stock from the market returns.

WITHOUT SAFARICOM (SCOM)			
ONE YEAR RANGE	**DOW-10**	**OMI Market Return**	**WINNER**
2006-2007	*39.92%*	*28.81%*	DDS
2007-2008	*8.19%*	*10.86%*	MARKET
2008-2009	*-20.74%*	*-36.43%*	DDS
2009-2010	*67.23%*	*34.11%*	DDS
2010-2011	*2.70%*	*15.13%*	MARKET
2011-2012	*-13.15%*	*-16.43%*	DDS
2012-2013	*49.30%*	*58.00%*	MARKET
2013-2014	*11.08%*	*5.70%*	DDS
2014-2015	*-3.82%*	*17.20%*	MARKET

Eliminating the effects of Safaricom increases the DDS batting ratio marginally to 5 out of 9 periods. While the market returns still outpace those of the DDS, the superior performance is significantly lower. To make a more precise conclusion, risk-adjusted returns are computed.

A major assertion by financial theory is the risk-return trade-off. That is, higher returns can only be generated by assuming higher risk. Therefore, the evaluation of the viability of an investment needs to be based on a risk-adjusted basis. For the purposes of this study, the Sharpe ratio is used to adjust the returns for tax. Table 2 below summarises the risk-adjusted returns of both the market (including Safaricom) and the DDS.

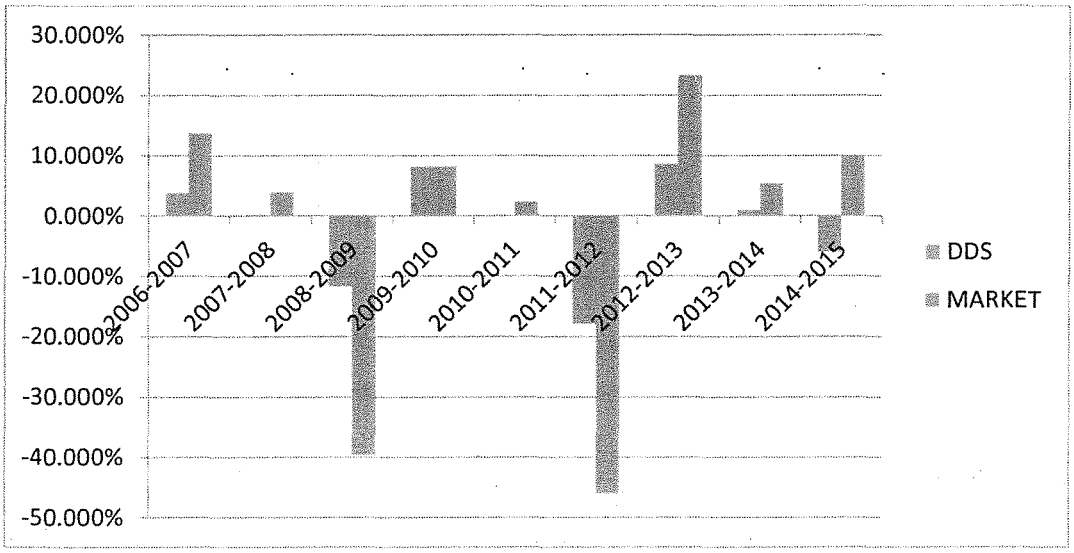
Table 2: BATTING RATIO CHART (*Risk-adjusted)*

	DDS	MARKET	WINNER
2006-2007	3.845%	13.757%	MARKET
2007-2008	0.248%	3.976%	MARKET
2008-2009	-11.786%	-39.682%	DDS
2009-2010	8.233%	8.232%	DRAW
2010-2011	0.021%	2.361%	MARKET
2011-2012	-17.942%	-46.041%	DDS
2012-2013	8.595%	23.353%	MARKET
2013-2014	0.946%	5.449%	MARKET
2014-2015	-6.062%	9.966%	MARKET

A simplified approach to measuring standard deviation has been applied and maintained throughout the study. Given the relatively small size of the DDS portfolio, it has less diversification benefits as compared to the overall market. This is further compounded by the tendency of the DDS to overinvest in some sectors of the economy while overlooking others.

While the performance of the DDS on a risk-adjusted basis declines even further when compared to the market, it does retain its superior performance during the two stress periods within our period of analysis.

Figure 2: RISK-ADJUSTED RETURNS



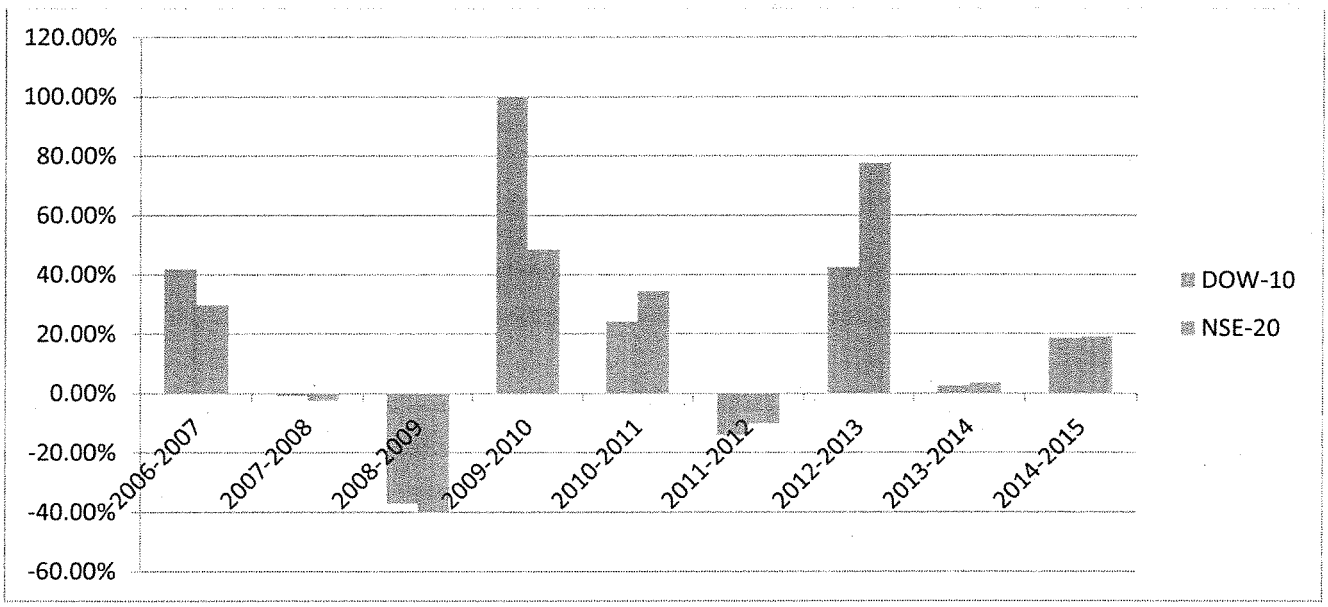
4.3 TESTING THE DDS ON BLUE CHIP STOCKS

For the purposes of this study, we define blue chip stocks as those that are contained in the NSE-20 Index during a given period.

Figure 3 below summarises how the DDS performs when solely applied to blue chip stocks in the NSE. The market overreaction effect remains evident following the significant variations in returns for the periods 2008-2010 and 2011-2013.

A clear trend is evident from the above data. Prior to 2011, the DDS outperformed the entire NSE-20 index. However, from 2011, the NSE-20 beats the 'dogs' in every instance. The reason for this could be attributable to the restructuring of the NSE-20 Index that led to a set of new rules in the selection of stocks into the portfolio. The criteria selects constituents of the index based on the weighted market performance for the prior 12-month period as follows: Market Capitalization 40%, Shares Traded 30%, Number of deals 20% and Turnover 10%. The new additions were: a company must have a free float of at least 20%, minimum market capitalization of KES 20 million and the company should ideally be a blue chip with a strong profit record. The subjective nature of the new rules, especially the last makes it difficult to incorporate a mathematical adjustment into the DDS to compensate for these new rules.

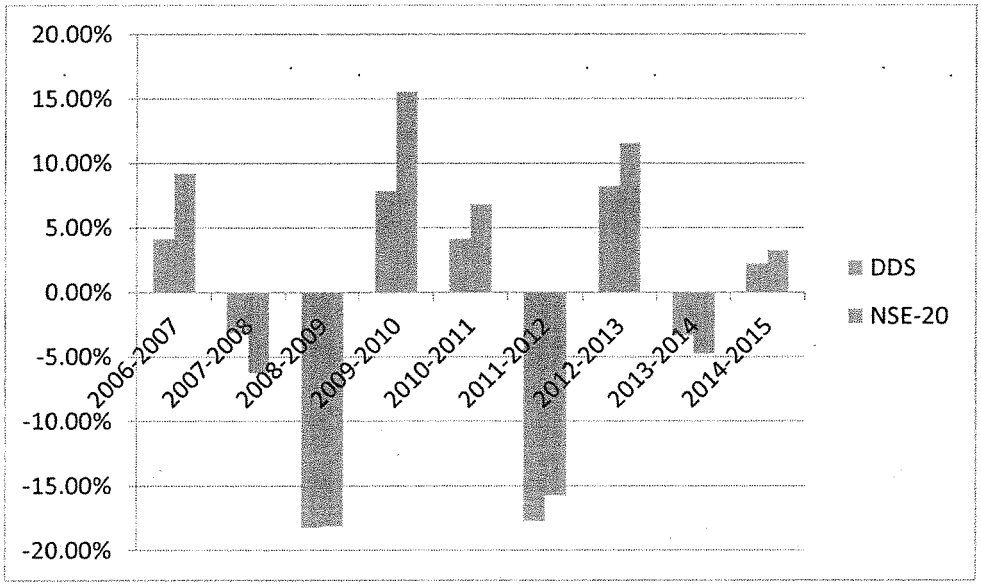
Figure 3: BLUE CHIP STOCKS



Another plausible explanation for the poor trend in the latter part of the analysis could be the aforementioned Safaricom effect. Safaricom was included into the NSE-20 share index in 2011. However, unlike OMI which is market weighted, the NSE-20 is a price weighted index. As such, greater weight is given to higher priced shares. For the purposes of this analysis, an equal number of shares in all stocks of the NSE-20 was sought in formulating a benchmark comparison. This served to apportion greater weight to highly priced shares thereby mimicking the bias of a price weighted index.

The Sharpe ratio is then used to adjust the returns of both the market and the DDS to compensate for the assumed risk. Figure 4 below summarises the findings.

Figure 4: RISK ADJUSTED RETURNS NSE-20



The higher returns generated by the DDS when used in the NSE-20 Index are completely eroded by the higher risk assumed by the DDS making it unviable as investment strategy.

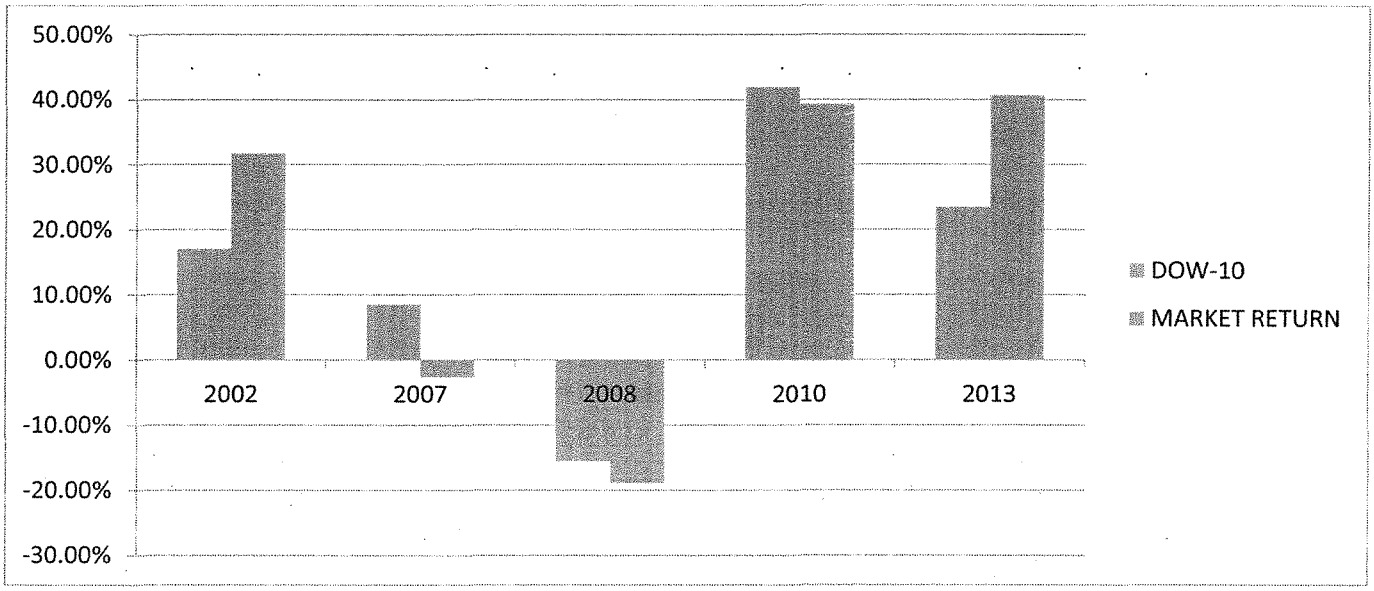
4.4TESTING THE DDS DURING ELECTION PERIODS

Owing to the preliminary findings of Section 4.2 that showed superior performance by the DDS during stress periods, an attempt is hereby made to determine whether portfolio managers can successfully use the DDS during electoral periods to beat the market.

Electoral periods have been chosen as a proxy for negative for the following reasons: (1) electoral periods have been seen to have a high negative correlation with the stock market mainly occasioned by foreign investor exits. (2) Electoral periods tend to be regular and can therefore be easily foreseen by an investor. As earlier noted, for a switching strategy to function the investor must be able to forecast 'bad' periods with a high degree of accuracy.

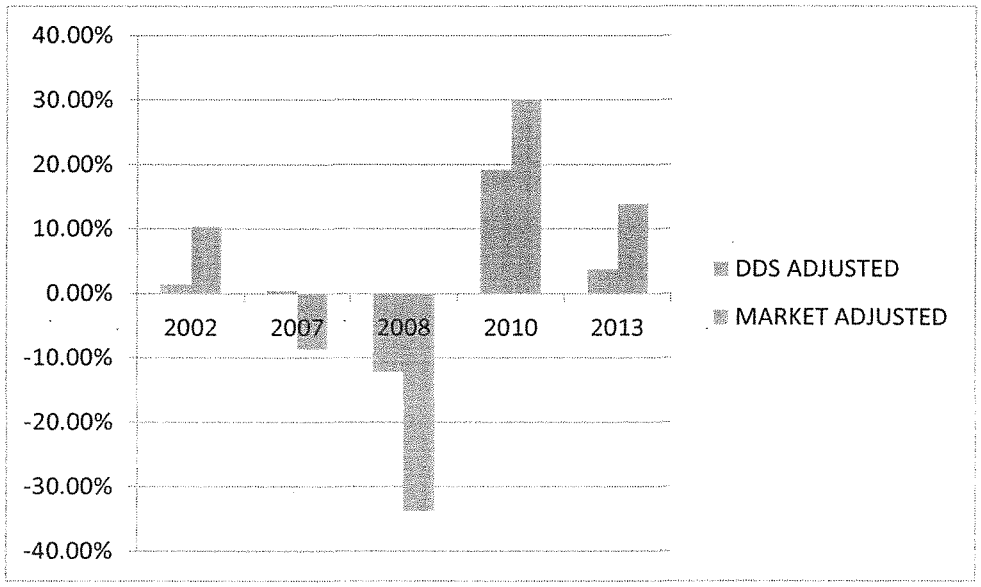
Owing to time and data constraints, only five periods are used for the analysis. Figure 3 reports the performance of the DDS during these periods. All five of these periods witnessed major electoral activities.

FIGURE 5: ELECTORAL PERIODS



On an absolute basis, the DDS outperforms the market in three of the five periods under review with the market coming out on top in 2002 and 2013. A risk-adjustment analysis is done to get more conclusive trend. These findings are summarised below.

Figure 6: RISK ADJSTED RETURN DURING ELECTORAL PERIODS



The findings above are consistent with earlier observation of superior DDS performance during the periods 2007 and 2008. However, with the exception of those two periods, the DDS performs worse than the general market during electoral periods.

Another viewpoint from such an analysis could be that the stress points chosen are wrong. The analysis done here is based on the assumption that electoral periods are indeed negative events. The analysis done here serves to show that despite general public sentiments, not all electoral periods are negative events. With the exception of the disputed 2007-08 general elections, all other elections have gone on fairly smoothly and the market has actually generated positive returns during those periods.

To illustrate this viewpoint, we show a snapshot of the NSE-20 share index around the latest election period, March 4th 2013.

TABLE 3: FEB-MARCH 2013

	NSE-20 Share Index		NASI	
WEEK 05	4420.79		104.09	
WEEK 06	4588.42	3.79%	107.42	3.20%
WEEK 07	4614.75	0.57%	107.58	0.15%
WEEK 08	4477.89	-2.97%	105.27	-2.15%
WEEK 09	4510.47	0.73%	107.18	1.81%
WEEK 10	4658.64	3.29%	111.79	4.30%
WEEK 11	4774.12	2.48%	113.23	1.29%
WEEK 12	4713.60	-1.27%	113.45	0.19%
WEEK 13	4860.83	3.12%	117.91	3.93%

During the last general election, the market is seen to have generated positive returns. The 2007 general election was unique due to the violence that characterised that election. This makes 2007 a unique stress period as compared to other general elections.

While the analysis refutes any assertions that the DDS can be used as an alternative investment strategy during election periods, it does not eliminate the possibility that the strategy can work during unique stress periods as was seen in 2008 and 2011 where the economy faced significant hardships.

4.5TESTING MODIFICATIONS TO THE DDS

Slight modifications have been made to the DDS in terms of the number of stocks held and the holding period. This study has tested the Reverse Procedure 4 over a 12-month period as well as the Dow-10 portfolio over a 4 year and 6 year period.

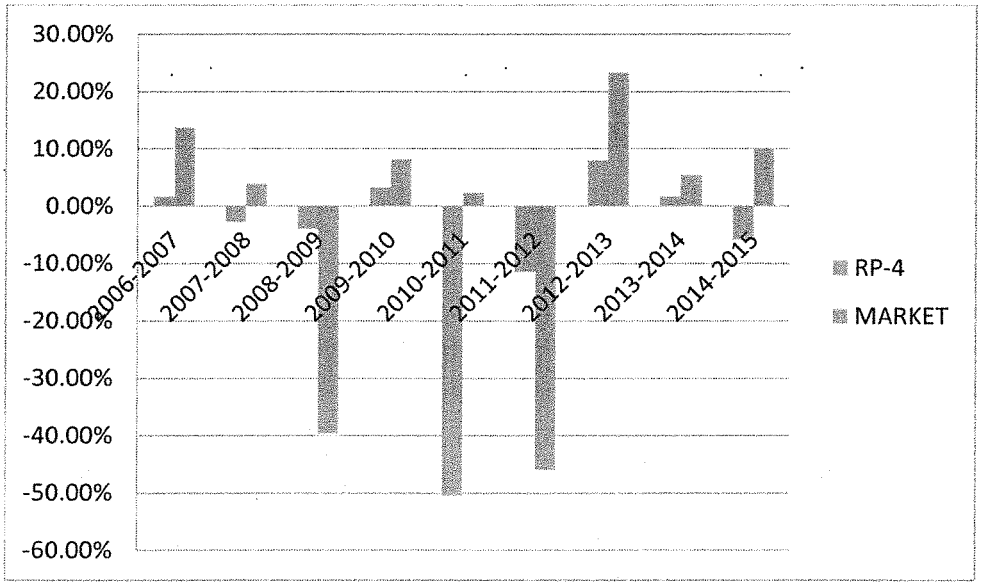
The returns from the Reverse Procedure 4 are presented in the table below:

Table 4

	Reverse Procedure 4	OMI Market Return	WINNER
2006-2007	70.33%	28.81%	Reverse Procedure 4
2007-2008	-6.69%	10.86%	OMI Market Return
2008-2009	-23.55%	-36.43%	Reverse Procedure 4
2009-2010	84.38%	71.09%	Reverse Procedure 4
2010-2011	-29.10%	5.40%	OMI Market Return
2011-2012	-21.49%	-16.50%	OMI Market Return
2012-2013	54.74%	61.98%	OMI Market Return
2013-2014	29.72%	19.57%	Reverse Procedure 4
2014-2015	-8.60%	21.37%	OMI Market Return

The reverse procedure 4 aims to incorporate size effects into the DDS strategy by making the RP-4 portfolio skewed in favour of lower-priced, high dividend yield stocks. To get a more definite conclusion, we compute the risk-adjusted returns of the RP-4 and compare them against the market. These findings are summed up in Figure 6 below.

Figure 7: RISK ADJUSTED RETURNS



The above findings show that the market outperformed the RP-4 in 7 of the 9 periods with the DDS still retaining its superior performance during 2008-09 and 2011-12. A major observation during the data collection was that highly priced shares in Kenya tended to outpace the lowly priced shares. Stocks such as NMG, BAT, SCBK and EABL recorded tremendous growth in the analysis period as compared to lowly priced stocks. Such a trend would therefore serve to make the RP-4 ineffective owing to its favour of lowly-priced stocks.

The modifications done were with regards to holding periods. Table 4 and 5 below summarises the findings. The returns were computed

TABLE 5: FOUR YEAR RANGE

	DOW-10	MARKET RETURN
2006-07 to 2009-10	75.12%	55.30%
2007-08 to 2010-11	26.55%	27.08%
2008-09 to 2011-12	6.93%	-4.28%
2009-10 to 2012-13	81.16%	143.91%
2010-11 to 2013-14	44.89%	70.46%
2011-12 to 2014-15	63.19%	96.30%

TABLE 6: SIX YEAR RANGE

	DOW-10	MARKET RETURN
2007-08 to 2012-13	96.85%	71.88%
2008-09 to 2013-14	101.17%	85.39%
2009-10 to 2014-15	110.73%	253.99%

The Dow-10 returns over the elongated periods were computed in a similar fashion to the usual Dow-10 portfolio with the sole difference being the liquidation date. The proceeds from de-listed stocks during the period were re-invested at the prevailing 91-day T-bill over the remainder of the period. Market returns sought to establish how much an investor would have made had he invested a similar investment of KES 100 each year in the market as measured by the market proxy OMI.

The prevailing trend of an initially strong DDS performance which fizzles out over time is still apparent over the elongated periods. The huge superior performance by the market return over the Dow-10 return in the latter periods is sufficient to offset any increased transactional costs that would have been incurred had the investor invested in the market.

4.6 INFORMATION RATIO AND SIGNIFICANCE TESTING

This study had initially proposed to gauge any observed excess returns by the DDS portfolio by use of the information ratio so as to justify the use of such a strategy by a portfolio manager. These excess returns were then to be statistically tested for significance so as to eliminate the chances of such observations being an off-chance.

The failure to find any reliable trend of excessive returns by the DDS during our sample period therefore eliminates the need to undertake such measurements.

CHAPTER FIVE: CONCLUSION

The Dogs of the Dow investment strategy has been an unsolved puzzle in the field of finance for a long time. Inconsistent evidence gathered from various studies has only served to compound this puzzle. Various studies have given contradicted findings on the effectiveness of the DDS within the same market. This study therefore sought to apply the DDS to the Kenyan market

The analysis of the NSE over the periods 2006 to 2015 shows that periods of subdued investment performance are followed by periods of hyper performance. Such observations lead to the conclusion that there is indeed overreaction in the market thereby creating a profit opportunity for investors. Whether the DDS can profitably capture such overreactions is a different matter altogether.

A common trend all through the analysis becomes apparent. The DDS provides superior or near-par returns in the earlier periods but performs dismally in the latter periods as compared to the market. These could be attributable to: the Safaricom effect in the latter part of our study, or the weakening of the DDS as a viable investment strategy over time or a mixture of both. An attempt to eliminate the direct impact of the price rally by Safaricom has been done but the indirect effects of such a rally by a dominant stock could have on the market remains inherent in the analysis. The weakening of the strategy is in line with the assertions made by Domian et al that the DDS strategy may no longer be selecting the 'true' dogs (1998).

In the Kenyan context, there appears to be limited evidence that the DDS does indeed beat the market or generate abnormal returns. This ineffectiveness cannot be explained away by a lot of money being used to pursue the investment strategy thereby eroding its benefits. This is because the strategy appears relatively foreign and unknown in the Kenyan market.

Therefore contrary to suggestions made by its major proponents Visscher and Filbeck (2003) John Slatter (1988) and O'higgins and Downes (2000), this study concludes that one cannot outperform a simple buy-and-hold strategy with a DDS portfolio of high yielding stocks within the NSE. Any perceived abnormal returns appear to be haphazard and tend to be eliminated when such returns are adjusted for risk over the 10 year period 2006-2014. As such, the strategy is deemed futile as an alternative investment strategy. This observations are in line with the assertions made by Hirschey (The "Dogs of the Dow" Myth, 2000).

APPENDICES

THE 10 HIGHEST YIELDING STOCKS

2006-2007		
City Trust	9.28%	1
British American Tobacco	7.65%	2
Unilever Tea	7.51%	3
Total	6.16%	4
Barclays Bank	5.69%	5
Sameer Africa Ltd	5.25%	6
Mumias	5.09%	7
Sasini	5.00%	8
Standard Chartered Bank	4.88%	9
National Industrial Credit	4.76%	10

2008-2009	
Total	8.18%
British American Tobacco	7.78%
Eveready East Africa Ltd	7.24%
Mumias	7.22%
BOC (K)	6.91%
Kapchorua	5.24%
Carbacid	5.22%
Standard Chartered Bank	4.52%
E.A.Breweries	4.52%
Nation Media Group.	4.15%

2007-2008		
Total	6.96%	1
British American Tobacco	6.34%	2
Limuru Tea	5.33%	3
Kapchorua	4.88%	4
Eveready East Africa Ltd	4.80%	5
BOC (K)	4.67%	6
Standard Chartered Bank	4.44%	7
Barclays Bank	4.19%	8
City Trust	4.01%	9
E.A.Breweries	3.79%	10

2009-2010		
British American Tobacco Kenya Ltd Ord 10.00	11.36%	1
Total Kenya Ltd Ord 5.00	8.14%	2
Carbacid Investments Ltd Ord 5.00	7.30%	3
Mumias Sugar Co. Ltd Ord 2.00	6.27%	4
Eveready East Africa Ltd Ord.1.00	6.16%	5
Nation Media Group Ord. 2.50	6.11%	6
Standard Chartered Bank Ltd Ord 5.00	5.71%	7
B.O.C Kenya Ltd Ord 5.00	5.63%	8
Kenya Airways Ltd Ord 5.00	5.27%	9
East African Breweries Ltd Ord 2.00	5.25%	10

2011-2012		
Sameer Africa Ltd Ord 5.00	6.31%	1
British American Tobacco Kenya Ltd Ord 10.00	6.13%	2
Bamburi Cement Ltd Ord 5.00	5.48%	3
E.A.Cables Ltd Ord 0.50	5.37%	4
B.O.C Kenya Ltd Ord 5.00	5.12%	5
Standard Chartered Bank Ltd Ord 5.00	4.88%	6
Kenya Commercial Bank Ltd Ord 1.00	4.87%	7
Barclays Bank Ltd Ord 2.00	4.53%	8
East African Breweries Ltd Ord 2.00	4.30%	9
Kenya Re-Insurance Corporation Ltd Ord 2.50	4.24%	10

2012-2013	
Barclays Bank of Kenya Ltd Ord 0.50	10.12%
B.O.C Kenya Ltd Ord 5.00	8.55%
E.A.Cables Ltd Ord 0.50	8.31%
Mumias Sugar Co. Ltd Ord 2.00	7.78%
British American Tobacco Kenya Ltd Ord 10.00	7.49%
Kapchorua Tea Co. Ltd Ord Ord 5.00 AIMS	7.13%
Standard Chartered Bank Kenya Ltd Ord 5.00	6.96%
Pan Africa Insurance Holdings Ltd Ord 5.00	6.74%
Kenya Commercial Bank Ltd Ord 1.00	6.58%
Unga Group Ltd Ord 5.00	6.45%

2013-2014		
Williamson Tea Kenya Ltd Ord 5.00 AIMS	21.61%	1
Barclays Bank of Kenya Ltd Ord 0.50	9.97%	2
Mumias Sugar Co. Ltd Ord 2.00	9.03%	3
Sasini Ltd Ord 1.00	8.52%	4
Housing Finance Co.Kenya Ltd Ord 1.00	7.60%	5
KenolKobil Ltd Ord 0.05	7.33%	6
British American Tobacco Kenya Ltd Ord 10.00	7.32%	7
E.A.Cables Ltd Ord 0.50	7.08%	8
Kenya Commercial Bank Ltd Ord 1.00	6.73%	9
B.O.C Kenya Ltd Ord 5.00	6.32%	10

2014-2015		
Williamson Tea Kenya Ltd Ord 5.00 AIMS	6.67%	
Sasini Ltd Ord 1.00	6.24%	
E.A.Cables Ltd Ord 0.50	6.23%	
British American Tobacco Kenya Ltd Ord 10.00	5.77%	
Kapchorua Tea Co. Ltd Ord Ord 5.00 AIMS	5.75%	
Barclays Bank of Kenya Ltd Ord 0.50	5.54%	
Mumias Sugar Co. Ltd Ord 2.00	5.15%	
Housing Finance Co.Kenya Ltd Ord 5.00	5.15%	
Bamburi Cement Ltd Ord 5.00	5.04%	
Sameer Africa Ltd Ord 5.00	4.58%	1

NSE-20 CONSTITUENTS

Due care has been undertaken to ensure that the NSE-20 portfolio closely reflects any amendments made during the period under review. However, any revisions made to the constituents of the index can only be incorporated at the end of the holding period.

2006-2007		2007-2008		2008-2009	
BAT	7.65%	TOTL	6.96%	TOTL	8.18%
UTKL	7.51%	BAT	6.34%	BAT	7.78%
TOTL	6.16%	BOC	4.67%	MSC	7.22%
BBK	5.69%	SCBK	4.44%	SCBK	4.52%
FIRE	5.25%	BBK	4.19%	EABL	4.52%
SASN	5.00%	EABL	3.79%	NMG	4.15%
SCBK	4.88%	NIC	3.07%	REA	3.61%
NIC	4.76%	BAMB	3.03%	BAMB	2.84%
WTK	4.24%	NMG	2.68%	KQ	2.63%
BOC	3.24%	UTKL	2.41%	KGN	2.57%
EABL	3.03%	KCB	2.30%	KCB	2.35%
NMG	2.60%	FIRE	2.25%	BBK	2.28%
KCB	2.47%	KQ	1.92%	XPRS	1.76%
BAMB	2.35%	WTK	1.82%	CMC	1.70%
DTB	2.23%	TPS	1.32%	TPS	1.64%
KQ	1.92%	KPLC	0.76%	ICDC	1.59%
KUKZ	1.70%	DTB	0.38%	DTB	1.20%
TPS	1.53%	KUKZ	0.00%	KPLC	1.05%
KPLC	0.47%	UCHM	0.00%	SASN	0.00%
UCHM	0.00%	SASN	0.00%	FIRE	0.00%

2009-2010		2010-2011		2011-2012	
BAT	11.36%	REA	2.92%	BAT	6.13%
MSC	6.27%	SASN	3.31%	BAMB	5.48%
NMG	6.11%	CMC	2.79%	CABL	5.37%
SCBK	5.71%	KQ	2.05%	SCBK	4.88%
KQ	5.27%	SCOM	3.14%	KCB	4.87%
EABL	5.25%	NMG	3.82%	BBK	4.53%
KGN	4.86%	BBK	4.10%	EABL	4.30%
REA	4.07%	EQTY	1.84%	SCOM	3.78%
XPRS	3.37%	KCB	4.83%	MSC	3.70%
BAMB	3.29%	SCBK	5.28%	KPLC	3.56%
CABL	3.17%	ICDC	0.00%	NMG	3.55%
BBK	3.13%	BAMB	5.32%	SASN	3.30%
KCB	3.08%	BAT	6.81%	REA	3.26%
ICDC	2.56%	KGN	3.86%	KGN	3.00%
KPLC	2.30%	EABL	4.53%	CMC	2.52%
CMC	2.17%	CABL	5.07%	KQ	2.15%
EQTY	1.52%	KPLC	4.35%	EQTY	1.79%
ARM	1.35%	ARM	1.06%	COOP	1.32%
SASN	0.00%	MSC	3.57%	ARM	0.99%
SCOM	0.00%	XPRS	0.00%	XPRS	0.00%

2012-2013		2013-2024		2014-2015	
BBK	10.12%	BBK	9.97%	SASN	6.24%
MSC	7.78%	MSC	9.03%	BAT	5.77%
BAT	7.49%	SASN	8.52%	BBK	5.54%
SCBK	6.96%	KENO	7.33%	MSC	5.15%
KCB	6.58%	BAT	7.32%	BAMB	5.04%
SCOM	6.03%	KCB	6.73%	KCB	4.34%
KQ	5.80%	REA	6.22%	SCBK	4.18%
REA	5.63%	KGN	5.96%	KUKZ	4.11%
BAMB	5.60%	BAMB	5.75%	KGN	4.09%
SASN	5.50%	SCBK	5.22%	EQTY	3.80%
KENO	5.46%	SCOM	4.58%	SCOM	3.45%
NMG	5.24%	EQTY	4.38%	NMG	3.19%
KGN	4.94%	NMG	3.91%	COOP	2.90%
EABL	4.70%	KQ	3.64%	EABL	2.19%
EQTY	4.05%	EABL	3.61%	KPLC	1.73%
COOP	2.81%	COOP	3.24%	UCHM	1.54%
KPLC	2.21%	KPLC	2.83%	SCAN	1.03%
CMC	1.38%	ARM	0.90%	ARM	0.66%
ARM	1.08%	UCHM	0.77%	KQ	0.47%
XPRS	0.00%	XPRS	0.00%	KENO	0.38%

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