



Dividend announcement affects on analysts' consensus dividend forecasts and share price

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Abstract

This research aims to evaluate the impact of dividend related SENS announcements on the share price both before and after the announcement. The objective is to assess if there is a long-term impact on the share price after a SENS announcement, and to assess the accuracy of analyst consensus forecasts, to establish if there is information contained in the build-up to the announcement.

A non-representative judgment sample of 988 dividend payout ratio changes was chosen and used as a proxy for SENS dividend announcements. The resulting sample after the removal of outliers, by plotting the cumulative abnormal returns “spaghetti graph” was divided into a sample of 482 SENS announcements (208 companies) where the payout ratio changes more than 10%, and 411 SENS announcements (181 companies) where the payout ratio changes less than negative 10%. An event study assessing the average abnormal returns (AARs) and cumulative average abnormal returns (CAARs) 20 days and 200 days after the announcement was conducted, to determine the impact on the share price. The mean average percent error (MAPE) statistics at 12 months, six months and one month before the announcement date were also tested for significance to assess if the analysts’ consensus forecasts had improved due to information contained in the dividend announcement.

The research found that the Johannesburg Stock Exchange exhibits weak efficiency and that there is a long-term impact on the share price after dividend SENS announcement. The significant MAPE indicated that there is information contained in the SENS announcement, showing that the JSE tends to be inefficient.

Keywords:

SENS announcement, analysts’, efficient market hypothesis, event study

Declaration

I declare that this research project is my own work. It is submitted in partial fulfillment of the requirements for the degree of Masters of Business Administration at the Gordon Institute of Business Science, University of Pretoria. It has not been submitted before for any degree or examination in any other University. I further declare that I have obtained the necessary authorisation and consent to carry out this research.

Rima Bridgemohan

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This research is dedicated to my parents, Mr. and Mrs. Rampersadh. Thank you, Mum and Dad, for always instilling the importance of education in my life and always making me believe that the world was my oyster and that I could achieve anything that I desired. You are truly inspirational parents.

Table of Contents

| | |
|---|------|
| List of Figures..... | viii |
| List of Tables..... | ix |
| 1 Introduction to the Research Problem | 1 |
| 1.1 Background to the problem | 1 |
| 1.1.1 Introduction | 1 |
| 1.1.2 Problem Statement | 2 |
| 1.2 Research Motivation | 4 |
| 1.3 Research Aim and Objectives | 5 |
| 1.3.1 Research Aim | 5 |
| 1.3.2 Research Objectives | 6 |
| 2 Theory and Literature Review | 7 |
| 2.1 Efficient Market Theory | 7 |
| 2.1.1 Signalling Theory | 9 |
| 2.2 Payout Policy | 11 |
| 2.2.1 Dividends and Earnings | 15 |
| 2.3 Why do firms pay dividends?..... | 16 |
| 2.3.1 Dividend Policy and the Share Price | 19 |
| 2.4 Analysts' Consensus Forecasts | 22 |
| 2.5 What influences and determines Analysts' forecasts..... | 23 |
| 2.5.1 Analyst's Bold Forecasts | 24 |
| 2.6 Analysts Forecasts and their Implications for Investors | 25 |
| 2.6.1 Origin of Forecast..... | 25 |
| 2.6.2 Timing of Analyst's Forecasts..... | 26 |
| 3 Research Hypotheses | 28 |
| 3.1 Hypothesis 1 | 28 |
| 3.1.1 Hypothesis 1a | 28 |
| 3.2 Hypothesis 2 | 29 |
| 3.2.1 Hypothesis 2a | 30 |
| 4 Research Methodology and Design..... | 31 |
| 4.1 Research Methodology | 31 |
| Rima Bridgemohan (21042633) | v |

| | | |
|-------|--|----|
| 4.2 | Research Design..... | 31 |
| 4.2.1 | Events Study Research Design..... | 32 |
| 4.2.2 | Time Series Research Design..... | 37 |
| 4.2.3 | Unit of analysis..... | 38 |
| 4.2.4 | Population..... | 38 |
| 4.2.5 | Sampling Method and Size..... | 39 |
| 4.2.6 | Data Gathering Process..... | 40 |
| 4.2.7 | Data Analysis..... | 40 |
| 4.2.8 | Research Limitations..... | 42 |
| 5 | Results..... | 44 |
| 5.1 | Data Cleaning..... | 44 |
| 5.2 | Sample Description..... | 44 |
| 5.3 | Results for Hypothesis 1..... | 45 |
| 5.3.1 | Payout Ratio Changes..... | 45 |
| 5.3.2 | CAR graph..... | 48 |
| 5.3.3 | Average Abnormal returns..... | 53 |
| 5.3.4 | Cumulative Average Abnormal Returns (CAAR's)..... | 54 |
| 5.3.5 | T- Test Results..... | 56 |
| 5.4 | Hypothesis 1a Results..... | 58 |
| 5.5 | Hypothesis 2 and 2a Results..... | 59 |
| 5.5.1 | Mean Average Percentage Error (MAPE) Results..... | 59 |
| 6 | Discussion of Results..... | 64 |
| 6.1 | Dividend Payout Ratio Discussion..... | 64 |
| 6.2 | CAR Results Discussion..... | 65 |
| 6.3 | Discussion of Abnormal returns..... | 66 |
| 6.4 | Discussion of Cumulative Average Abnormal Returns (CAARs)..... | 68 |
| 6.5 | Hypothesis 1 discussion..... | 68 |
| 6.6 | Hypothesis 1a discussion..... | 71 |
| 6.7 | Hypothesis 2 Discussion..... | 72 |
| 6.8 | Hypothesis 2a Discussion..... | 74 |

| | | |
|-----|---|----|
| 7 | Conclusion | 77 |
| 7.1 | Main Findings..... | 77 |
| 7.2 | Managerial Implications and Recommendations | 78 |
| 7.3 | Recommendations for Future Research..... | 79 |
| 8 | References..... | 81 |
| 9 | Annexure A | 88 |

List of Figures

| | |
|--|----|
| Figure 1: Analysts' reporting environment (Ramnath et al., 2008, p.37)..... | 8 |
| Figure 2: The relationship between payout ratio and real earnings growth with data from 1946 to 2001 (Arnott & Asness, 2003, p. 73)..... | 13 |
| Figure 3: Model representing Literature Review with links to the Hypothesis..... | 27 |
| Figure 4: Divided payout ratio changes | 46 |
| Figure 5: CARs for Event Study for Sample less than negative 10% (Firms ABL to MML)..... | 49 |
| Figure 6: CARs for event study for the sample less than negative 10% (Firms MMP to ZSA)..... | 50 |
| Figure 7: CARs for event study for the sample more than 10% (Firms ABL to LNF).... | 51 |
| Figure 8: CARs for event study for the sample more than 10% (Firms LNF to WNH) .. | 52 |
| Figure 9: Average Abnormal Returns for sample less than negative 10% | 53 |
| Figure 10: Average Abnormal Returns for sample more than 10% | 54 |
| Figure 11: CAAR's for sample less than negative 10%..... | 55 |
| Figure 12: CAAR's for sample more than 10% | 55 |
| Figure 13: AAR paired difference results for sample less than negative 10% | 56 |
| Figure 14: AAR paired difference results for sample more than 10%..... | 57 |
| Figure 15: MAPE for sample less than negative 10%..... | 60 |
| Figure 16: MAPE for sample more than 10%..... | 62 |

List of Tables

| | |
|---|----|
| Table 1: Payout Ratio and Growth (Arnott & Asness, 2003, p. 74) | 14 |
| Table 2: Control Portfolios (Ward & Muller, 2010, p. 30)..... | 35 |
| Table 3: Dividend payout ratio changes..... | 47 |
| Table 4: Outliers eliminated using CAR graph for sample less than minus 10% | 48 |
| Table 5: Outliers eliminated using CAR graph for sample greater than 10% | 48 |
| Table 6: T -Test one sample statistics for the sample less than negative 10% | 57 |
| Table 7: T -Test one sample results for the sample less than negative 10% | 57 |
| Table 8: T -Test one sample statistics for the sample more than 10%..... | 58 |
| Table 9: T -Test one sample statistics for the sample more than 10%..... | 58 |
| Table 10: Long Term CAAR | 58 |
| Table 11: T -Test 12 month statistics for MAPE T-Test for the sample less than negative10% | 60 |
| Table 12: T -Test one sample statistics for MAPE for the sample less than negative10% at 12 months | 61 |
| Table 13: T -Test 6 month statistics for MAPE T-Test for the sample less than negative 10%..... | 61 |
| Table 14: T -Test one sample statistics for MAPE for the sample less than negative 10% at 6 months | 61 |
| Table 15: T -Test 12 month statistics for MAPE T-Test for the sample more than 10% | 62 |
| Table 16: T -Test one sample statistics for MAPE for the sample more than 10% at 12 months | 62 |
| Table 17: T -Test 6 month statistics for MAPE T-Test for the sample more than 10% . | 62 |
| Table 18: T -Test one sample statistics for MAPE for the sample more than 10% at 6 months | 63 |
| Table 19: Sample for less than negative 10% dividend payout ratio change | 88 |
| Table 20: Sample for more than 10% dividend payout ratio change | 91 |

1 Introduction to the Research Problem

1.1 Background to the problem

1.1.1 Introduction

The efficient market hypothesis (EMH) by Eugene Fama (1970) stated that a share price is a true reflection of all company information and therefore no one has an advantage or disadvantage in purchasing shares. The implication is that in efficient markets, share prices are not predictable, but instead are based on company information or random events (Investopedia, 2009). Dividend announcements fall into the definition of an event. Stock Exchange News Service (SENS) announcements are required by the Johannesburg Stock Exchange (JSE), if a firm wants to, or is required to communicate with its shareholders. Dividend announcements are changes in dividend policy, the declaration of a dividend or any other dividend related communication. The determinants of a firm's dividend policy are firm size, growth prospects, liquidity, and proportion of shares held by the largest shareholder. Profitability does not have a statistically significant effect on dividends (Emily & Richard, 2010).

There are a few theories regarding why firms declare dividends, the clientele effect theory, where a firm declares dividends to impact on the value of the stock market thereby attracting investors (Emily & Richard, 2010). The declaration of a share dividend that is to gain the support of shareholders refers to Managerial theory. One of the modern theories that support these arguments is the regret theory, which places emphasis on the need for cash dividends due to the fluctuation of the share price. In other words, paying dividends reduces the probability of capital loss (Emily & Richard, 2010). In an efficient market, an unanticipated change in dividends triggers a share price reaction (Andres, Betzer, Bongard, Haesner & Thiessen, 2011).

In order to study the affects of an announcement on share price, the event study methodology is most appropriate. Event studies show how quickly information, which is

anything that moves stock prices, gets incorporated into earnings prices (Brown, 2011). The strongest evidence in favour of efficient market hypothesis, with information reflected in earnings prices in a matter of minutes, is obtained by conducting an event study (Brown, 2011). By utilising the event study methodology, one is able to test the difference between the abnormal returns before and after the event, to check if there is a significant change. Therefore, event studies play a role in determining the extent to which the change in stock prices is due to information (Brown, 2011). This information can give investors an advantage in an inefficient market or assist analysts who forecasts dividends per share, to have a more accurate forecast.

An analyst or financial analyst prepares research that brokers can use in investment decisions (Investopedia 2012). Analysts' have a financial background and provide Buy, Hold or Sell forecasts for securities (Investopedia 2012). Investors use the information or forecasts provided by analysts' to make investment decisions. Yearly dividend changes have a greater impact in terms of information conveyed than quarterly dividend announcements (Andres et al., 2011) As evidenced amongst German firms, if a firm pays a dividend quarterly the expected dividend change is small, however, if a firm pays dividends yearly, this would most likely increase the dividend change (Andres et al., 2011).

1.1.2 Problem Statement

If the process of forecasting and capital markets is efficient, the share price and analyst's forecasts will immediately reflect all of the information from the forecasting process (Ramnath, Rock & Shane, 2008). This debate is still of interest and remains focused on the accuracy of earnings forecasts and the reliability thereof. This is based on the work by Goedhart, Raj and Saxena (2010) who found that there is still an "excessively optimistic" attitude to earnings forecasts by equity analyst's. This follows from the 2001 McKinsey on Finance article by Goedhart, Russel and Williams (2001) who noted that analysts are more reliable in months closer to the release of earnings results. As analysts forecast at different times before actual earnings announcements, Ciciretti, Dwyer and Hasan (2009) found that analyst's' forecasts are greater than earnings on average a year before earnings are announced and analysts' median forecasts are less than earnings on average at the one month horizon which disputes the more accurate claims argued by Goedhart, Russel and Williams (2001).

Following the international interest in the reaction of the share price to earnings announcements, in South Africa, Mlonzi, Kruger and Nthoesane (2011) also investigated the share price reaction to earnings announcements with their universe being the JSE-ALtX. Mlonzi et al. (2011) argued that the AltX shows a weak form of market efficiency and that cumulative average abnormal returns are observed due to earnings announcements. Bhana (1997) also argued that, the JSE is inefficient in its reaction to the announcement of share dividends, and observed abnormal returns for 20 trading days after the event. Bhana (1997, 1998) is the only South African author who addressed dividend announcements influence on share price, however she did not address the effect of dividend announcements on analysts' consensus dividend forecasts and did not conduct a long term study of the influence of dividend announcements on the share price. Bhana's methodology is questionable as a normal distribution of share returns is assumed in order to conduct statistical significance tests where the bootstrapping methodology would heed more accurate results.

Sharma (2011) has conducted the only study directly relating to this research was a study on the reaction of the stock price to dividend announcements using the events methodology, for the Indian stock exchange. The events study period was for 12 days before the announcement and 12 days after the announcement so, no long-term affects was inferred from this research. The research also did not use the market model, capital asset pricing model or any other model to benchmark the research, nor were T-tests used to test the hypothesis for significance. Evidence from Sharma (2011) is in favour of market efficiency as his findings indicate that "dividends information gets immediately absorbed into the stock prices resulting in random character of stock price movements" (Sharma, 2011, p. 29) "and no investor can earn significant abnormal returns by strategizing his/her investment policy surrounded by these announcements days even by identifying stocks related to a particular sector" (Sharma, 2011, p. 29).

This brings us to the research problem being investigated by this study. The research problem has two parts, the first being to investigate if there is any change in a share price based on dividend related announcements using SENS and to investigate if there is a long-term impact on a share price. The second part of the problem is to assess the accuracy of the analysts' consensus dividend forecasts due to dividend announcements, to establish if there is information contained in the dividend announcements or in the build-up to the announcement.

1.2 Research Motivation

There is still a large amount of debate around the market efficiency of the JSE in response to SENS announcements. There is also no research on the effects of dividends announcements on analysts' consensus dividend forecasts. For the efficiency theory to hold true, this document should prove that analysts do not change their forecasts based on dividend announcements and that this does not result in changes in the share price.

Although research into the effects of dividend announcements on the share price is minimal, event studies have been conducted in order to assess the efficiency of share prices on the JSE. Based on the Efficient Market Hypothesis (EMH), these studies classified the JSE as semi-strong efficient. Okeahalam and Jefferis (1999) argued that the JSE is semi-strong efficient, which is contrary to the more recent research conducted by Ward and Muller (2010), who argued that the JSE is reasonably inefficient in the reaction to the announcement of BEE deals with events only incorporated in the share price more than 80 days after the announcement.

A recent SENS announcement on the 23rd of January 2009 was that the "The JSE made amendments to sections 11 and 24 to require the disclosure of the source (capital vs. income) of dividends/distribution" (JSE, 2009). The effects of such an announcement on the accuracy of analysts' consensus dividend forecasts and if analysts change their consensus dividend forecasts based on this event is unknown. Another article in Moneyweb's Personal Finance section on the investment case of Mr Price Group Limited was an example where dividend announcements formed part of the investment case where mention was made that the Mr Price Group, since its listing, "has never decreased a dividend payout year-on-year" (Cairns, 2012, p.4). This shows how relevant dividend announcements are to investors in South Africa.

Changes in analysts' forecasts affect investor's decisions on which securities to invest in. The accuracy of analysts' forecasts is an important determining factor for an analyst's career projection as, in a May 2010 edition, the Financial Mail ran a special report on the ranking of the analyst'. This featured top investment houses and analysts' competing for this coveted title. The rankings were based on the opinions of institutional clients of brokerage firms (McNulty, 2010).

A study of the accuracy of analysts' forecasts has been conducted in the United States of America by Conroy and Harris as far back as 1987, who proved that average analysts' forecasts or consensus forecasts were more accurate predictors of earnings than a random time series forecasts. Dividend announcements are more informative than earnings announcements (Andres et al., 2011). However, dividend announcements occur at regular events and analysts' consensus dividends forecasts are forecasted for brokerage houses regularly, but there is no study on the implications of dividend announcements on analysts' consensus dividend forecasts. Results on the accuracy of analysts' forecasts at different times before the earnings announcement from Ciciretti et al. (2009) are also based on earnings announcements, and what influence dividend announcements have on analysts' consensus forecasts. One of the focal points of this research is on that question.

The information discussed thus far indicates that there is a large amount of research that is being undertaken on earnings announcements and the efficient market hypothesis as well as on the share price reaction to earnings announcements. Thus, this research on the reaction of share prices to dividend announcements, as well as the accuracy of analysts' consensus forecasts following the dividend announcement, fills the valuable gap in the current research. This research also opens the door for more research to be conducted in South Africa on this hot topic of SENS dividend announcements and its influence on analysts' consensus forecasts and the share price to establish if there is any information contained in the dividend announcements.

1.3 Research Aim and Objectives

1.3.1 Research Aim

This research aims to evaluate the impact of dividend related SENS announcements on the share price both before and after the announcement. The objective is to assess if there is a long-term impact on the share price after a SENS announcement, and to assess the accuracy of analyst consensus forecasts, to establish if there is information contained in the build-up to the announcement.

1.3.2 Research Objectives

The objectives of this research are as follows:

- i. To determine if dividend SENS announcements have an influence on share prices and thereby establish if the JSE is efficient or inefficient in its response to SENS announcements by focusing on the following:
 - a. Abnormal returns,
 - b. Long-term cumulative abnormal returns.
- ii. To calculate the above for the chosen sample using the events study methodology and to analyse the results using the appropriate analysis technique.
- iii. To determine if analysts' increase their forecast accuracy by following dividend announcements.

2 Theory and Literature Review

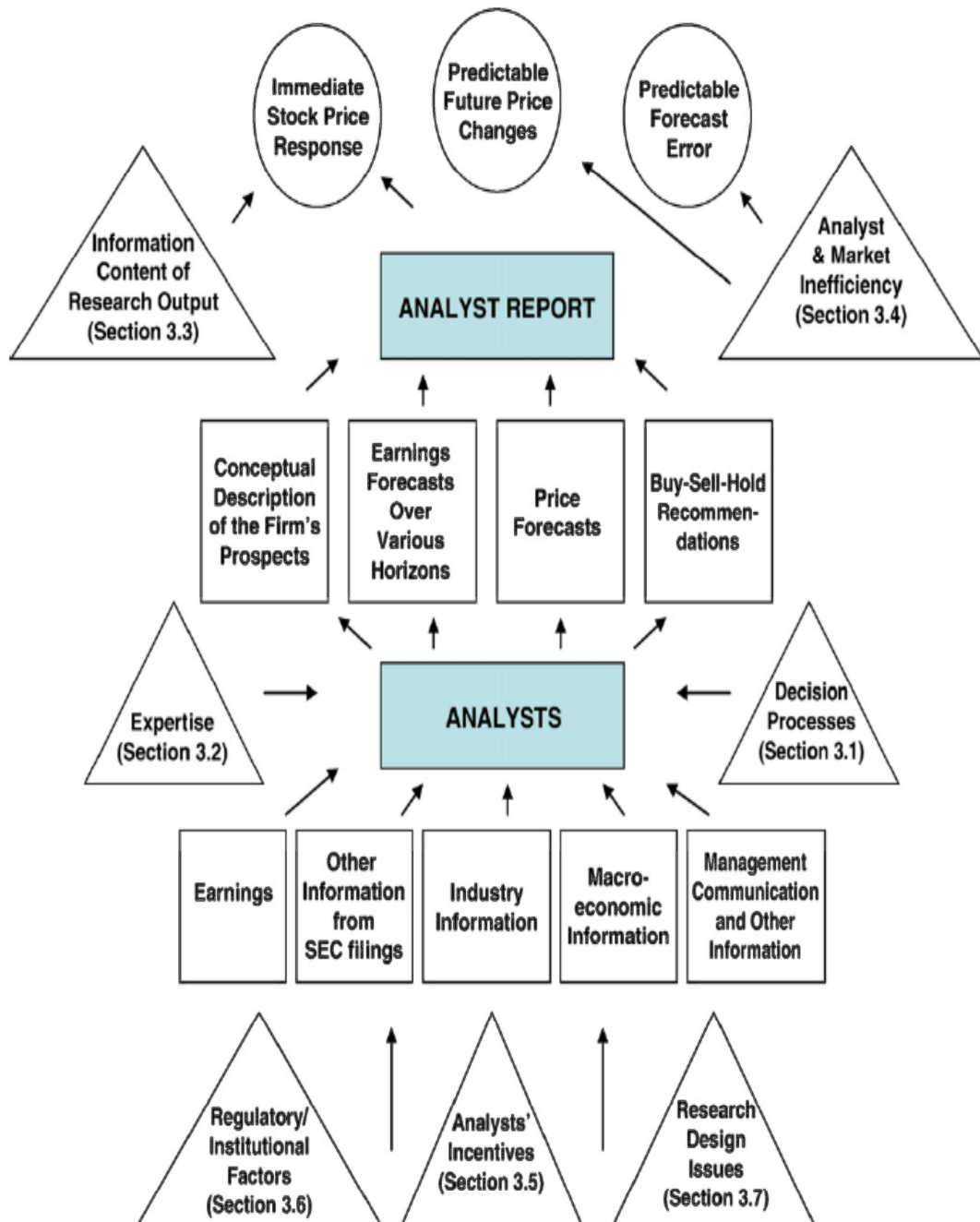
2.1 Efficient Market Theory

“A market in which prices always fully reflect available information is called efficient” (Fama, 1970, p. 383). When the forecasting process and capital markets are efficient, market prices and analysts’ forecasts will immediately reflect all of the information shown in figure 1 (Ramnath et al., 2008). This theory is the cornerstone of this research as the research question is: Do dividend announcements via SENS result in a change in analysts’ consensus dividends forecasts and share price? By assuming that the market is efficient, one would expect that information regarding dividends result in no change in analysts’ consensus dividends forecasts.

There are three degrees of efficiency (Investopedia, 2009):

- Strong efficiency – All public and private information in the market is accounted for in the share price. Insider information cannot even provide an investor with the advantage to beat the market.
- Semi-strong efficiency – All public information in the market is accounted for in the share price. Technical analysis will not give an investor an advantage to beat the market.
- Weak efficiency – Past prices of share prices that are built into the current share price so that the market cannot be beaten, even with the utilisation of technical analysis. The JSE is defined as weak-form efficient (Mlambo & Biekpe, 2007).

Figure 1: Analysts' reporting environment (Ramnath et al., 2008, p.37)



Studies on the South African stock exchange with respect to market efficiency conducted research on the JSE's market efficiency (Ward & Muller, 2010; Bhana, 1997; Mlambo & Biekpe, 2007), and all argued that the JSE is relatively inefficient or has a weak efficiency, with the exception of Okeahalam and Jefferis (1999) who argued that

the JSE is semi-strong efficient. In order to determine if the JSE is efficient or inefficient and to confirm some of the previous research, the assessment of the change in share price due to the event of dividend announcements must be analysed. The question that then arises is how can market efficiency be improved?

A high frequency of online disclosures by companies on information such as pricing had a positive effect on improving market efficiency, as the information was be easily available to investors so they were more informed of changes in the market, thereby reducing market risk (Rahman & Debreceeny, 2010). SENS announcements assisted by allowing companies on the JSE, to regularly disclose pertinent company information. Rational expectations equilibrium (REE), according to Bruguier, Quartz and Bossaerts (2010), provided the theory to justify EMH, which meant that uninformed persons could correctly read information from share prices. In support of EMH and REE, it was found that more than 90% of changes in analyst's' forecasts were explained by management forecasts alone, with management forecasts incorporating all available information at the time that it is published (Ota, 2010). This brings us to how signalling related to market efficiency.

2.1.1 Signalling Theory

Signalling theory suggested that managers had more information than the public and if the information that management was in possession of was conveyed to the public, they might not perceive it in the same way as management does (Firer, Gilbert & Maytham, 2008). The question that arose was, is dividend announcements via SENS a signal to analysts from management, or is the reason why firms pay dividends a signal to the market about the stability of the company? The answer of 'yes' to either one of the questions would result in improved market efficiency through signalling. This section aims to answer the above questions, thereby indicating how signalling theory fits into this research.

Due to the time at which dividends were distributed, which was usually in the new financial year, the signal contained would apply to both the previous and current years' earnings (Firer et al., 2008). Signals that could be interpreted were those of the maintenance of past dividends levels, despite a decline in earnings. This would indicate to investors that management believed that earnings growth was expected in the future

(Firer et al., 2008). Investors interpreted a cut in dividends as bad news as this indicated that management viewed the long-term growth of the firm as poor (Firer et al., 2008). If a firm that traditionally did not pay dividends suddenly decided to announce dividends, this would be a signal to investors that the firm has run out of value adding projects (Firer et al., 2008). So what do other authors have to say about this?

Managers in the United States and South Africa both believed that when a firm paying dividends made a decision to pay dividends, that decision had the ability to convey information to the market (Firer et al., 2008). This was confirmed by Araujo, Moreira and Tsuchida (2011), who showed that low-earnings firms pay high dividends so that they could be considered as high-earnings firms. In addition to the confirmation by Araujo et al. (2011), Fuller and Goldstein (2011) confirmed that due to the signalling hypothesis, increased amounts of dividends paid by firms in declining markets sent a strong signal to the market, whilst maintaining a dividend in a declining market signalled that the firm was not in a crisis. Dividend decreases for both low and high future earnings firms was worse for the firm in declining markets as compared to advancing markets, which was consistent with signalling theory. Charitou, Lambertides and Theodoulou (2011) found that dividend initiations and increases also conveyed information on decreased default risk. Their results indicated that the greater the decline in default risk, the more positive the market reaction to the announcement of an increase in dividends or the commencement of the paying of dividends. This all contributes to answering the question that signalling contributes to conveying information to the market, thereby increasing the probability of strong market efficiency.

In contrast to the current evidence of signalling, Deangelo, Deangelo and Skinner (2004), further investigated if the decrease in the number of firms paying dividends in the past 20 years was an indication that dividends were disappearing. The authors found that the decrease in aggregate supply was best explained by a decrease in the number of firms that paid small dividends and the increase in the real dividends paid by the largest paying firms who were top of the dividend distribution. This combination reflected high and increased earnings concentration (Deangelo et al., 2004) and was not necessarily a form of signalling that dividends were in fact disappearing. Due to the long period over which the sample was taken, many of the smaller firms that used to pay small dividends were no longer in existence. The low number of dividends that were paid by these firms; resulted in only a minor impact on the aggregate supply (Deangelo et al., 2004) and should not be misconstrued as a signal to the market that

dividends were disappearing. Deangelo et al. (2004) also concluded that signalling was not a first order determinant of corporate dividend policy. Their research further indicated that the market should be weary of looking for signals in all trends. The market should be aware that other factors also contributed to a decreased number of firms paying dividends, such as the period over which the samples were taken, as the world continuously evolved, companies continued to shrink, grow, merger or acquire other companies, and this resulted in a decrease in the net amount of companies in existence.

Although this section has shown how signalling can contribute to market efficiency, no evidence was shown of how analysts utilise the signals to improve on the accuracy of their forecasts; however this will follow in subsequent sections. Firms can also influence the perceptions of analysts and the market with their payout policy and changes here forms part of SENS announcements. The payout policy of a firm also forms part of the signalling approach that assists with improving market efficiency.

2.2 Payout Policy

A firm may decide to pay out excess cash that is not retained earnings as dividends or share repurchases, this all forms part of payout policy. For some firms the reason to pay dividends is to ensure that they are in keeping with the payout policy as can be seen in this section as the argument develops.

Payout policy was not the primary concern of management in the 21st century when they considered paying dividends and was seen as a second-order concern (Brav, Graham, Harvey & Michaely, 2005). Maintaining the dividend per share in line with previous payouts and avoiding dividend cuts was more important than focusing on the payout ratio (Brav et al., 2005; Daniel, Denis & Naveen, 2008). Although payout ratios conveyed some information, this was not used as a tool to distinguish a firm from its competitors (Brav et al., 2005). In order to avoid cutting dividends, managers would forego positive NPV investments and were willing to raise external capital (Brav et al., 2005). This was in contrast to Lintner's findings that indicated that the first place to start for payout decisions was the payout ratio, which were dividends as a proportion of earnings (Lintner, 1956). The payout ratio gives an indication of how well the dividends were supported by earnings and is calculated using equation 1 (Investopedia, 2012).

Yearly Dividends per Share
Earnings per share

Equation 1

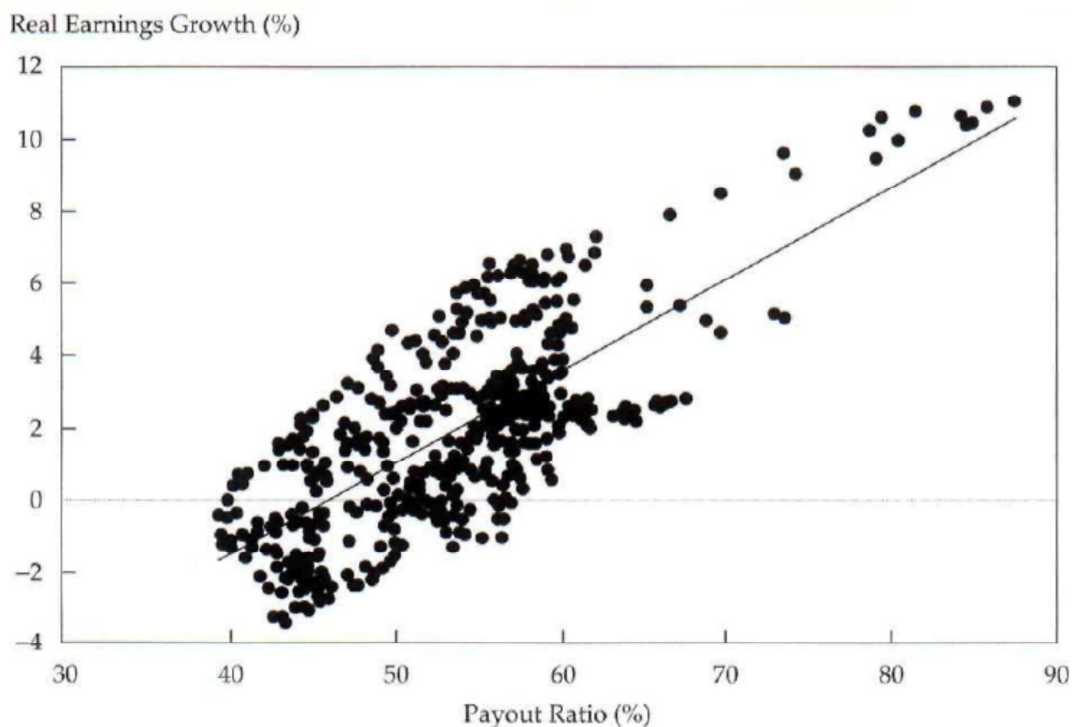
When cash flow uncertainty was high, dividends paid were low; therefore, dividend payouts are inversely related to the degree of cash flow uncertainty (Chay & Suh, 2009). Cash flow uncertainty was therefore a cross-sectional determinant of the payout policy used to determine a firm's dividend payout ratio (Chay & Suh, 2009). Leary and Michealy (2011) researched another determinant of payout policy was the dividend smoothing. Dividend smoothing refers to stable dividends and a stable dividend policy and this occurred where there was a strong influence of the previous dividend payments, and the current dividend was insensitive to the current earnings (Aivazian, Booth & Cleary, 2006). Firms have different policies with regard to smoothing in that firms that smooth less are younger, smaller firms with a low dividend yield. Firms with a high earnings and return volatility as well as firms with a lower number of analysts following that have more dispersed and less accurate forecasts smooth less (Leary & Michealy, 2011). Firms, which were more subject to agency conflicts, smooth more, as did firms that were sources of income with low growth prospects or weaker governance and firms that required institutional investors. Dividend smoothing is correlated to corporate policy where these firms paid the highest dividends, and there was a positive correlation between dividend smoothing and leverage (Leary & Michealy, 2011).

If a firm decreased dividends this resulted in a decrease in value of the firm, therefore managers should avoid high dividend payouts unless they are able to maintain the high dividend payouts (Chay & Suh, 2009). If managers were unable to maintain the payouts they would resort to measures such as dividend smoothing, "firms that smooth the most tend to be significantly larger and older and have greater asset tangibility and lower market-to-book ratios than firms that smooth the least. Similarly, firms that smooth more tend to have lower volatility of both cash flows and stock return" (Leary & Michealy, 2011, p. 3218). Firms that smooth dividends also turned over shares less frequently than those that did not smooth dividends. This suggests that these firms attract investors with a longer investment horizon. Although the amount of information generated and released by market analysts has increased over time with technology, dividend smoothing has increased and is more pronounced today than it was earlier in the twentieth century (Leary & Michealy, 2011). This could be due to evidence from Fuller and Goldstein (2011), who found that shareholders prefer dividend-paying stocks

over non-dividend paying stocks over time, depending on if the market is declining or not. This could mean that firms must resort to dividend smoothing or avoidance of unmaintainable dividends in order to ensure that they are continuously able to pay dividends to prevent their stocks or share price from declining.

Payout policies could alternatively be perceived to provide negative information, where an increase in dividends could be interpreted as a lack of investment opportunities for the firm (Firer, Gilbert & Maytham, 2008). South African managers do target payout ratios and are conservative when setting dividends to avoid having to cut them in the future (Firer et al., 2008). It was also the view of South African managers that dividend decisions were subordinate to investment decisions and that dividend and share repurchases were complementary not substitutes (Firer et al., 2008). In contrast to Firer et al.'s (2008) argument that the possibility of dividends paid could be perceived as a lack of investment or growth opportunities, Arnott and Asness (2003) investigated the relationship between payout ratio and growth and found that the relationship of current payout to future earnings growth was strongly positive, as per the scatter plot in figure 2:

Figure 2: The relationship between payout ratio and real earnings growth with data from 1946 to 2001 (Arnott & Asness, 2003, p. 73)



According to Arnott and Asness (2003) for very low payout ratios, the equity market had very low real earnings growth over the next ten years, with growth falling by an average of 0.4% a year. However if the starting point of the payout ratio is high then the opposite occurs and strong average real growth of 4.2% occurred as per the table 1 below with the highest growth of 11%.

Table 1: Payout Ratio and Growth (Arnott & Asness, 2003, p. 74)

| Starting Payout Quartile | Average | Worst | Best |
|--------------------------|---------|-------|-------|
| 1 (low) | -0.4% | -3.4% | +3.2% |
| 2 | +1.3 | -2.4 | +5.7 |
| 3 | +2.7 | -1.1 | +6.6 |
| 4 (high) | +4.2 | +0.6 | +11.0 |

This result from table 1 was in agreement with signalling theory and could be explained by the act of management having paid out a large share of earnings, as they possess private information and are optimistic that there is no need for a dividend cut. The opposite could also be true that management paid out a small amount in terms of dividends when they were pessimistic, just to enable markets to remain confident that management maintained dividend payouts and did not resort to a dividend cut. This would result in an efficient market.

Firms whose ownership structures were characterised by short-term oriented investors have payout structures that constituted of a high amount of share repurchases (Gaspar, Massa, Matos, Patgiri & Rehman, 2012). Ownership by short-term shareholders decreased the probability of dividend payouts, whereas long-term investors were associated with positive payouts more strongly associated with dividends. Could this difference be associated with the culture of these firms, as was found by Fidrmuc and Jacobs (2010)? Fidrmuc and Jacob (2010) used Hofstede's cultural dimensions and a data set of 5797 firms in 41 countries and found that differences in dividend payout strategies had strong cultural origin, thereby providing evidence that culture has a substantial effect on the dividend policy of firms all around the world. Firms in countries that that were found to have a high score on individualism and a low score on power distance and uncertainty avoidance show higher dividend

payout ratios (Fidrmuc & Jacobs, 2010). Other complementary determinant of payout policies across countries is legal institutions and culture as a social institution (Fidrmuc & Jacob, 2010). “Better legal protection in cultures that are naturally afflicted with more severe agency conflicts is associated with even higher dividend payouts” (Fidrmuc & Jacob, 2010, p. 323). In conclusion, Fidrmuc and Jacob (2010) found that culture does matter for a large range of economic and capital market phenomena.

In the calculation of payout ratios, both dividends and earnings are utilised and it is therefore necessary to understand the link between the two. The next section focuses on this link between dividends and earnings and their influence on each other.

2.2.1 Dividends and Earnings

This section adds onto the arguments built in the previous section by specifically focusing on earnings and how this affects dividends.

A firm with high earnings reductions or with negative earnings was more likely to cut dividends (Charitou, Neophytos & Theodoulou, 2010). A firm with a reduction in earnings was more likely to have a management team that was reluctant to cut dividends if the past earnings/dividend pattern was an on-going commitment to pay dividends (Charitou et al., 2010), agreed with the arguments on dividend smoothing (Leary & Michealy, 2011). However, dividend reductions given lower earnings realisations were more likely to occur, irrespective of past earnings and dividend decisions. By comparison, more established businesses were more likely to reduce or omit dividends if the return on assets is negative compared to a less-established business (Charitou et al., 2010). In contrast to Charitou et al. (2010), Daniel, Denis and Naveen (2008) found that firms view expected dividend levels as an important earnings threshold and that they manage earnings to meet expected dividend levels. This was done despite such earnings management behaviour having no cash flow consequences and, therefore, not affecting the firm’s capacity to pay dividends. Dividends are of first order importance to firms (Daniel, Denis & Naveen, 2008).

Concerning risk of a firm, the default risk of 7805 US firms, from 1986 to 2008, increased dividends, or commenced paying dividends (Charitou, et al., 2011). There

was significant default risk in the year prior to the commencement or the increase of a dividend (Charitou et al., 2011). In a test to check if default risk around dividends increases or if initiations are priced in the equities return, Charitou et al. (2011) found a statistically significant decrease in the default risk factor. This indicates that the decrease in default risk is associated with the commencement or increase of a dividend and is priced by the market measure of systematic risk.

In summary, the arguments on payout ratio reveal that dividends payouts by firms are important to the company's shareholders and the market, which base their perception on the consistency of dividends, and an inconsistency would result in a semi-efficient market. The question then arises, do firms pay dividends just to maintain market perception or are they genuinely paid due to excess cash, and in other words why do firms actually pay dividends?

2.3 Why do firms pay dividends?

In order to investigate the effect of SENS announcements on analysts' consensus forecasts and the share price, it is important to know that according to JSE rules, in order for a firm to communicate with their shareholders about changes including changes to dividend policy and dividends declarations, they must make a SENS announcement, but why do firms pay dividends? This information will be conveyed in this section.

In 1956, Lintner investigated what contributed to the amount of dividends paid by companies and found that the amount of dividend that a company paid was dependent on the existing dividend rate and that the amount was only decided upon when management had decided that a change in dividend would portray the company in a positive light. Lintner (1956) developed a model that explains most dividend decisions which is represented in equation 2 and 3 below:

$$\Delta D_{it} = a_i + c_i (D_{it}^* - D_{i(t-1)}) + u_{it} \quad \text{Equation 2}$$

and

$$D_{it}^* = r_i P_{it} \quad \text{Equation 3}$$

Where:

| | | |
|---------------------|---|---|
| r | = | target payout ratio |
| P_t | = | the current year's profits after taxes |
| ΔD_t | = | is the change in dividend payments |
| D_t and D_{t-1} | = | are the amounts of dividends paid in years t |
| i | = | identifies the individual company |
| D_{it}^* | = | the dividends the individual company would have paid in the current year |
| c_i | = | indicates the fraction of the difference between D_{it}^* and $D_{i(t-1)}$ |
| a | = | +ve to reflect the greater reluctance to reduce than to raise dividends |
| u | = | the discrepancy between the observed change ΔD_t and the expected change in dividend payments |

The essence of Lintner's model, as described by Wolmarans (2003), was that if a firm persisted with its target payout ratio, then the dividend payment in the ensuing year (Div_1) would equal a constant proportion of earnings per share (EPS_1). Dividend decisions that are reasonably consistent were developed due to the conservative nature of management, as they were of the belief that shareholders preferred reasonably consistent dividend rates (Lintner, 1956). The earnings of a firm were considered an important determinant in the change of the dividend rate (Lintner, 1956; Charitou, Lambertides & Theodoulou, 2010). The model thereby ensured that a firm that adhered to its target payout ratio would inevitably change its dividend only when its earnings changed (Wolmarans, 2003).

The factors that influenced why firms paid dividends are firm size, growth opportunities and profitability (Denis & Osobov, 2008). In addition to these factors, Brav, Graham, Harvey, and Michaely (2005) also found that managers do not set dividends policies based on the attraction of large shareholders or based on the consideration of the tax implications on current large shareholders. Firms focused on operating decisions and only considered increasing dividends once investment and liquidity needs were met.

Dividends are a measure of corporate governance and are associated in many ways (Bank, Cheffins & Goergen, 2009). When dividends were issued, free cash flow was reduced and cash was distributed to the shareholders (Bank et al., 2009). This activated beneficial capital markets where external sources such as a bank loan were relied upon to obtain funds if needed (Bank et al., 2009). If dividend cuts are experienced, alternative corporate governance mechanisms were mobilized to address the financial distress (Bank et al., 2009). The signalling function of dividends from dividend cuts, for example, could be interpreted by markets as a signal of bad news about a particular company (Bank et al., 2009). Fuller and Goldstein (2011) found by using S&P 500 returns from January 1970 to December 2007 that dividend-paying firms performed better than non-dividend paying firms do when the market declined, which was in agreement with Bank, Cheffins and Goergen (2009). This therefore also implied that dividends matter in declining markets. Dividend paying firms outperformed non-dividend paying firms by one to two percent each month with the difference being statistically significant and economically significant (Fuller & Goldstein, 2011). This was not due to the inclusion of dividend initiations in the dividend paying set or the omission of dividends in the non-dividend, paying set but was rather evident of shareholders' preference for dividend-paying stocks over non-dividend paying stocks over time, depending if the market is declining or not (Fuller & Goldstein, 2011).

In contrast to Lintner's (1956) as well as Fuller and Goldstein's (2011) view, Denis and Osobov, 2008 found evidence in support of the life cycle theory. According to Denis and Osobov, the life cycle theory states, "firms optimally alter dividends through time in response to the evolution of the opportunity set" (Denis & Osobov, 2008, p. 62). The predictions of the life cycle theory is that in the start-up stage of the firm, dividends that are paid are few due to the high number of investment opportunities that exceed the amount of capital inflow. In the more mature stages of the firm, internal funds exceeded the amount of investment available and therefore a higher number of dividends were paid out to prevent the wasting of free cash flow (Denis & Osobov, 2008).

In accordance with evidence that was obtained internationally, the likelihood of paying dividends was strongly associated with the ratio of retained earnings to total equity (Denis & Osobov, 2008). Dividends were also concentrated among the largest, most profitable firms (Denis & Osobov, 2008). DeAngelo, DeAngelo, and Stulz (2006) also tested the life cycle theory and found that the probability of a firm paying a dividend

increased depending on the amount of equity a firm has in its capital structure. The retained earnings to total common equity (RE/TE) ratio, as well as the ratio of retained earnings to total common assets (RE/TA), was also found by DeAngelo et al. (2006) to have a strong impact on the decision to pay dividends as compared to payout ratio, as argued in the previous section. These ratios were found to have a stronger impact than profitability (payout ratio) and growth (life cycle theory) on the decision to pay dividends, which is in agreement with Denis and Osobov (2008).

The reason firms paid dividends in conjunction with payout policy is as mentioned in the previous section to keep market perception positive and when excess cash flow is available (Bank et al., 2009). The theories of the life cycle model, Lintner's equation and the amount of retained earnings to total equity also adds value to the reason for paying dividends. Due to the focus on market efficiency and market perception of the company, the question arises on the effect of dividends and the policy thereof on share price, which is an indication of market perception.

2.3.1 Dividend Policy and the Share Price

Is there a relationship between dividend policy and share price as indicated by Myron Gordon or is dividend policy irrelevant as some authors may suggest? This is the debate that this section addresses which will assist in establishing if SENS announcements on dividend related matters, results in a change in the share price of shares on the JSE.

Brennan (1971) analysed the Gordon valuation model, from which Myron Gordon's dividend policy developed. The dividend policy states that "the price of a share is equal to the discounted value of expected future dividends" (Brennan, 1971, p. 1116) and compared it to information from an article by Miller and Modigliani (1961). This was contrary to Miller and Modigliani (1961), who argued that the dividend payout policy that a firm followed given its investment strategy did not affect the share price of the firm or the total return to shareholders therefore rendering dividend policy irrelevant given the firm's investment policy. Miller and Modigliani (1961), who provided the foundational framework for modern corporate finance theory, showed this by analysing the value of a firm as a whole, which was calculated using the following formula:

$$V(t) = \frac{1}{1+\rho(t)} [D(t) + n(t)p(t + 1)] \quad \text{Equation 4}$$

$$= \frac{1}{1+\rho(t)} [D(t) + V(t + 1) - m(t + 1)p(t + 1)] \quad \text{Equation 5}$$

Where:

- $n(t)$ = the number of shares of record at the start of the period t
- $m(t + 1)$ = the number of shares sold during t at $p(t + 1)$
- $p(t + 1)$ = the ex-dividend closing price
- $V(t)$ = $n(t) p(t)$ = the total value of the firm
- $D(t)$ = $n(t)d(t)$ = the total dividends paid during t to the holders of record at the start of t

Brenan (1971) found in favour of Miller and Modigliani (1961), with the result being that Gordon's proof of the relevance of dividend policy to a firm's investment policy rested on a confounding of investment and dividend policy effects (Brennan, 1971). Contrary to what Brennan (1971) and Miller and Modigliani (1961) found, DeAngelo and DeAngelo (2006) more recently argued that payout policy was not irrelevant and that investment policy was not the sole determinant of value in a frictionless market. DeAngelo and DeAngelo (2006) found that payout policies affect stockholder wealth, and this was not only true because of market imperfections such as personal taxes or project choice.

Contrary to what DeAngelo and DeAngelo found, the debate continued with Handley (2008) arguing in favour of Miller and Modigliani saying that DeAngelo and DeAngelo's conclusion did not render the Miller and Modigliani's dividend irrelevance theorem irrelevant due to the fundamental difference in their treatment of agency costs. Handley (2008), comments that if one "focuses on dividends and treat a stock repurchase, undertaken to hold the firm's investment policy constant, as a negative stock issue, then low dividend payouts are possible" (Handley, 2008, p. 531). In response to Handley, DeAngelo and DeAngelo (2008) argued that there were flaws in his analysis where he noted that firms could reduce payouts to less than 100% of free cash flow by substituting share repurchases for dividends. They argued that their findings in DeAngelo and DeAngelo (2006) was still valid because Miller and Modigliani assumed

100% free cash flow payout hence the flaw in Handly's argument in favour of Miller and Modigliani.

Maitra and Dey (2012) explained as per Walter (1963) that dividend policy affected the value of a firm. For a 'growth firm,' if the rate of return (r) for a firm was greater than its cost of capital (k) the share value increased if the firm's policy was to retain earnings in view of making an internal investment. For normal firms where rate of return was equal to the cost of capital, the dividend policy had no influence on the market value of the share. For 'declining firms' where the firm's rate of return was less than the cost of capital, dividend policy did influence the market value of the firm's shares. Significant abnormal returns, which were positive and negative, were experienced once a dividend announcement takes place, and the authors found this more significant with the CAPM model than the market model. However, the CAPM model and market model were not used in this research and section 4.2.1 explains why.

In South Africa Firer, Gilbert and Maytham (2008) explored Miller and Modigliani's 1961 theory and found that of their 80 responses of directors of JSE listed companies, 47% of South African managers agreed that by contrast dividend policy was not strongly affected by the company's share price. This is not according to Charitou et al. (2010), however, found that past earnings per share and dividend payment patterns were considered when firms change their dividend policy. Firms that face earnings difficulties could explain their future earnings with the information in the dividend policies (Charitou et al., 2010). By analysing the abnormal returns before and after a SENS dividend announcement, this research will also be able to add value to the argument that dividend policy does not affect the share price.

Barclay, Holderness, and Sheehan (2009) investigated the relationship between corporate stock ownership and dividend policy because during the period of their investigation in the United States, individuals were fully taxed on dividends received, whereas corporate shareholders are allowed to deduct 70% of their dividends from their taxable income. Barclay et al. (2008) initially postulated that dividends should increase once a firm buys a large block of stock from an individual due to the tax treatment of dividends for corporates, however they found that dividend policy remained unchanged, and therefore found that taxes in the context of corporate shareholders did not have an influence on dividend policy. Further to this, Barclay et al.

(2008) found that corporate block holders were more than likely to be found at firms that do not pay dividends than at firms that do, and two thirds of their sample that were firms that pay dividends had no corporate block holders.

Labour costs were negatively correlated with dividends as higher labour costs in terms of increased wages could erode profit margins over time thereby limiting the amount of dividends that can be paid out (Cheffins & Goergen, 2009). Although there was no link between the political party in power and the dividend policies, there was a correlation between dividend policy and unit labour costs (Cheffins & Goergen, 2009). UK public companies set their dividend policies by adjusting them over time towards a target based on corporate earnings and the political party in office does not affect this pattern (Cheffins & Goergen, 2009).

The arguments on dividends, dividend policy, what influences dividend policy it and if share price was influenced by dividend policy, all have merit, so this research should add value in determining the influence of SENS announcements on share price. So how do analysts view dividend policy changes and the declaration of dividends by a company? Do dividend related SENS announcements result in a more accurate prediction of dividends per share by analysts? What influences analysts' consensus forecasts and what implications do these forecasts have for investors in the market. These questions are addressed in the following section of the literature review.

2.4 Analysts' Consensus Forecasts

For the EMH to be proven true, analysts' consensus dividends forecasts must not change in accordance with the event of dividend announcements. A change in analysts' consensus forecasts would support the semi-strong form of EMH, as this would mean that new information has been conveyed by the SENS announcement and is being incorporated into the analysts' consensus forecasts. The reasons for choosing analysts' consensus forecasts are highlighted in this section.

Consensus forecasts are the results of the combination of the most and least informed analyst's forecasts (Herrmann & Thomas, 2005). In order to provide cost effective improvements in the accuracy of analysts' forecasts, consensus forecasts were

recommended by Conroy and Harris (1978). Analysts' consensus forecasts were used in comparison to individual analyst's forecasts as individual analyst's forecasts, were biased due to incentives that they received from trading volume, as they were not confined to unbiased forecasts (Beyer & Guttman, 2011). Conroy and Harris (1987) mentioned that consensus forecasts had the "portfolio effect" which consisted of a reduced measurement error of individual forecasts and even a reduced forecast error through the cancellation of individual errors. A model developed by Beyer and Guttman (2011) predicted that analysts' forecasts biases were on average optimistic, that the amount of analysts' bias increases based on the volume of trading received and the squared forecast error increases.

In order to understand analysts' consensus dividends forecasts, it is important to understand what influences analysts' forecasts and if analysts are influenced by SENS announcements.

2.5 What influences and determines Analysts' forecasts

There are a number of influential factors that assist analysts to predict accurate dividend forecasts; this is in addition to dividend related event announcements. Analysts' expertise was one such influential factor. Expertise was developed by analysts in the analysis of information from sources described in figure 1, information on company's earnings results, industry information (SENS announcements, macro-economic information, and interaction and communication with management of firms they forecast for (Ramnath et al., 2008). Analysts then utilised the information, as per figure 1, to provide earnings, price and dividend forecasts (Ramnath et al., 2008).

Experience, which is defined as the number of years a particular analyst has followed a firm was found to result in more accurate forecasts (Ertimur, Sunder & Sunder, 2007; Herrmann & Thomas, 2005; Clement, 1999). Past firm accuracy, which related to the previous accuracy levels of analysts' past forecasts for a firm, brokerage firm size, place of employment of the analyst and analysts' forecast frequency (the number of firm forecasts made by the analysts'), all positively influenced forecast accuracy (Myring & Wrege, 2009; Ramnath et al., 2008; Ertimur et al., 2007; Herrmann & Thomas, 2005; Clement, 1999). The information sources, used and the management consultations informs us that analysts follow information sources but do they follow

SENS dividend announcements and does this also influence the accuracy of analysts' forecasts and analysts' consensus dividend forecasts?

Negative forecast accuracy was associated with the number of firms or industries followed (Herrmann & Thomas, 2005; Clement, 1999). There was also a decline of analysts' forecast accuracy before a merger and an increase in post-merger forecast errors (How, Phung & Verhoeven, 2005). Duru and Reeb (2002) found there was a decreased accuracy in analysts' forecasts for a diversification of international share portfolios and attributed this to the complex nature of the task of forecasting over international markets. However the importance of forecast accuracy has far reaching implications for analysts' as analysts' with accurate forecasts have better career outcomes and are employable at top brokerage firms when compared to analyst's whose forecast accuracy was worse than those of their peers who experienced a high job turnover rate (Ertimur et al. 2007). Therefore, this research will add value by helping to determine if the accuracy of analysts' consensus forecasts can be improved by dividends announcements.

2.5.1 Analyst's Bold Forecasts

Trading commissions for analysts' were higher for bold forecasts like buy and strong buy recommendations, as the more divergent an analysts' forecasts from the consensus, the greater the brokerage firms' share of trading (Irvine, 2004; Kim & Jagadeesh, 2009). More recently, however, Kadous, Mercer and Thayer (2009) argued that accuracy is still important to investors and advised risk adverse analysts to provide close consensus forecasts unless they were fully confident of their forecast and could be assured that their bold forecast was accurate otherwise the authors mentioned that this would result in loss of credibility. Herding is defined as the "tendency of many different agents, who make their own individual decisions, to take similar actions at roughly the same time" (Kim & Jegadeesh, 2009, p. 901). Herding was more prone among analysts with negative information like a downgrade, as there was some reluctance to be bold with a negative forecast (Kim & Jegadeesh, 2009).

In the quest to establish if market efficiency applies to this research, it is imperative to establish the relationship between analysts' forecasts and their implications for the investors into the market. The next section offers insights to this question.

2.6 Analysts Forecasts and their Implications for Investors

Analysts provide consensus forecasts to assist investors and prospective investors to be more informed when making investment decisions. The public can also access databases like INET-Bridge, which provided analysts with forecasts from different brokerage houses or analysts' consensus dividend forecasts. Investors could also earn a high return by following changes in analyst recommendations instead of only focusing on and following analysts' consensus forecast recommendations (Prayag & van Rensburg, 2006). Such high returns can be obtained by acting on changes in recommendations, resulting in downgrades of stocks by following analysts' consensus buy, hold and sell recommendations (Prayag & van Rensburg, 2006).

2.6.1 Origin of Forecast

Approximately 12% of recommendations were likely to come from analysts who had more accurate forecasts, which enabled them to influence investment decisions (Loh & Stulz, 2010). Analysts who found that a particular model for forecasting was ineffective in providing forecasts switch to another simple model which was reflected in the forecasts from the analyst going forward and resulted in volatility of the particular share forecasts and a larger difference between forecasts from the analyst (Loh & Stulz, 2010). This results in companies' stock turnovers increasing and impacts on industry returns, with the contribution of the analysts being highest during times of uncertainty (Loh & Stulz, 2010). Some analysts have the ability to make a recommendation that results in investors changing their minds on the assessment of a particular firm, however this was found to be isolated, with the majority of analysts' recommendations being changes so small that they are not even noticed by investors (Loh & Stulz, 2010). However, some authors still argue that there is a positive trend between analyst forecast accuracy and profitability (Ertimur et al, 2007; Kadous, Mercer & Thayer, 2009). It is with this premise in mind that the contribution that this research will make is important as if analysts change dividend consensus forecasts based on dividends announcements, this will result in greater profitability for investors who will be able to realise benefits by going through SENS announcements.

The forecast date of analysts' consensus forecasts can have an influence on an investor's response to the forecast, as described in the next section.

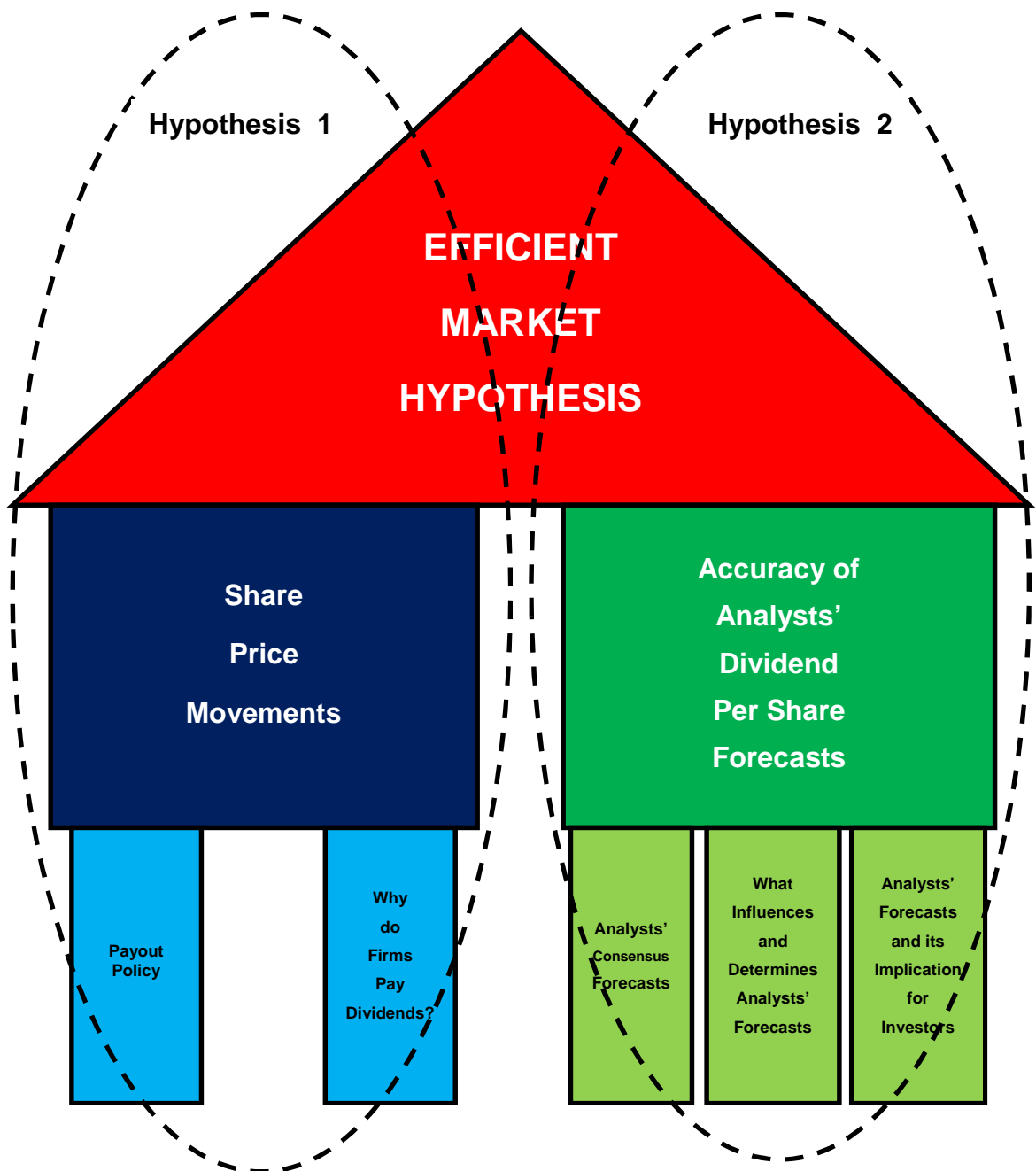
2.6.2 Timing of Analyst's Forecasts

Investors' response to analyst's forecasts are influenced by forecast timing and not only by forecast accuracy (Clement & Tse, 2003; Ramnath et al., 2008). Investors responded better to analyst's forecasts earlier to the period of earnings announcements, which were generally less accurate, than analysts' forecasts shortly before target earnings announcements but were found to be more informative for investor decision making (Ramnath et al., 2008). The timing of analysts' consensus dividends releases are very important, as announcements needed to be captured immediately in the forecasts and share prices so that EMH held true and maximum benefits could be realised. Herding of analyst's towards the consensus is found later in the announcement period (Ramnath et al., 2008). Longer forecast horizons tend to be associated with greater levels of uncertainty about earnings than shorter forecast horizons and the return or profit is stronger as compared to shorter forecast horizons (Clement & Tse, 2003). Investors had to trade-off accuracy and timeliness, and were concerned with the time elapsed since the forecast due to the return gained (Clement & Tse, 2003). This is in contrast to Lustgardten and Tang (2008), who argued that analysts' stock recommendations are affected by the latest, forecasts therefore they are associated with shorter forecast horizons.

The key themes from the literature that relate to the share price and the analysts' forecast accuracy are the efficient market hypothesis and the decision on the amount of dividends to pay. The main themes from the literature review and its links to the hypothesis is given in a model in figure 3 that was developed by the author for this research to better explain the flow of logic of the literature review. The literature for the share price movement due to dividend announcement information is given by two pillars, the payout policy and the why do firms pay dividends pillar which represents headings of the literature review. The accuracy of analysts' dividend per share forecasts are given by three pillars namely analysts' consensus forecasts, what influences and determines analysts' forecasts, analysts' forecasts, and its implications for investors. Theses pillars also represent the headings in the literature review. The overarching theme is that of the efficient market hypothesis, which draws all of the

literature, and both the hypothesis together. The findings in support of or contrary to EMH will influence the analysts, market, and investors' reactions to investment decisions with regard to the firm. The relationship as described by both the payout ratio and dividend policy between the earnings per share, cash flow, and the dividends declared will provide insight to this research with regard to the share price reaction to SENS dividend related announcements.

Figure 3: Model representing Literature Review with links to the Hypothesis



3 Research Hypotheses

3.1 Hypothesis 1

The null hypothesis states that dividends announcements do not result in a change in share price.

The alternative hypothesis states that dividends announcements result in a change in share price

$$H1_0 = \mu_{AR1} - \mu_{AR2} = 0$$

$$H1_a = \mu_{AR1} \neq \mu_{AR2}$$

Where:

μ_1 = Abnormal returns before dividends announcement

μ_2 = Abnormal returns after dividends announcement

3.1.1 Hypothesis 1a

The null hypothesis states that the information conveyed in a dividends announcement has a short-term impact only, and is 'washed out' in the longer term as evidenced by the CAARs of zero at 200 days after the dividend announcement.

The alternative hypothesis states that the information conveyed in a dividends announcement has a long-term impact and in the longer term is evidenced by the CAARs greater or less than zero at 200 days after the dividend announcement depending on whether the information is positive or negative.

$$H1a_0 = CAAR_{T+200} = 0$$

$$H1a_a = CAAR_{T+200} \neq 0$$

Where:

$CAAR_{T+200}$ = Cumulative Average Abnormal Returns 200 days after the Dividends Announcement

3.2 Hypothesis 2

The null hypothesis states that analysts' dividend per share consensus forecasts (dps) one year before a SENS announcement is more accurate than the analysts dps consensus forecast one month before the dividends announcement because there is no information contained in the buildup to the announcement.

The alternative hypothesis states that analysts' dividend per share consensus forecasts (dps) one year before the SENS announcement is less accurate than the analysts dps forecast one month before the dividends announcement because there is information contained in the buildup to the announcement.

$$H_{20} = \mu_1 - \mu_2 = 0$$

$$H_{2a} = \mu_1 \neq \mu_2$$

Where:

μ_1 = Analysts' consensus dividends forecasts 12 months prior to dividend announcements

μ_2 = Analysts' consensus dividends forecasts one month prior to dividend announcements

3.2.1 Hypothesis 2a

Analysts' dividend per share forecasts (dps) six months before a SENS announcement is more accurate than the analysts dps forecast one month before the dividends announcement, because there is no information contained in in the buildup to the dividend announcement.

The alternative hypothesis states that analysts' dividend per share consensus forecasts (dps) six months before the SENS announcement is less accurate than the analysts dps forecast one month before the dividends announcement because there is information contained in the buildup to the announcement.

$$H2a_0 = \mu_1 - \mu_2 = 0$$

$$H2a_a = \mu_1 \neq \mu_2$$

Where:

μ_1 = Analyst's consensus dividends forecasts six months prior to dividend announcements

μ_2 = Analyst's consensus dividends forecasts one month prior to dividend announcements

4 Research Methodology and Design

4.1 Research Methodology

In order to prove EMH that SENS announcements do result in a change in analysts' consensus forecasts and the share price, secondary data (data that was not originally collected for the purpose of this research) was used (Saunders & Lewis, 2012). The reason for the use of secondary data was that secondary data was readily available and it was also an unobtrusive method with historical data on analysts' consensus dividends forecasts, actual dividend forecast, headline earnings per share and Stock Exchange News Service (SENS) dividend announcements data being used for the study in order to satisfy the research hypothesis (Saunders & Lewis, 2012).

The secondary data that was used was in the form of quantitative data which is data consisting of numbers was obtained from I-NET Bridge and was used as part of this study (Saunders & Lewis, 2012). The quantitative method that was used for this analysis was predominately an events study in which abnormal returns before the SENS announcement was compared to abnormal returns after the SENS announcement to establish if the share price was affected by the SENS announcements. The other quantitative method that was used was a time series analysis of analysts' consensus dividends per share Mean Average Percentage Error (MAPE) for six and 12 months before the SENS announcement to assess if accuracy improves closer to the time of the announcement.

4.2 Research Design

The research design is described using the research onion by (Saunders & Lewis, 2012, p.103). The research philosophy used was Positivism as observable and measurable variables (the analysts' consensus dividends forecasts and actual dividends and share price) were used and the reaction of these variables was described (Saunders & Lewis, 2012). The approach was deductive as it involved testing the four different hypotheses using the research strategy of time series regression analysis and event studies as described in the methodology section for the respective hypothesis described (Saunders & Lewis, 2012). The strategy used was

experimental and causal combined with archival research using records from I-NET Bridge's database to find links between the variables analysts' consensus dividends forecasts and actual dividends and earnings announcements and a mono method was chosen (Saunders & Lewis, 2012). The research design used the data collection and data analysis technique. The time horizons were cross sectional as this study was conducted over a particular time based on the availability of data currently identified as from 1997 until 2012, and was a snapshot (Saunders & Lewis, 2012).

4.2.1 Events Study Research Design

The events study methodology was used to prove or disprove hypothesis 1 and hypothesis 1a. The null hypothesis 1 is that dividends announcements do not result in a change in the share price as no information is conveyed in a dividends announcement. Hypothesis 1a states that dividends announcements only have a short-term impact as evidenced by the CAARs of zero at 200 days after the dividend announcement change. The steps in the events study methodology were as follows:

Step one involved the decision on the event bearing in mind the hypothesis, which is usually a single event like stock splits, and the date or calendar time at which the event occurs is set at time zero and all time periods thereafter are described relative to this zero time (Bowman, 1983). The event here was the SENS dividends announcements. Confounding events are those events that have a big impact on the results of the event study tests that are conducted during the consideration of the event to study, with firm specific confounding events being most problematic (Bowman, 1983). The SENS dividends announcements were checked for confounding events and outliers by drawing a graph of the cumulative abnormal returns (CAR) and any value that was high or had a constant value due to the lack of data in the style database was removed from the data set so as not to skew the data.

Step two was to model the stock price reaction, as one would expect the direction of the stock price to be different for the various firms due to the event. Bowman (1983, p. 565) developed a model to partition the firms between both the positive and negative reactions to these SENS dividend announcements.

$$E(e_{it}|\eta, y_{it}) \neq E(e_{it}) = 0$$

Equation 6

With

- e_{it} = measure of excess returns for firm i in time period t
- η = expectations model
- y_{it} = information from η for firm i and time t

In order to satisfy the question that SENS dividend announcements do not have any effect on the share price an events study was conducted and abnormal returns calculated. These abnormal returns need to be benchmarked against an existing model from theory, which was the reason for the debate on the most appropriate model to use.

Step three was the estimation of excess returns which can be estimated using the CAPM or Market Model where “the systematic risk parameter (beta) is equal to the slope coefficient in a time series regression of individual firm returns on the return on a market index” (Bowman, 1983, p. 568). However the market model and the CAPM model use a single beta which does not account for other factors like market capitalisation or book to market equity or growth (Fama & French 1992). On the JSE the resource shares have a much higher market capitalisation than the non-resource shares and therefore the difference between resource and non-resource shares was taken into account (Prayag & van Rensburg 2006).

The Capital Asset Pricing Model (CAPM) or the Market Model was used as a benchmark for abnormal returns in many event studies. Kumar, Sorescu, Boehme and Danielsen (2008) derived and tested empirical predictions from the model on the effects of firm-specific information on the cross section of return, as well as the model’s prediction that events and disclosures that influence the stock’s systematic estimation risk had announcement effects by affecting the firm’s cost of capital. Kumar et al (2008) found that the empirical results strongly supported the predictions of the CAPM model. In contrast, authors have found the CAPM model inadequate for use as a benchmark for abnormal returns (Fama & French, 1996; Ward & Muller, 2010).

Ward and Muller (2010) recommended the use of a 12 parameter ‘style’ model to estimate benchmark abnormal returns, while Strugnell, Gilbert and Kruger (2011) also made mention of the need for more sophisticated multifactor models to represent the return on South African equities. The ‘style’ model uses 12 control portfolios of shares with cross sectional factors adapted from Fama and French’s (1996) three factor model shown in the equation 7 (Mordant & Muller, 2003, p. 18) below:

$$R_{it} - R_{ft} = \alpha_i + \beta_{i,1}(R_{mt} - R_{ft}) + \beta_{i,2}SMB_t + \beta_{i,3}HML_t + \varepsilon_{it} \quad \text{Equation 7}$$

Where:

- R_{it} = actual return of stock_i in period_t
- R_{ft} = risk-free rate in period_t
- α_i = the alpha intercept term
- $\beta_{i,1}$ = the market beta
- R_{mt} = the benchmark or market index return in period
- SMB_t = small minus big: the return on the market portfolio of small stocks (measured by market capitalisation) minus the return on the portfolio of big shares
- HML_t = high minus low: the return on the market portfolio of value shares (high book to market ratio) minus the return on the portfolio of growth shares (low book to market ratio)
- $\beta_{i,2}$ = coefficient of tilt or factor sensitivity towards small companies and away from big companies
- $\beta_{i,3}$ = coefficient of tilt towards value companies and away from growth companies
- ε_{it} = the error term

The three factor model formula given in equation 7 provides a good explanation of the expected returns of shares across the market. The three factor model “states that the expected return of a stock (in excess of the risk-free rate) is explained by the sensitivity of its return to three factors: the market return (in excess of the risk-free rate again), the

underlying company’s market capitalisation (size) and its book to market ratio (value)” (Mordant & Muller, 2003, p. 18). The 12 parameter style model was used in this research study to obtain abnormal returns. In order to assess if dividends announcements on SENS resulted in a change in analysts’ consensus dividends forecast or the share price, which could have positive or negative influences for investors based on the accuracy of the analysts’ consensus forecast, the methodology followed by Ward and Muller (2010), a 12 parameter ‘style’ model, was used to estimate beta. Twelve control portfolios were created representing “the cross-sectional factors of size, growth/value and resources/non-resources were created” (Ward & Muller, 2010, p.30).

The JSE listed shares were then put into these portfolios based on their initial characteristics, with regular rebalancing occurring that was based on changes in the share characteristics like delisting. The control portfolios are given in table 2 below.

Table 2: Control Portfolios (Ward & Muller, 2010, p. 30)

| Control Portfolio | Resources or non-resources company | Value or growth company | Company size |
|-------------------|------------------------------------|-------------------------|--------------|
| SGN | Non-resources | Growth | Small |
| SGR | Resources | Growth | Small |
| SVN | Non-resources | Value | Small |
| SVR | Resources | Value | Small |
| MGN | Non-resources | Growth | Medium |
| MGR | Resources | Growth | Medium |
| MVN | Non-resources | Value | Medium |
| MVR | Resources | Value | Medium |
| LGN | Non-resources | Growth | Large |
| LGR | Resources | Growth | Large |
| LVN | Non-resources | Value | Large |
| LVR | Resources | Value | Large |

The returns were calculated for the 12 control portfolios using Equation 8 below (Ward & Muller, 2010).

$$R_{it} = \log [P_{it}/P_{it-1}] \quad \text{Equation 8}$$

Where:

- R_{it} = the equal weighted share return for portfolio i for day t;
 P_{it} = the equal weighted share return for portfolio i at the end of the day t

Continuing with the methodology as per Ward and Muller (2010), the beta coefficients for the expected return calculation were then calculated for each share in the sample by regressing each share daily using the log-function share price return over the preceding 48 day period against the daily returns of each of the 12 control portfolios for the matching period (Equation 9). The alpha coefficient for each share was obtained through regression equation 9.

The expected return for the security i, was calculated using the following equation (Ward and Muller, 2010):

$$E(R_{i,t}) = \alpha_i + \beta_{i,1} SGN_t + \beta_{i,2} SGR_t + \beta_{i,3} SVN_t + \beta_{i,4} SVR_t + \beta_{i,5} MGN_t + \beta_{i,6} MGR_t + \beta_{i,7} MVN_t + \beta_{i,8} MVR_t + \beta_{i,9} LGN_t + \beta_{i,10} LGN_t + \beta_{i,11} LVN_t + \beta_{i,12} LVR_t \dots \quad \text{Equation 9}$$

Where

- $E(R_{m,t})$ = the expected return on the security for day t,
 β_i = the beta coefficient of each control portfolio return,
 α_i = the regression intercept of the security on day t,
 $SGN_t \dots SGR_t$ = the log-function share price returns on each of the 12 portfolios as per table 1 on day t.

An abnormal return was then calculated which was the difference between the actual returns and the predicted returns and was calculated using equation 10 below (Bhana, 1998):

$$AR_{i,t} = R_{i,t} - E(R_{i,t}) \quad \text{Equation 10}$$

Where

- t = Day measured relative to the event date
- $AR_{i,t}$ = Abnormal return for security i for day t
- $R_{i,t}$ = The observed return for security i during day t

Step four was the organization and grouping of excess returns which was done using an aggregation method, see equation 11, where the cumulative average residual (CAR) was calculated (Bowman, 1983).

$$CAR_t = \sum_{t=1}^T 1/N \sum_{i=1}^N e_{i,t} \quad \text{Equation 11}$$

Where

- $e_{i,t}$ = excess return for firm I in period t
- N = number of firms in the portfolio
- T = number of time periods being aggregated

4.2.2 Time Series Research Design

For hypothesis 2, which has a null hypothesis that states that dividends announcements do not contribute to a change in analysts' consensus forecasts, the methodology that was used was the Time Series analysis (Myring and Wrege, 2009). The percentage error was calculated between analysts' consensus dividends forecasts and the actual dividends earned 12 months before the dividends SENS announcement, with T_0 being the date of the dividends announcement. The mean average percentage error (MAPE) was compared for the 12 months analysts' consensus dps forecasts with the one month analysts' consensus dps forecasts and a T-test was conducted to test whether the 12 month MAPE equaled the one month MAPE. The MAPE was calculated by subtracting the 12 month dividend prediction by analysts from the one month prediction by analysts and then dividing by the one month prediction.

In order for hypothesis 2a which has a null hypothesis that states that dividends announcements do not contribute to a change in analysts' consensus forecasts, to be true, the methodology used was Time Series analysis (Myring and Wrege, 2009). The

percentage error was calculated between analysts' consensus dividends forecasts and the actual dividends earned six months before the dividends SENS announcement with T_0 being the date of the dividends announcement. The mean average percentage error (MAPE) was compared for the six months analysts' consensus dps forecasts with the one month analysts' consensus dps forecasts and a T-test was conducted to test whether the six month MAPE equaled the one month MAPE. The MAPE was calculated by subtracting the six month dividend prediction by analysts from the one month prediction by analysts and then dividing by the one month prediction.

4.2.3 Unit of analysis

The unit of analysis was daily dividends per share (dps) and daily analysts' consensus dividends forecast data, as well as earnings per share (eps). As per analysis used by Ward and Muller (2010), four years of past dps data from 20 days before the event date and a further 250 trading days after the event was used for event analysis.

4.2.4 Population

For event studies the population is a complete set of group members and not necessarily people and can also be a list of items (Saunders & Lewis, 2012). The population as recommended by Prayag and van Rensburg (2006) was the daily analyst's' consensus dividends recommendations for the top 40 JSE listed companies of all brokerage houses in South Africa on the I-Net Bridge database. Due to the research being conducted on dividends and dividend announcements, final dividends were used as well because yearly dividend change has a greater impact in terms of information conveyed than quarterly dividend announcements (Andres et al., 2011). Most firms declare dividends once a year and therefore announce yearly dividend. The dividend SENS announcements are made per firm; therefore the population was all companies on the JSE that declared dividends and those analysts who forecasted dividends, for the period January 1987 to April 2012.

According to Ward and Muller (2010), for event studies the population also comprised of all monthly EPS available data corresponding to the companies and the time period of the dividend per share data of all the available JSE listed companies for the period

January 1987 to April 2012. The population also included all dividend announcements that affected share price to shareholders and the public through SENS for the firms with the corresponding dividend per share and analyst dividends per share forecasts.

4.2.5 Sampling Method and Size

The sample is a subgroup of the whole population (Saunders & Lewis, 2012). A non-probability sampling technique was used to ensure that a judgment sample was selected from the complete list of the population and the probability of each member of the population being selected was unknown (Saunders & Lewis, 2012). For the period of analysis, which was January 1987 to April 2012, all JSE companies that declared dividends and where the earnings per share information were available and which were followed by analysts forecasting dividends per share, were selected. These firms were checked for confounding events and then the remaining number of companies formed the sample size. The actual SENS announcement was obtained initially for one year per firm using a keyword search in the SENS database, however each announcement per company spanned in excess of a page and this method was deemed impractical in order to complete the research. The sample size was then chosen based on the dividend payout ratio.

The SENS announcement date was obtained by calculating the dividend payout ratio and searching for significant changes in the dividend payout ratio between consecutive years of the payout ratio calculated per firm. The change was merely calculated by subtracting the dividend payout ratio percentages for consecutive years, so if there was a payout ratio calculated for a specific firm for 2009 and a payout ratio calculated for 2010 then the change in payout ratio would be the payout ratio for 2010 minus that for 2009. The assumption was made at the onset that significant changes would constitute a dividend payout ratio change in consecutive years of more than 10% or a dividend payout ratio change in consecutive years of less than negative 10%. The sample size reduced the analysis period to between January 1997 and April 2012. A total of 208 companies was the sample size of more than 10% payout ratio change and a total of 181 companies was the sample size of the less than negative 10% payout ratio change.

4.2.6 Data Gathering Process

Secondary data of analysts' consensus dividends forecasts, earnings per share data and dividends and share price were used and obtained from I-Net Bridge daily for the period January 1987 to April 2012. Where available, earnings per share data used in the calculation of the payout ratio were confirmed with the BFA McGregor database provided by Professor Mike Ward and Chris Muller.

4.2.7 Data Analysis

The data was primarily analysed by three methods. The cumulative abnormal returns were calculated to determine confounding events that would result in problems in analysis. The bootstrapping analysis method was used, assuming that a normal distribution did not exist, to test for significance and lastly a simple T-test was also used for the testing of the hypotheses. The methods will be described in the sections below.

4.2.7.1 Cumulative Abnormal Residual (CAR)

Cumulative abnormal residuals were calculated and plotted on a graph to determine if any abnormal returns would create outliers in the events study and cause data problems in testing of the hypotheses. This was calculated using equation 11 and the Styles database (Ward & Muller, 2010) by typing in `JseStyleResidualReturn`, the share code and the event date. The graphs were assessed and the firms that had a CAR that was much higher than the average CAR for the other companies and showed an exponential trend instead of one that tapered off to the end of the event study period were deleted. This resulted in the sample size achieved and was conducted for the sample of dividend payout ratio change more than 10% and less than negative 10%.

4.2.7.2 Bootstrapping Analysis Method

Hypothesis 1 and hypothesis 1a was analysed using the bootstrapping process to test the abnormal returns and cumulative abnormal returns for significance (Ward & Muller,

2010). This process was used in addition to the T-test for significance as the bootstrapping process does not assume a normal distribution of abnormal returns and cumulative abnormal returns (Ward & Muller, 2010) and the T-test which is a parametric test makes this assumption. The abnormal returns (ARs) for each of the firms in the sample on the JSE were calculated for 20 days prior to the event and 20 days after the event and a “bootstrap distribution of one day ARs for each sample” (Ward & Muller, 2010, p. 31) was constructed.

This process was started and the dates for all of the JSE firms involved were randomised in order to create the bootstrapping distribution. The next step proved to be challenging as a data table of 500 values using iterations needed to be calculated, however due to the large amount of firms and the magnitude of the iterations, this process was not successful as just an iteration for 20 days after the announcement date took in excess of 90 minutes and this was still incomplete. Computer speed problems also hampered the success of this process as after leaving the computer for two hours to iterate just one day’s ARs, the computer would switch off and the entire process would have to be re-started. The abnormal returns for the event period were then supposed to be tested against the bootstrap distribution for significance (Ward & Muller, 2010).

The same method was to be used to test the cumulative abnormal returns for significance against a bootstrap distribution of 200 day cumulative abnormal returns.

4.2.7.3 T Tests

For hypothesis two which has a null hypothesis that states that analysts’ dividend per share consensus forecasts (dps) one year before the SENS announcement are more accurate than the analysts dps consensus forecasts one month before the dividends announcement because there is no information contained in the buildup to the announcement, the analysis approach here was to obtain trends through graphical analysis. T-tests were then conducted, to test for significance using IBM’s SPSS statistical software.

In order to analyse hypothesis 1a, where the null hypothesis states that the accuracy of analysts' consensus dividends forecast does not improve by following dividends announcements, graphical analysis was used to analyse the results during the T-20 days before the dividends SENS announcement until T+ 200 days after the dividends announcement with T_0 being the date of the dividends announcement. The association between analysts' consensus dividends forecasts and the actual dividends announcement was examined using a time series analysis (Myring & Wrege, 2009). Finally T-tests were then done to test for significance.

The p-value of a sample from a T-test "is the probability of seeing a sample with at least as much evidence in favor of the alternative hypothesis as the sample actually observed." (Albright, Winston and Zappe, 2009, p. 203). The smaller the p-value the more evidence there is in favor of the alternative hypothesis with the p value between 0.01 and 0.05 indicating that there is strong evidence in favor of the alternative hypothesis and if the p-value is 0.01 there is some evidence that the alternative hypothesis is true. (Albright et al, 2009).

4.2.8 Research Limitations

A limitation in the gathering of data was that although dividends are declared during interim intervals final dividends are declared yearly, therefore the data was limited to firm's yearly dividend data.

Another limitation is that SENS announcement data could not be used due to the large amount of information that had to be sifted through to obtain the dividend announcement so payout ratio percentage change was used instead as an indication of SENS dividend announcement.

A longer time period could not be used due to limitations of the availability of analysts' consensus dividends forecasts. This was limiting for hypothesis 2 as analysts' consensus dividends forecasts were readily available for five years into the future, however information could only be obtained on analysts' forecasts as far back as 2002.

Another limitation was the use of Excel to draw graphs as one graph can accommodate only 250 series and therefore the graphs of the CARs had to be drawn in two separate graphs, dividing the number of companies up alphabetically.

The “12 parameter style model” was used to obtain the abnormal returns from a database created by Chris Muller and Professor Mike Ward, however this database did not contain abnormal returns prior to 1997 hence the sample size was reduced, as the model would return a constant value for the years prior to 1997 when the relevant data did not exist. This led to limitations in the amount of averages that could be used for a company to calculate the average abnormal returns and resulted in some large values for average abnormal returns especially t_0 for the sample of payout ratio greater than 10%, which then became an outlier.

Share repurchases was not included in the study as they were out of the scope of the research, however this would have helped to understand if the amount of dividends declared is influenced by the number of share repurchases.

This study was strictly quantitative and no qualitative surveys or interviews were conducted investigating the behavioral finance aspect and influence on the efficient market hypothesis as the focus was on capital markets.

5 Results

This section of the report contains the results as per the research hypothesis. The data cleaning is first explained and then a description of the sample used. Thereafter the layout of the results will be in accordance to the hypothesis headings.

5.1 Data Cleaning

The process of data cleaning began upon receipt of the dividend per share data set, as the data contained information on all firms, old and new with old firms using a four letter acronym which eliminated them from the sample however no check was conducted to remove all delisted firms from the study. The payout ratio was required in order to establish which firms had made a significant dividend announcement and for this to be calculated, the earnings per share were required. A new data set with companies had to be obtained. Due to the existing database being obtained at a different time a matching process was undertaken to match the earnings per share with the already existing dividends per share data. In this matching process, the deletions that were made was of any additional information on earnings per share, dividend per share or analysts dividend per share forecasts that were not common to all of the spreadsheets.

5.2 Sample Description

The population was all of the JSE companies during the time 1999 to 2012 that declared dividends and had analysts forecast of dividends per share. The SENS announcement data was obtained by calculating the dividend payout ratio and searching for significant changes in the dividend payout ratio. The assumption was made from the onset that significant changes would constitute; a dividend payout ratio change in consecutive years of more than 10 % and a dividend payout ratio change in consecutive years of less than negative 10%. The final samples comprised of a total of 208 companies, see Annexure A table 20, which was the sample size of the more than 10% dividend payout ratio change and a total of 181 companies, see Annexure A table 19, which was the sample size of the less than negative 10% dividend payout ratio change. The abnormal returns were obtained for both samples. The sample also included analysts' consensus dividend per share forecasts.

5.3 Results for Hypothesis 1

The null hypothesis states that dividends announcements do not result in a change in share price.

5.3.1 Payout Ratio Changes

The payout ratio changes are given in Figure 4 for the different companies. Table 19 and Table 20 in Annexure A show the names of companies and the predicted SENS announcement dates as calculated by the dividend payout ratio changes. Table 19 refers to the sample less than negative 10% and table 20 refers to the sample for more than 10%. Table 3 is a summary ranked in order from highest to lowest of the most significant payout ratio changes across the sample.

Figure 4: Divided payout ratio changes

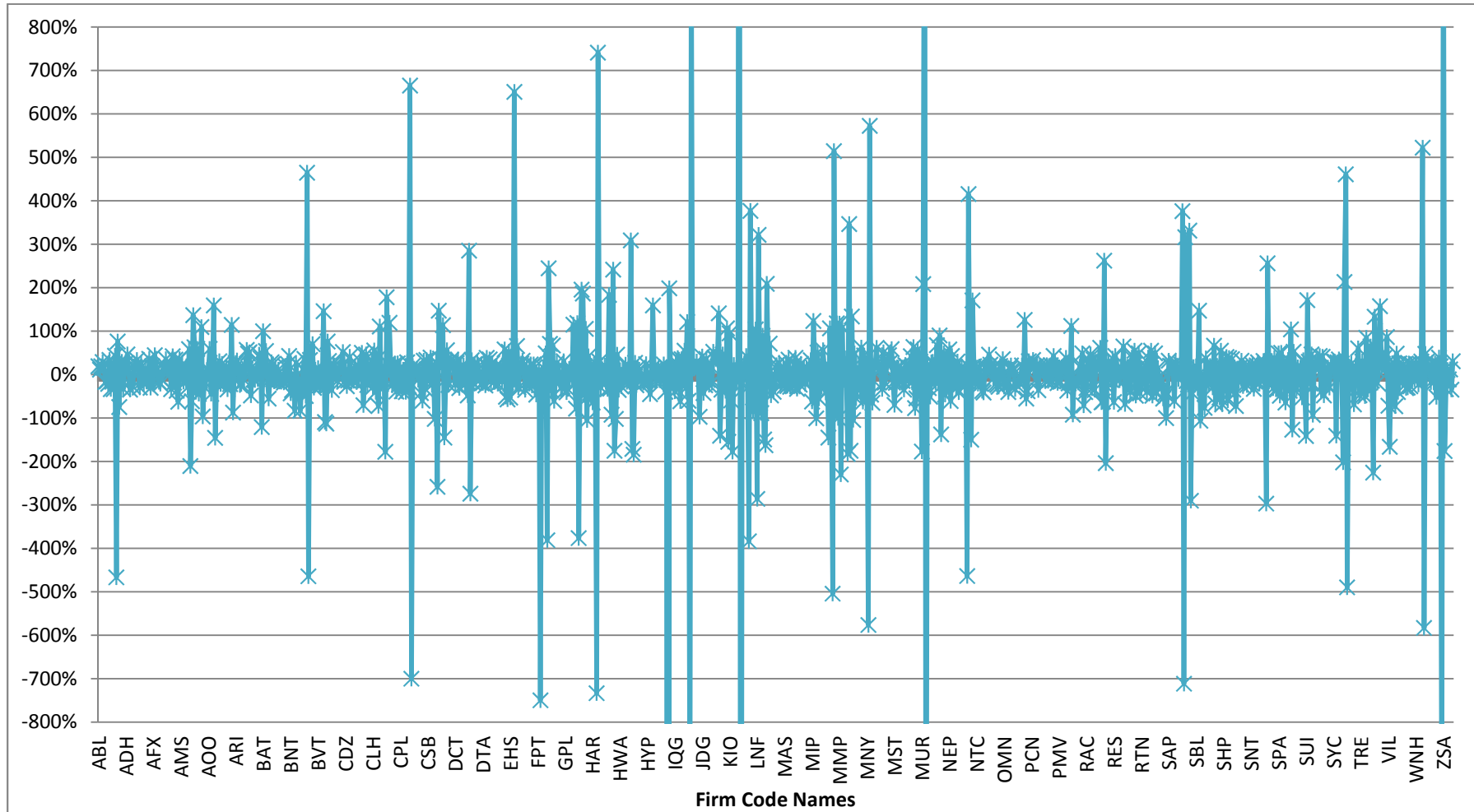


Table 3: Dividend payout ratio changes

| Share Code | Announcement Date | Payout Ratio Changes |
|-------------------|--------------------------|-----------------------------|
| LBH | 25 Feb 2010 | 2816% |
| MUR | 25 Aug 1999 | 1568% |
| ZSA | 06 Feb 2002 | 1220% |
| HAR | 15 Aug 2011 | 741% |
| CRG | 03 May 1991 | 665% |
| ELR | 28 Sep 2004 | 651% |
| MNY | 30 Jun 2010 | 573% |
| MMI | 10 Mar 2010 | 515% |
| BSR | 05 Mar 2004 | 465% |
| LNF | 05 Mar 1992 | 377% |
| MMP | 24 Dec 1998 | 347% |
| SBL | 30 Sep 1992 | 331% |
| LNF | 03 Sep 2003 | 322% |
| SAP | 08 Nov 2007 | 316% |
| HWN | 14 Mar 2000 | 309% |
| DLV | 04 Jun 2007 | 285% |
| RDF | 30 Oct 2008 | 262% |
| SNU | 24 Jun 2009 | 256% |
| GFI | 27 Aug 1999 | 244% |
| LNF | 14 Oct 2011 | 209% |
| MUR | 28 Aug 1998 | 208% |
| ANG | 10 Feb 2006 | -210% |
| TSX | 28 May 2008 | -225% |
| MMP | 12 Feb 1993 | -230% |
| CSO | 23 Feb 2011 | -258% |
| LNF | 23 Aug 2002 | -287% |
| SNU | 25 Jun 2008 | -297% |
| GRT | 05 Sep 2005 | -377% |
| GFI | 27 Jul 1998 | -381% |
| LNF | 14 Jun 1991 | -384% |
| ACL | 07 Feb 2012 | -467% |
| TON | 23 Feb 2009 | -490% |
| MMI | 11 Mar 2009 | -505% |
| YRK | 01 Mar 1993 | -583% |
| CRG | 03 May 1992 | -700% |
| SAP | 09 Nov 2006 | -712% |
| HAR | 16 Aug 2010 | -733% |
| FVT | 25 Jun 2009 | -750% |
| ITR | 23 Jul 2010 | -1061% |
| ZSA | 07 Feb 2001 | -1077% |
| MUR | 31 Aug 2000 | -1667% |
| LBH | 24 Feb 2011 | -2813% |
| ING | 22 Jul 2004 | -6140% |

5.3.2 CAR graph

The spaghetti graphs shown in figures 5 and 6 indicate the Cumulative Average Residuals (CARs) for the sample for less than negative 10% of sample size of 456 SENS announcements whilst the spaghetti graphs in figures 7 and 8 indicate the CAR's for the sample more than 10% of sample size of 527 SENS announcements. The share codes of the outliers that were removed from the sample based on figures 5, 6, 7 and 8 are given in table 4 and table 5 respectively. These were the only deletions due to outliers, other deletions occurred due to the abnormal returns returning a value of "0" the "styles" database did not have abnormal returns values for those SENS announcements. These announcements were eliminated from the sample to prevent skew results when average abnormal returns were calculated for a specific company.

Table 4: Outliers eliminated using CAR graph for sample less than minus 10%

| Share Code | Year |
|------------|------|
| WOX | 2006 |
| MTA | 2012 |
| WKF | 2009 |
| NCS | 1989 |
| RLF | 2011 |
| VMK | 2008 |
| TPC | 1993 |
| SVN | 2001 |
| WNH | 1988 |
| HWN | 2002 |
| ASR | 1989 |
| BAW | 2011 |
| ACE | 2011 |
| ING | 2004 |
| MTP | 1998 |

Table 5: Outliers eliminated using CAR graph for sample greater than 10%

| Share Code | Year |
|------------|------|
| CSB | 1999 |
| DTA | 2012 |
| EFG | 2011 |
| MUR | 1998 |
| MOR | 2011 |

Figure 5: CARs for Event Study for Sample less than negative 10% (Firms ABL to MML)

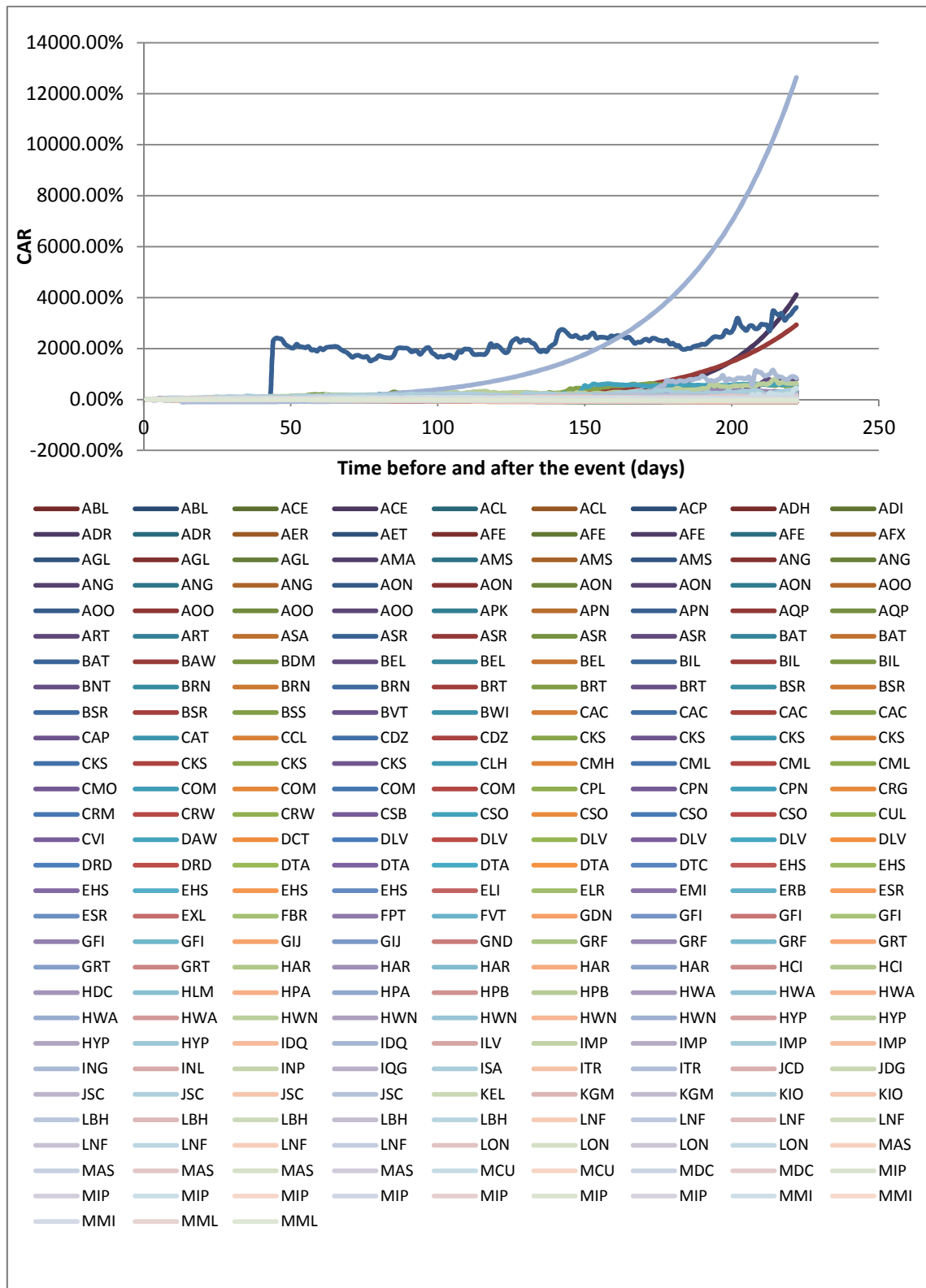


Figure 6: CARs for event study for the sample less than negative 10% (Firms MMP to ZSA)

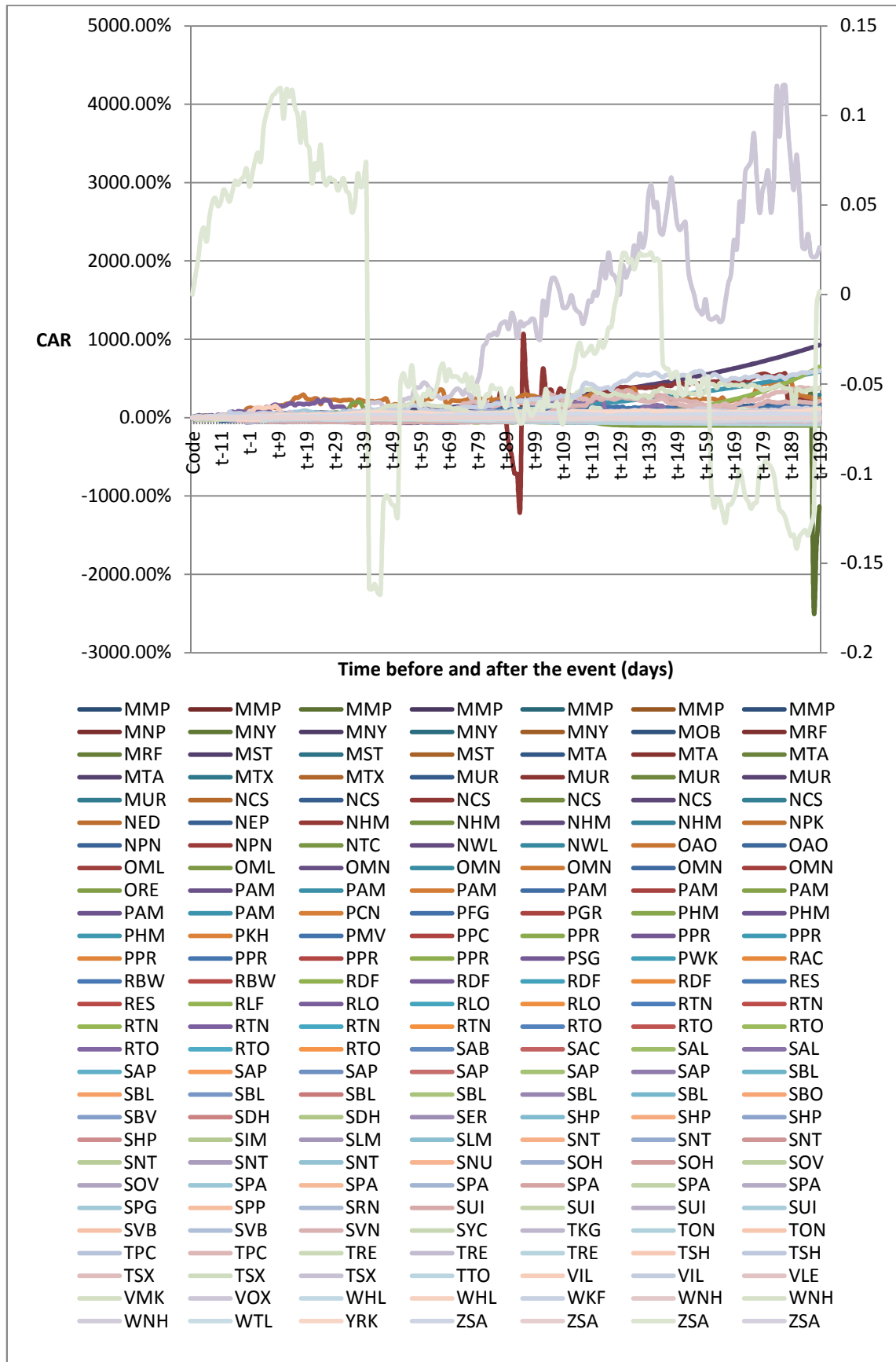
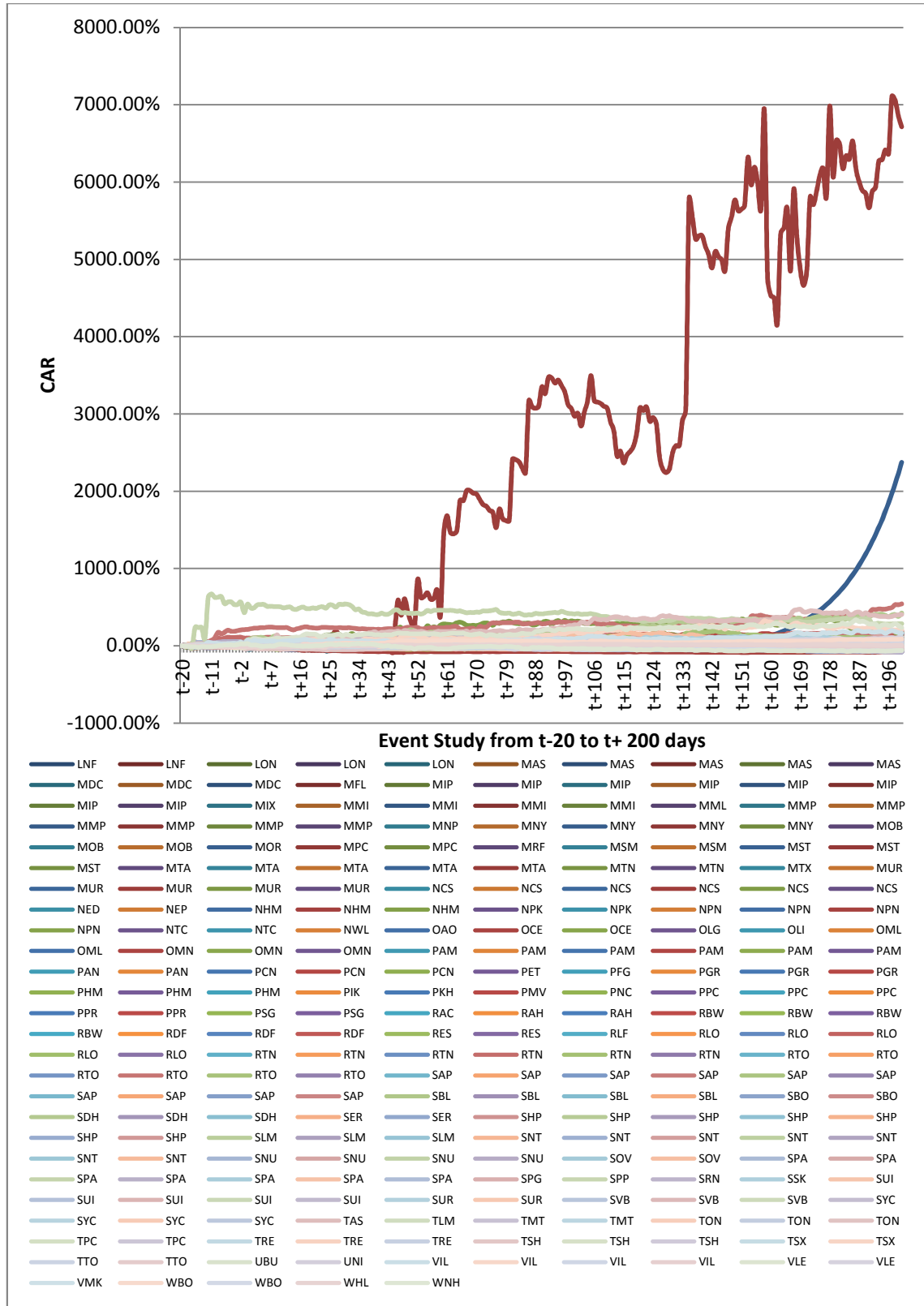


Figure 8: CARs for event study for the sample more than 10% (Firms LNF to WNH)



5.3.3 Average Abnormal returns

The average abnormal returns are graphically represented in figure 9 and figure 10. These are calculated for the entire long term events study from t -20 days before the SENS announcement to t+200 days after the SENS announcement with a sample size of 181 companies for figure 9 and 208 companies for figure 10. According to figures 9 and 10, the average abnormal returns lie mostly between -0.5% and +0.5%.

Figure 9: Average Abnormal Returns for sample less than negative 10%

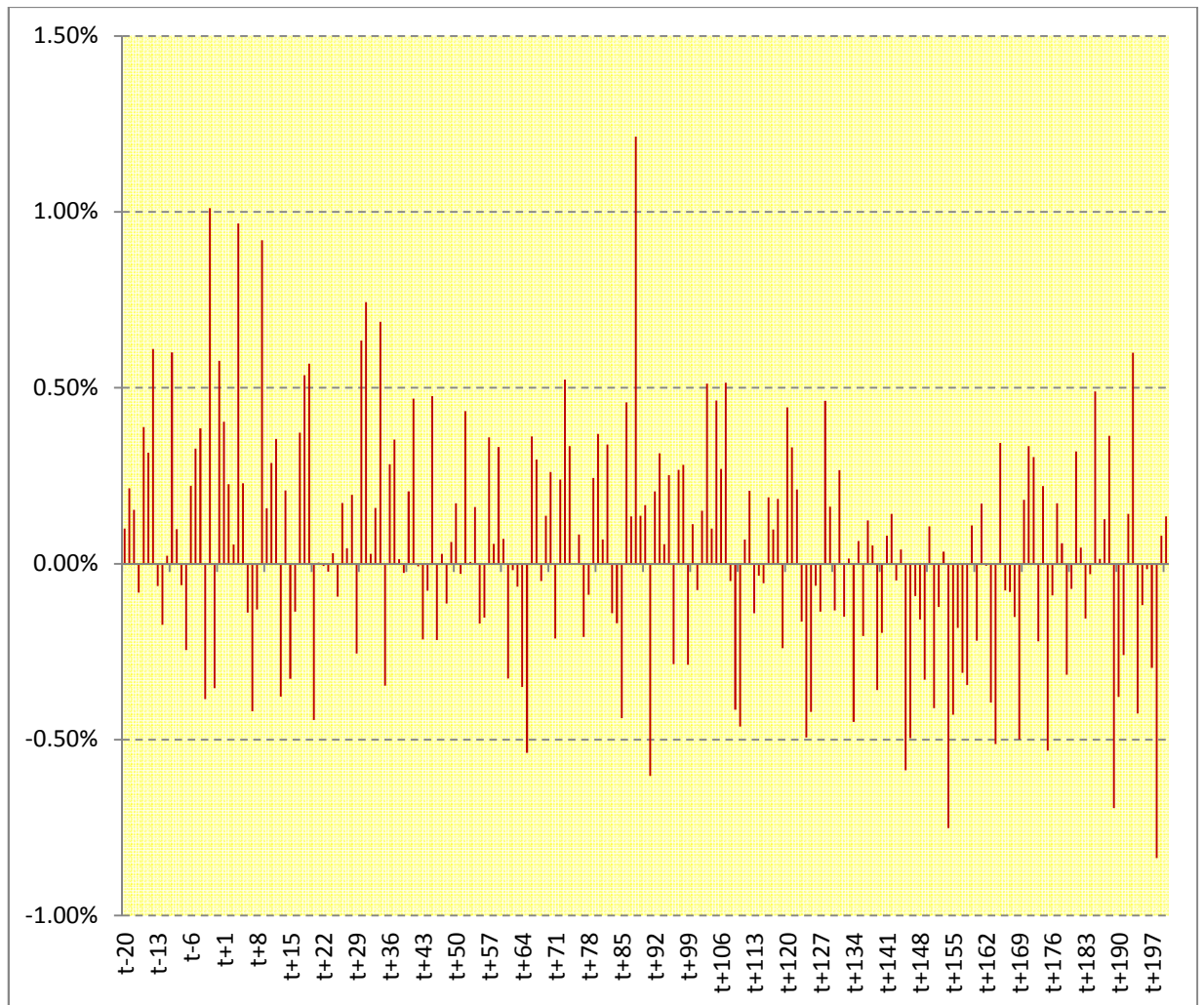
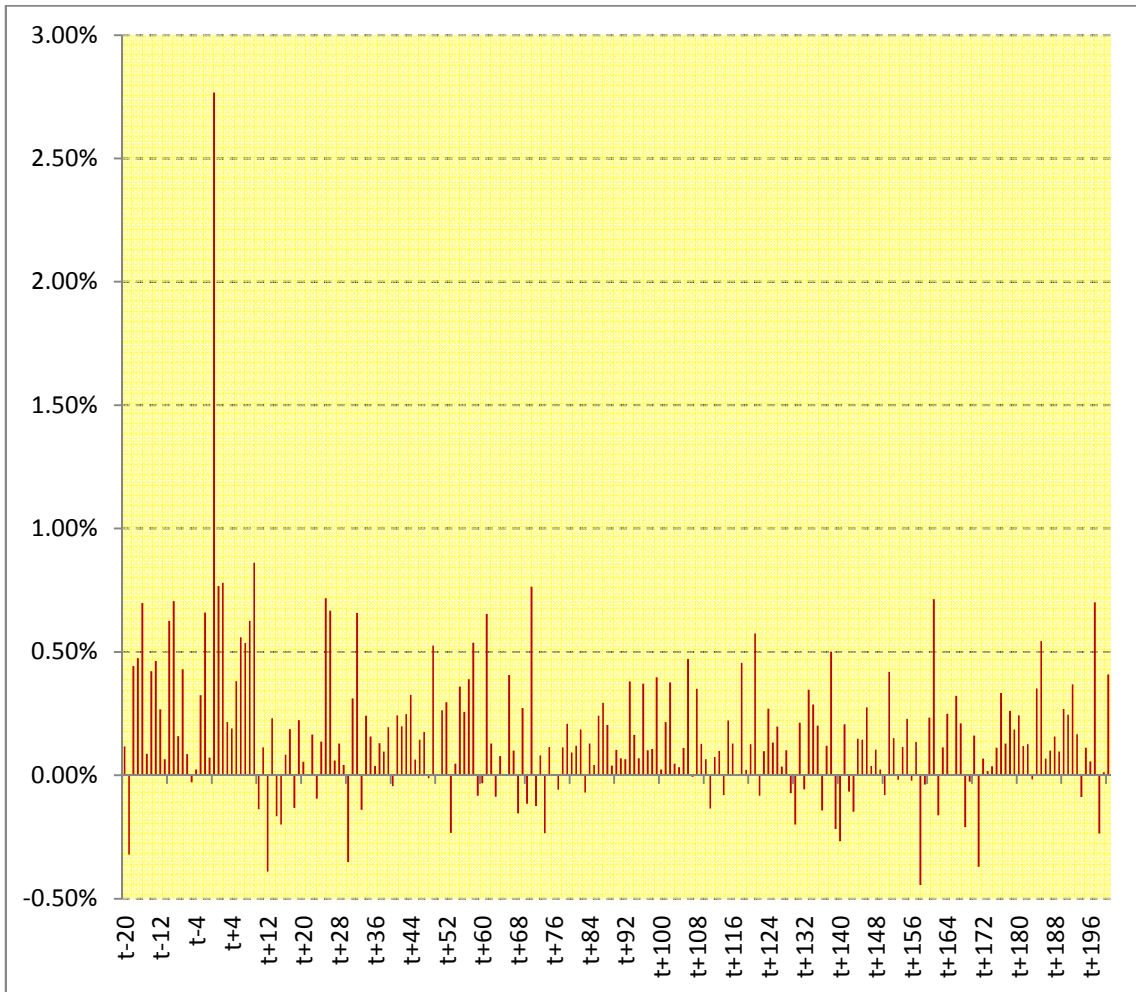


Figure 10: Average Abnormal Returns for sample more than 10%



5.3.4 Cumulative Average Abnormal Returns (CAAR's)

The cumulative average abnormal returns are graphically represented in figure 11 and figure 12. These are calculated for the entire long term events study from t -20 days before the SENS announcement to t+200 days after the SENS announcement. Figures 11 and 12 have distinctly different shapes with the CAAR for the sample greater than 10% of a sample size of 208 firms showing more of a straight line trend as compared to the sample for the less than minus 10% sample of size 181 firms.

Figure 11: CAAR's for sample less than negative 10%

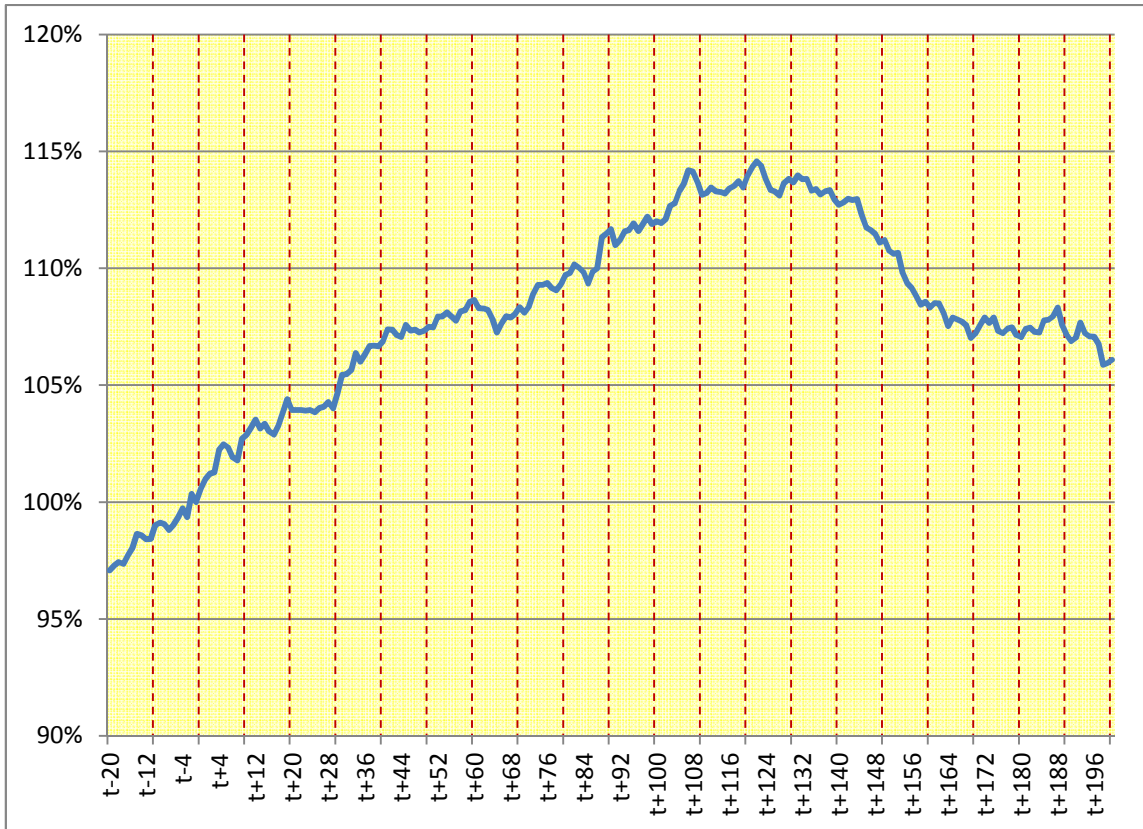
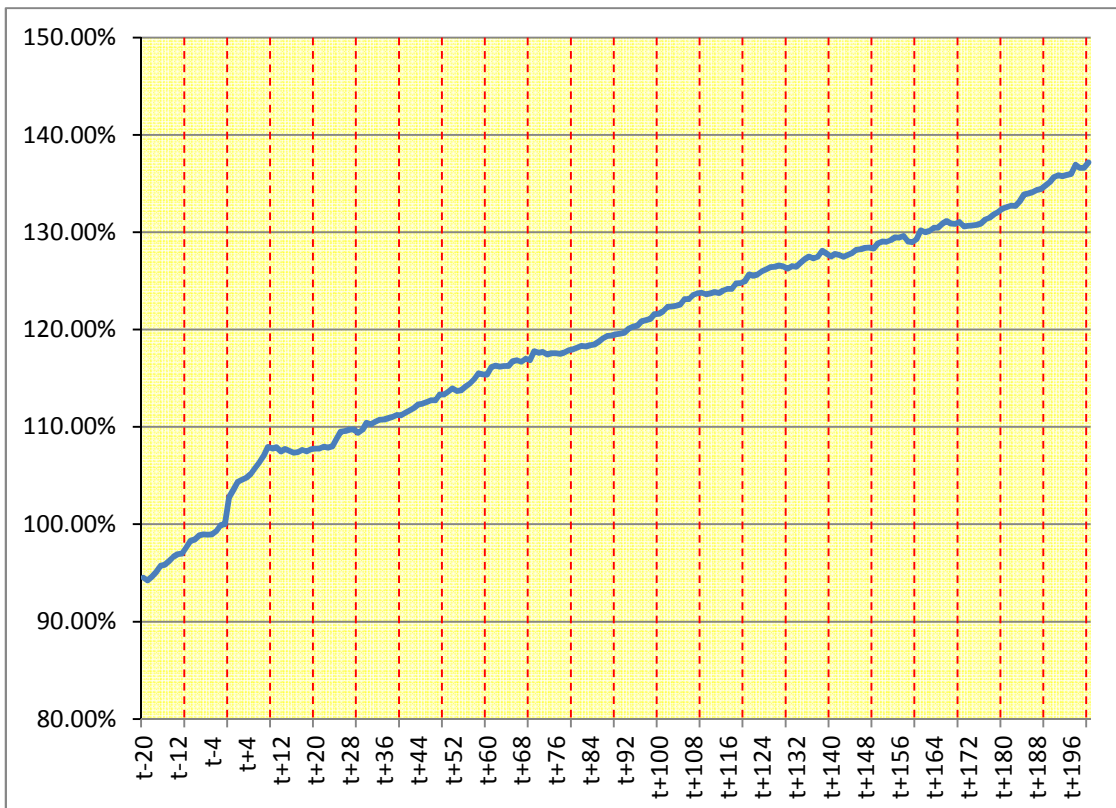


Figure 12: CAAR's for sample more than 10%



5.3.5 T- Test Results

Due to unsuccessful attempts at the bootstrapping approach, the t-test had to serve as the statistical determinant of the rejection or acceptance of the null hypothesis. The average abnormal returns were calculated for the period t-20 days before the SENS announcement up until the day of the SENS announcement and the average abnormal returns were calculated for the equivalent period after the SENS announcement from t+1 day after the announcement to t+20 days after the announcement. The difference between these average abnormal returns was then termed the paired difference. Figure 13 shows the results for the sample less than minus 10%.

Figure 13: AAR paired difference results for sample less than negative 10%

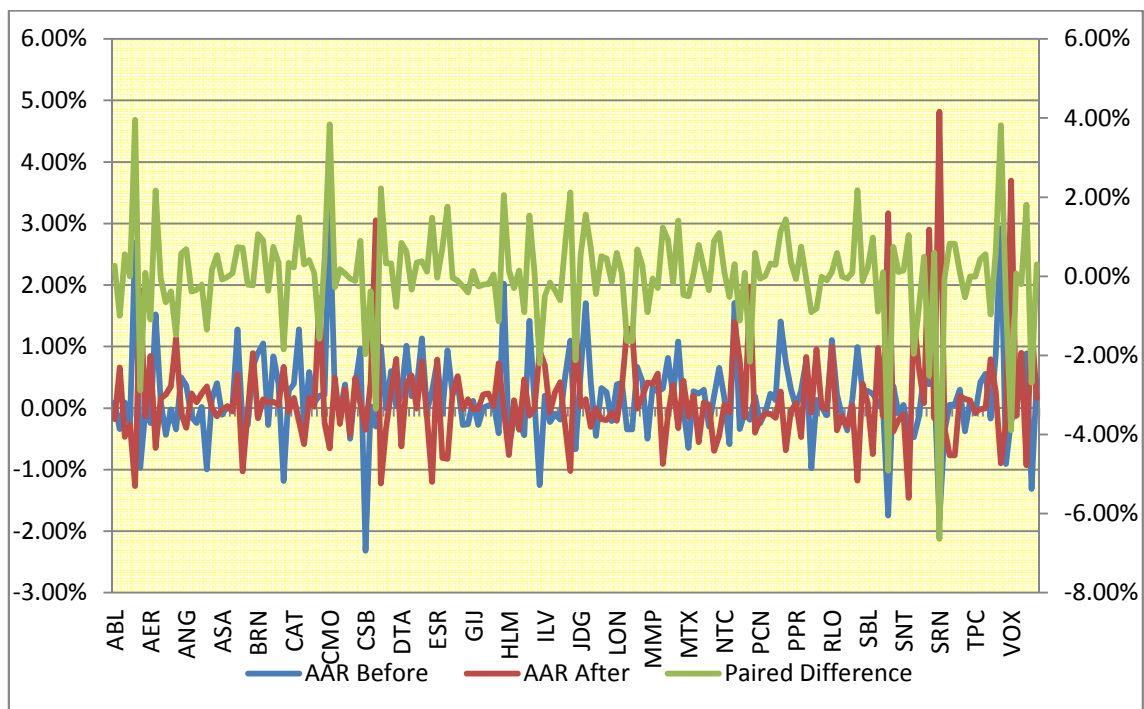


Table 6 and table 7 display the results of the simple t-test performed using IBM SPSS statistical software.

Table 6: T-Test one sample statistics for the sample less than negative 10%

| One-Sample Statistics | | | | |
|-----------------------|-----|-------|----------------|-----------------|
| | N | Mean | Std. Deviation | Std. Error Mean |
| Paired Difference | 181 | .0001 | .01251 | .00093 |

Table 7: T-Test one sample results for the sample less than negative 10%

| One-Sample Test | | | | | | |
|-------------------|----------------|-----|-----------------|-----------------|---|-------|
| | Test Value = 0 | | | | | |
| | t | df | Sig. (2-tailed) | Mean Difference | 95% Confidence Interval of the Difference | |
| | | | | | Lower | Upper |
| Paired Difference | .095 | 180 | .925 | .00009 | -.0017 | .0019 |

The average abnormal returns paired difference results for the sample greater than 10% payout ratio change is given in figure 14. The difference OF greater than 0 for the paired difference abnormal returns is evident.

Figure 14: AAR paired difference results for sample more than 10%

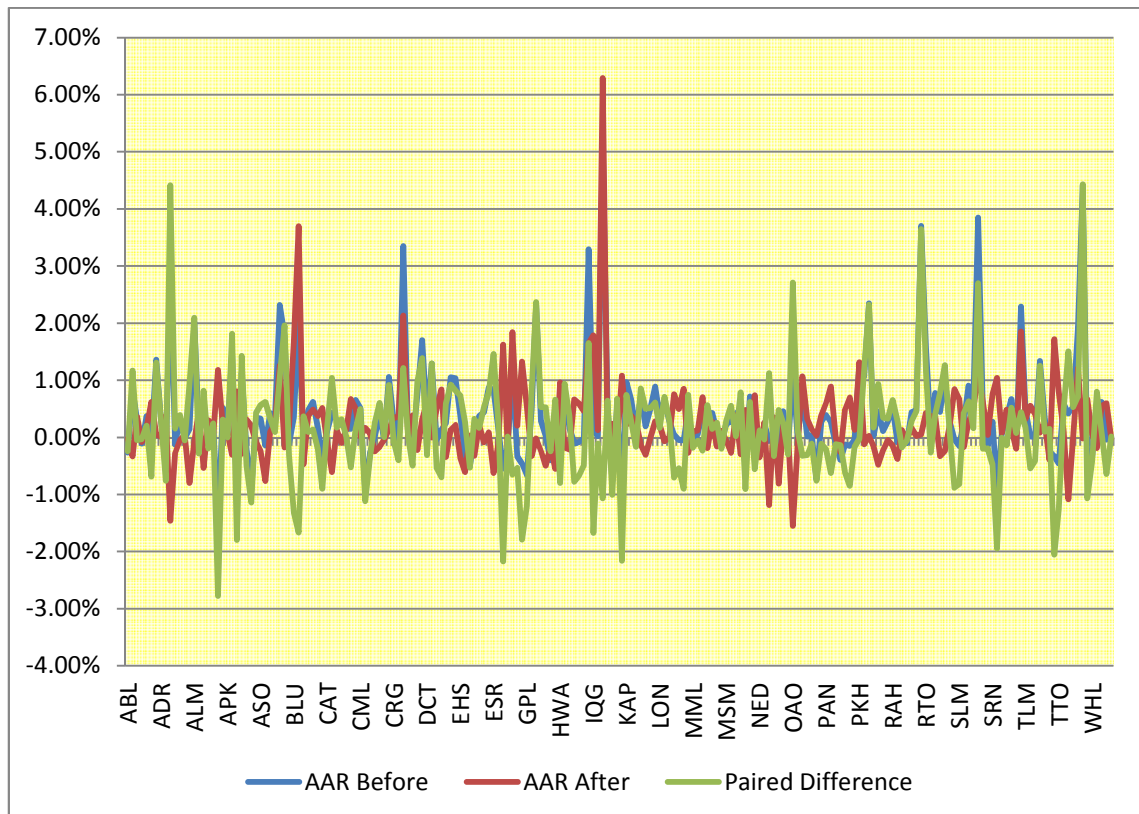


Table 8 and table 9 displays the results of the simple t-test performed using IBM SPSS statistical software at a 95% confidence interval.

Table 8: T -Test one sample statistics for the sample more than 10%

| | N | Mean | Std. Deviation | Std. Error Mean |
|-------------------|-----|---------|----------------|-----------------|
| Paired Difference | 208 | .001675 | .0097688 | .0006773 |

Table 9: T -Test one sample statistics for the sample more than 10%

| | Test Value = 0 | | | | | |
|-------------------|----------------|-----|-----------------|-----------------|---|---------|
| | t | df | Sig. (2-tailed) | Mean Difference | 95% Confidence Interval of the Difference | |
| | | | | | Lower | Upper |
| Paired Difference | 2.472 | 207 | .014 | .0016746 | .000339 | .003010 |

5.4 Hypothesis 1a Results

The null hypothesis 1a stated that the information conveyed in a dividends announcement has a short-term impact only, and ‘washed out’ in the longer term evidenced by the CAARs of zero at 200 days after the dividend announcement. Table 10 reflects the results of the CAAR 200 days after the SENS announcement.

Table 10: Long Term CAAR

| | CAAR _{T+200} |
|--------------|-----------------------|
| Sample >10% | 137% |
| Sample <-10% | 106% |

5.5 Hypothesis 2 and 2a Results

The null hypothesis 2 states that analysts' dividend per share consensus forecasts (dps) one year before the SENS announcement are more accurate than the analysts dps consensus forecast one month before dividends announcements because there is no information contained in the dividend announcements or in the build-up to the announcements.

Analysts' dividend per share forecasts (dps) six months before the SENS announcement are more accurate than the analysts dps forecast one month before dividends announcements because there is no information contained in the dividend announcements or in the buildup to the announcements.

The above hypothesis was proved by calculating the Mean Average Percentage Error of analysts' consensus forecasts for the period of 12 months before announcement date and six months before the SENS announcement date. The actual dividends per share were used.

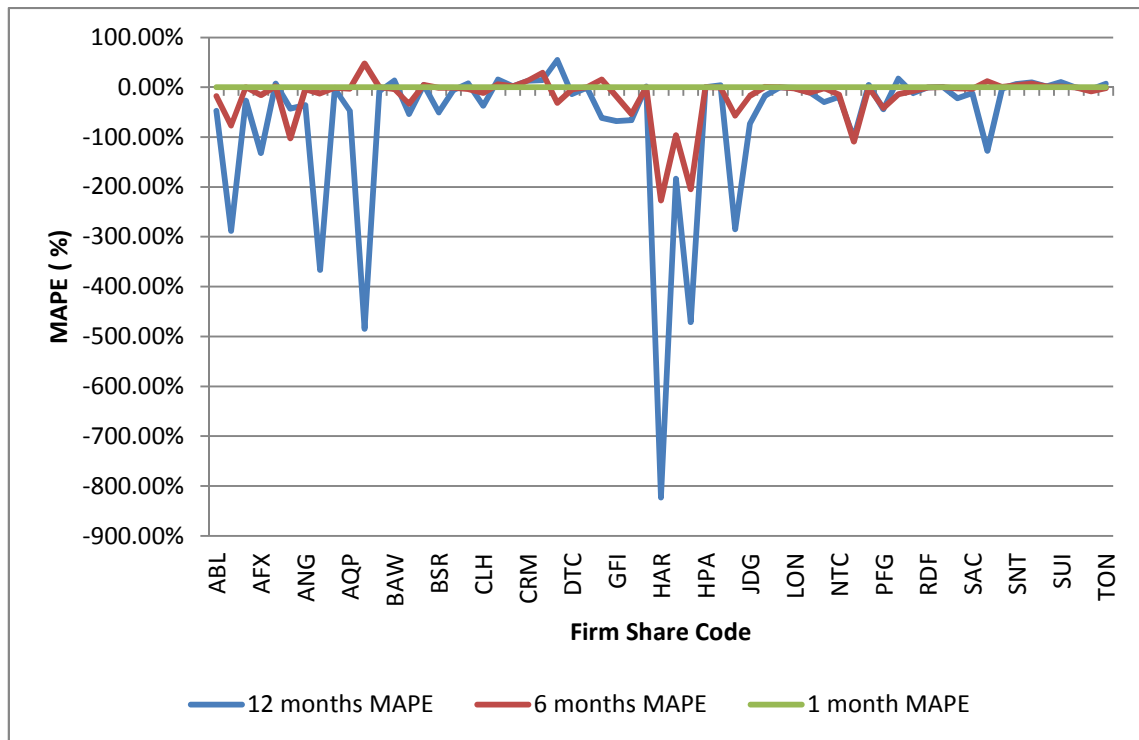
5.5.1 Mean Average Percentage Error (MAPE) Results

The MAPE was calculated for one month, six months and 12 month analysts' consensus forecasts for the different samples.

5.5.1.1 Results for Sample less than -10%

Figure 15 shows the difference in the percentage MAPE as the time for dividend declaration or SENS announcement draws closer.

Figure 15: MAPE for sample less than negative10%



The statistical analysis of the sample less than negative 10% was statistically analysed using a simple t-test through the IBM SPSS statistical software package. The mean was equal to 0 and a 95% confidence interval was used. The results are represented by table 11 and table 12 for the 12 month statistical tests while table 13 and table 14 reflect the results from the six month statistical hypothesis testing.

Table 11: T -Test 12 month statistics for MAPE T-Test for the sample less than negative10%

| | N | Mean | Std. Deviation | Std. Error Mean |
|----------|----|----------|----------------|-----------------|
| VAR00001 | 61 | -.636624 | 1.4750806 | .1888647 |

Table 12: T -Test one sample statistics for MAPE for the sample less than negative 10% at 12 months

| | Test Value = 0 | | | | | |
|----------|----------------|----|-----------------|-----------------|---|----------|
| | t | df | Sig. (2-tailed) | Mean Difference | 95% Confidence Interval of the Difference | |
| | | | | | Lower | Upper |
| VAR00001 | -3.371 | 60 | .001 | -.6366239 | -1.014410 | -.258838 |

Table 13: T -Test 6 month statistics for MAPE T-Test for the sample less than negative 10%

| | N | Mean | Std. Deviation | Std. Error Mean |
|----------|----|----------|----------------|-----------------|
| VAR00001 | 61 | -.174840 | .4619736 | .0591497 |

Table 14: T -Test one sample statistics for MAPE for the sample less than negative 10% at 6 months

| | Test Value = 0 | | | | | |
|----------|----------------|----|-----------------|-----------------|---|----------|
| | t | df | Sig. (2-tailed) | Mean Difference | 95% Confidence Interval of the Difference | |
| | | | | | Lower | Upper |
| VAR00001 | -2.956 | 60 | .004 | -.1748403 | -.293157 | -.056523 |

5.5.1.2 Results for sample more than 10%

The MAPE for the various analysts forecast periods is given per company in figure 16. A total of 63 companies made up the sample for more than 10% and the statistical results are demonstrated in table 15 and 17. The sample size decreased from the original sample of 208 firms due to the availability of analysts' consensus forecast data.

Figure 16: MAPE for sample more than 10%

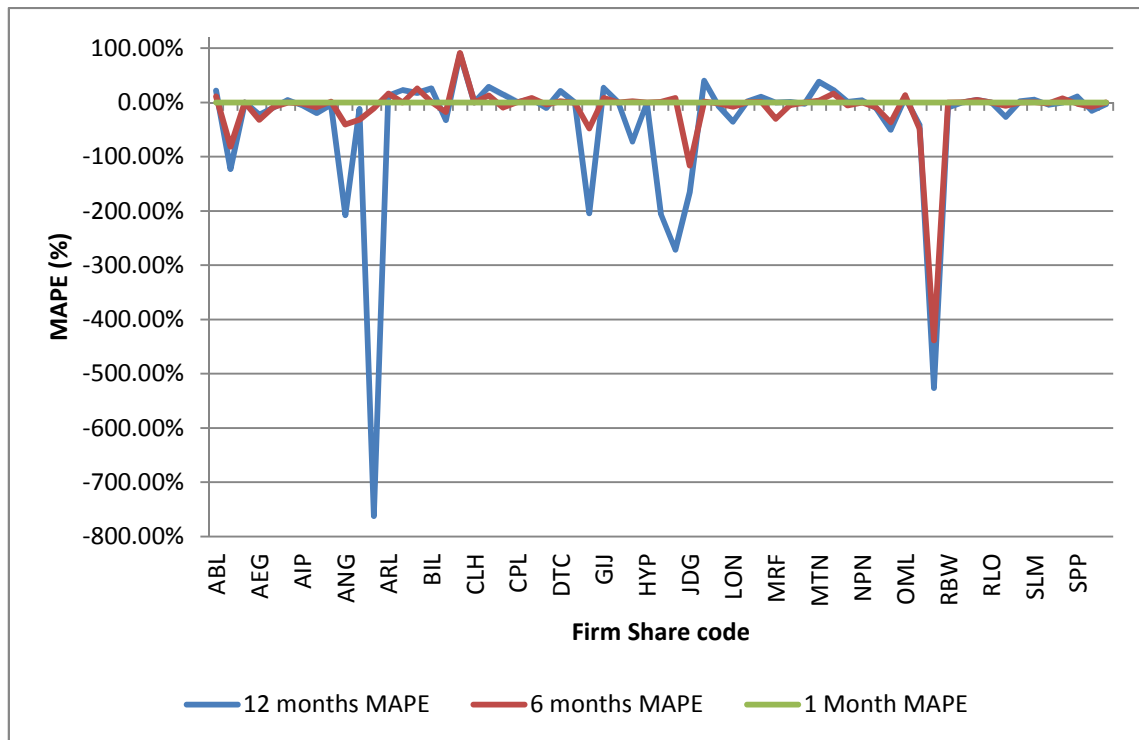


Table 15: T -Test 12 month statistics for MAPE T-Test for the sample more than 10%

| | N | Mean | Std. Deviation | Std. Error Mean |
|----------|----|----------|----------------|-----------------|
| VAR00001 | 63 | -.382559 | 1.2950442 | .1631602 |

Table 16: T -Test one sample statistics for MAPE for the sample more than 10% at 12 months

| | Test Value = 0 | | | | | |
|----------|----------------|----|-----------------|-----------------|---|----------|
| | t | df | Sig. (2-tailed) | Mean Difference | 95% Confidence Interval of the Difference | |
| | | | | | Lower | Upper |
| VAR00001 | -2.345 | 62 | .022 | -.3825586 | -.708711 | -.056406 |

Table 17: T -Test 6 month statistics for MAPE T-Test for the sample more than 10%

| | N | Mean | Std. Deviation | Std. Error Mean |
|----------|----|----------|----------------|-----------------|
| VAR00001 | 63 | -.122076 | .6018831 | .0758301 |

Table 18: T -Test one sample statistics for MAPE for the sample more than 10% at 6 months

| | Test Value = 0 | | | | | |
|----------|----------------|----|-----------------|-----------------|---|---------|
| | t | df | Sig. (2-tailed) | Mean Difference | 95% Confidence Interval of the Difference | |
| | | | | | Lower | Upper |
| VAR00001 | -1.610 | 62 | .113 | -.1220757 | -.273658 | .029507 |

6 Discussion of Results

Hypothesis testing was chosen as the method of analysis for this research. Hypothesis 1 aims at examining whether inefficiency exists on the JSE. This is shown by proving that the average abnormal return before a SENS dividend announcement changes after the SENS dividend announcement, thereby indicating that there is a change in the share price. However, prior to the testing of the hypothesis, data was collected and analysed that assisted in proving the hypothesis and this is discussed in the order in which the data was converted into results.

6.1 Dividend Payout Ratio Discussion

The SENS announcements pertaining to dividends was the first set of data was obtained, however this proved to be quite challenging as mentioned in section 4.2.5. The alternative to this challenge was to calculate the dividend payout ratio and make the assumption that the dividend payout ratio change if significant enough would constitute a SENS dividend related announcement. The assumption was made was that if the change in payout ratio was more than 10% or less than negative 10% this would constitute a significant SENS dividend announcement. Figure 4 represents the dividend payout ratio change results of the total sample indicating companies that had significant SENS dividend related announcements. The logic for this assumption follows from literature of Firer et al, 2008, who found that South African managers do target payout ratios, therefore a change in the dividend payout ratio over consecutive years being either a positive or negative change following the rules of the JSE, should constitute a SENS dividend announcement.

Of the 988 different significant SENS dividend related announcements, 43 announcements or 4.35% in the form of dividend payout ratio changes were found to be the most significant and are given in table 3. No patterns of significant specific years or industry specific patterns were evident. The reason for the abnormally high dividend payout ratio changes could be attributed to the dividend payout ratio history. Due to the change in dividend payout ratio being calculated over consecutive years, and as per equation 3, if there was a change in the payout ratio for a previous year due to either a change in dividends paid or earnings per share. This would result in a large payout ratio change. This is evident from assessing the data containing the 43

announcements. These large changes in dividend payout ratio are a result of a large dividend declared in one year and a very small dividend declared the next year or vice versa, or a variation in earnings per share that occurred.

The figures with payout ratio changes in excess of 2000% were due to an extreme drop in the earnings per share values for consecutive years resulting in an extremely high payout ratio. The earnings per share information was obtained from the I-NET Bridge database but was checked against, where available, the BFA McGregor database. An example is where for the company with share code LBH, the EPS was 683.3 cents for the year 2009 but this dropped to 15.9 cents for the year 2010 resulting in an abnormally high dividend payout ratio difference of -2816% for the year 2010 as the dividend did not decrease accordingly. Management maintained the dividend to avoid negative investor sentiment. This result is in agreement with signaling theory, where due to a dividend cut being perceived as bad news by investors, and an indication of negative growth prospects by management, management maintained past dividends in order for investors to believe that earnings growth is possible in the future (Firer et al., 2008; Brav et al., 2005).

The significant dividend payout ratio changes that occurred in the period of the financial crisis are quite evident with the effects being noted up until 2010. There were significant dividend payout ratio changes that occurred due to changes in the firms' payout policies. Firms did not declare dividends in 2008 and some did not declare dividends in 2009 as well, then suddenly declared dividends again in 2010, resulting in a high dividend payout ratio change as the change was calculated over consecutive years. Although this showed as a significant dividend payout ratio change thereby featuring as a SENS dividend related announcement, this change was actually due to firms stabilising their operations and being able to declare dividends once more. This result was not necessarily due to a change in dividend payout or dividend policy.

6.2 CAR Results Discussion

The cumulative abnormal returns spaghetti diagrams given in figures 5,6,7 and 8 were a necessary step to remove any outliers that could cause possible data problems at a later stage in the analysis.

For the sample with a less than negative 10% payout ratio change of sample size consisting of 411 dividend payout ratio changes being interpreted as a dividend related announcement from 181 companies. There were 15 firms, as per table 4, that did not have CARs conforming to the norm, as per figures 5 and 6, with the exponential shape in the curves. The reasons for the abnormally high CARs for these firms could be related to problems with the data obtained, such as share prices or problems with abnormal returns. The high negative change in payout ratio was mainly due to a decline in dividends in consecutive years for specific firms. With approximately 40% of the 15 firms that experience unusually high CARs occurring post 2008, this can be viewed as a lag effect to the recession, which could be the reason for the decrease in dividends. This is in line with the findings of Charitou et al., 2010 who found that firms with high earnings reductions or negative earnings cut dividends.

For the sample with greater than 10% payout ratio change of sample size consisting of 482 payout ratio changes being interpreted as a dividend related announcement from 208 companies, from figures 7 and 8 and table 5 there were only five firms that had abnormally high CARs which was due to an increase in dividends by the firms. The increase also occurred during the 2011 and 2012 period, which could be an indication of the firms recovering from the recessionary period of 2008. The results indicate that because dividends are of importance to the firms, as soon as earnings increased after the recessionary period, dividends were increased, which is in line with the findings of Daniel et al., 2008. This data was subsequently removed from the sample set as the financial crisis of 2008 was seen as an abnormal confounding event and results from these firms could mislead the findings from this research.

With the small in comparison results deviations for the samples, dividend smoothing, and the view that firms are reluctant to change dividends as indicated by Leary and Michealy, 2011, is supported.

6.3 Discussion of Abnormal returns

The average abnormal returns in figure 9 for the 181 firms in the sample of dividend payout ratio change less than negative 10%, do not show a significant difference from

zero. The majority of the abnormal returns are either at or between 0.5% and -0.5% for the long-term event period. This can result in a cancelling off effect with the mean possibly resulting in a net effect of 0%.

The results given in figure 10 of the abnormal returns for the sample of 208 firms with the dividend payout ratio change more than 10%, are very different from those in figure 9. The majority of the abnormal returns are between 0% and +0.5% for the event window of $t-20$ days and $t+200$ days. The outlier with the average abnormal return of 2.77% at t_0 occurs due to the low amount of abnormal returns averaged to obtain the abnormal returns for a specific company. This is due to there being a limited number of abnormal returns values in the styles database for specific companies especially prior to 1997; this resulted in the decreased amount of SENS announcements used as events. In instances where an event was to be analysed and there was no abnormal return data for that specific event in the styles database, the event was removed from the sample set.

The variation in abnormal returns between the samples is indicative of the difference in the samples, because of a high negative dividend payout ratio change. As previously mentioned, a high negative payout ratio change is mainly due to a decline in dividends. The abnormal returns in figure 9 indicate that the share price is not affected by a decrease in dividends, which could be due to this information already being captured in the share price for the event study period. This would mean that efficiency exists for this sample. This was proven by the T-test of the mean abnormal returns. This differs from the findings of Mlambo and Biekpe (2007) who found the JSE to have weak efficiency.

Figure 10 shows the existence of mostly positive abnormal returns due to the high positive payout ratio change, which is indicative of mainly an increase in dividends paid. The trend therefore appears to be that an increase in dividends resulted in an increase in abnormal returns. What does this mean for market efficiency? This could mean that an increase in dividends thereby reflected by the positive payout ratio change more than 10%, causes significant abnormal returns. This is indicative of semi-efficient market. These questions will be answered by the T-test results discussion of hypothesis 1. These findings are in agreement with Ward and Muller (2010) who found the JSE to be reasonably inefficient.

6.4 Discussion of Cumulative Average Abnormal Returns (CAARs)

The CAARs graph in figure 11 is for the sample size of 181 firms with a dividend payout ratio change of less than negative 10%. All the CAARs are positive with an increasing trend up until t+122 days. After 122 days following the event, the CAARs start to decrease from 115% to approximately 105% however; the CAARs are still not decreasing to a negative value. This could be indicative of the effects of the information contained in the SENS dividend related announcement having a long-term impact positive impact on share prices.

The CAARs graph in figure 12 is for the sample size of 208 firms with a payout ratio change of more than 10%. All of the CAARs are positive with an increasing trend throughout the event study period. This could be indicative of the effects of the information contained in the SENS dividend related announcement having a long-term positive impact on share prices.

6.5 Hypothesis 1 discussion

The null hypothesis stated that dividends announcements do not result in a change in share price.

The alternative hypothesis stated that dividends announcements result in a change in share price.

$$H1_0 = \mu_{AR1} - \mu_{AR2} = 0$$

$$H1_a = \mu_{AR1} \neq \mu_{AR2}$$

Where

μ_1 = Abnormal Returns before dividends announcement

μ_2 = Abnormal Returns after dividends announcement

In order to prove the hypothesis a T-test was conducted at a 95% confidence level. However prior to the conducting of the T-test the average abnormal returns 20 days before the event were calculated as well as the average abnormal returns 20 days after the event. This is reflected in figure 13 for the sample less than negative 10% dividend payout ratio change and figure 14 for the sample more than 10% dividend payout ratio change. The AAR before refers to the 20 days prior to the event and AAR after refers to 20 days after the event. The paired difference series refers to the difference between the average abnormal returns before t and after the event.

The one-sample T-test was then conducted on the paired difference in order to see if hypothesis 1 should be rejected or accepted for the sample of payout ratio changes less than minus 10%. The p value from the t-test for the sample less than minus 10% as per table 7, was 0.925 which means that H_0 should not be rejected and that the mean abnormal returns before the event are equal to the mean abnormal returns after the event. This means that the market is strong efficient and that the dividends announcements do not result in the share price changing.

The one sample T-test was also conducted on the paired difference for the sample of payout ratio changes greater than 10%. The T-test for this sample had a p-value of 0.014 as per table 9, which is significant at a 5% significance level which means that the H_0 should be rejected and the mean abnormal returns before the event are not equal to the mean abnormal returns after the dividends announcement. This means that the market is semi-strong efficient and that dividend announcements do result in the share price changing.

The difference in results between the two extremes could be due to the assumption made at the beginning with respect to dividend payout ratio changes representing SENS announcements. This could also be due to the calculation of the payout ratio changes following from the argument of abnormal returns in section 6.3, where this was as a result of a high negative dividend payout ratio change for the sample of less than negative 10% change in dividend payout ratio. As previously analysed, a high negative payout ratio change was mainly due to a decline in dividends. According to signaling theory where, due to a dividend cut being perceived as bad news by investors

and an indication of negative growth prospects by management, management maintains past dividends in order for investors to believe that earnings growth is possible in the future (Firer et al., 2008; Brav et al., 2005). This could mean that management is reluctant to cut dividends and that this result is unconventional, as it cannot be supported by any evidence from literature claiming that the JSE is strong efficient. However this is in agreement with Miller and Modigliani (1961) and Brennan (1971), who argued that changes in dividend payout policy do not result in a change in share price.

There is support for the theory that the JSE is inefficient as per the results of the T-test for the sample of more than 10% change in dividend payout ratio. Okeahalam and Jefferis (1999) found the JSE to be a semi-strong form of the efficient market hypothesis. They arrived at this conclusion based on an event study methodology, testing the impact of earnings announcements on the abnormal return of 17 bank sector stocks and 13 retail stores sector stocks on the JSE. They analysed 106 good news, 112 bad news and 11 no news events. The Cumulative Abnormal Return plots for the good news firms showed a gradual increase from two weeks before the event to the announcement week and then fell sharply two weeks after the event. Okeahalam and Jefferis (1999) also found that the CAR plots for the bad news firms showed a sharp drop from two weeks prior to the announcement week with a gradual drop from the announcement week to one week after the announcement and then a drastic increase in the second week after the announcement. This price response to the earnings announcements resulted in Okeahalam and Jefferis (1999) concluding that the JSE is semi-strong efficient.

No research could be found to indicate that the JSE was strong efficient which is contradictory to the findings of Ward and Muller (2010), who found the JSE to be reasonably inefficient during their analysis of 118 black empowerment deal-related announcements thereby agreeing with the results from the sample with payout ratios greater than 10%. Ward and Muller (2010) concluded that the BEE deal impacts were only incorporated into the share price about 80 days after the announcements.

Bhana (1997) was the only author in South Africa that could be found to assess the announcement of share dividends declared by a random sample of 250 companies listed on the JSE and to conduct an event study 60 days before the announcement to

60 days after the announcements. The JSE was found to be inefficient in reacting to the announcement of share dividends as Bhana (1997) found that there were significant abnormal returns for up to 20 days after the event. This result is in agreement with the result from the sample more than 10% dividend payout ratio change.

International evidence from India found the Indian stock exchange to be semi-strong efficient as all of the dividend announcements were reflected in the share price (Sharma, 2011) which is in line with the findings from the sample of less than negative 10% dividend payout ratio. Sharma (2011) conducted an event study which consisted of 1188 annual dividend announcements by 133 companies listed on the Bombay Stock Exchange and the National Stock Exchange 12 days before the event and 12 days after the event. Sharma (2011) noted through the analysis of the average abnormal returns and the cumulative average abnormal returns, that there was no statistical significance.

6.6 Hypothesis 1a discussion

The null hypothesis stated that the information conveyed in dividends announcements has a short term impact only, and is 'washed out' in the longer term as evidenced by the CAARs of zero at 200 days after the dividend announcement.

The alternative hypothesis stated that the information conveyed in dividends announcements has a long term impact and in the longer term is evidenced by the CAARs greater than or less zero at 200 days after the dividend announcement.

$$H1a_0 = CAAR_{T+200} = 0$$

$$H1a_a = CAAR_{T+200} \neq 0$$

Where

$CAAR_{T+200}$ = Cumulative Average Abnormal Returns 200 days after the dividends announcement

The results for this hypothesis reveal that the CAARs at 200 days after the dividend announcement are not equal to zero as shown in table 10 where the CAARs 200 days after the dividends announcement is 106% for the sample of the payout ratio change less than minus 10% and is therefore greater than 0.

For the sample of payout ratio change greater than 10%, the CAARs 200 days after dividend announcement was 137% and is therefore greater than 0. Both of these values are greater than zero and therefore for both samples the null hypothesis is rejected and find in favor of the alternative hypothesis. This means that the information contained in the dividend announcement is not washed out in the longer term and dividends announcements do not only have a short term impact and in the long term dividends announcements do have an impact on the share price.

International evidence from another emerging economy, India, is in agreement with the findings from this study, Maitra and Dey (2012) who based their analysis on 24 S&P CNX NIFTY companies in an event study with event period 15 days before the announcement and 15 days after the announcement with the event defined as a dividend announcement. Under the CAPM model, Maitra and Dey (2012) found the CAARs to be continuously increasing and from the fifteenth day to the ninth day before the announcement, all the CAARs were observed to be positive statistically insignificant at a 5% level of significance, however during the post announcement period the CAARs were found to be statistically significant.

Ward and Muller (2010) also conducted a long term study and recorded an abnormal return of about 10% at 180 days after a BEE announcement and therefore concluded that in the long term, that BEE has an effect on the share prices.

6.7 Hypothesis 2 Discussion

The null hypothesis stated that analysts' dividend per share consensus forecasts (dps) one year before a SENS announcement is more accurate than the analysts' dps consensus forecast one month before a dividends announcement because there is no information contained in the build-up to the announcement.

The alternative hypothesis states that analysts' dividend per share consensus forecasts (dps) one year before a SENS announcement is less accurate than the analysts dps forecast one month before a dividends announcement because there is information contained in the buildup to the announcement.

$$H_{2_0} = \mu_1 - \mu_2 = 0$$

$$H_{2_a} = \mu_1 \neq \mu_2$$

Where:

μ_1 = Analyst's consensus dividends forecasts 12 months prior to dividend announcements

μ_2 = Analyst's consensus dividends forecasts 1 month prior to dividend announcements

The results of the MAPE for the sample less than negative 10% dividend payout ratio change of 62 firms, as per table 11 and graphically represented in figure 15 indicated, that the analysts' consensus dividend forecasts 12 months prior to a dividend announcement are less accurate than the dividend per share forecast one month before the dividend announcement and therefore accuracy increases with time. The T-test revealed a p-value of 0.001 as per table 12 which is statistically significant at a 5% level. The null hypothesis is therefore rejected in favor of the alternative hypothesis that analysts forecast accuracy improves closer to the time of a dividend announcement as there is information contained in the buildup to the announcement.

The results of the MAPE for the sample more than 10% dividend payout ratio change of 63 firms as per table 15, and graphically represented in figure 16, indicated that the analysts' consensus dividend forecasts 12 months prior to a dividend announcement is less accurate than the dividend per share forecast one month before a dividend announcement and therefore accuracy increases with time. The T-test revealed a p-value of 0.022 from table 16, which is statistically significant at a 5% level. The null hypothesis is therefore rejected and there is strong evidence in favor of the alternative hypothesis that analysts forecast accuracy improves closer to the time of a dividend announcement as there is information contained in the buildup to the announcement.

The results are supported by the Bhana (1997) who investigated 250 companies from the JSE and besides finding the JSE to be inefficient, also found that share dividends are used as an inexpensive and unambiguous signaling device by managers and investors. The rejection of the null hypothesis is also not in agreement with the rational expectations equilibrium (REE) according to Bruguier et al. (2010) and provides a justification for the Efficient Market Hypothesis. Their results were that over 90% of analysts' forecasts can be explained by management forecasts as they incorporate all available information at the time of publication. The results of this study disprove REE and are more in favour of signaling theory with a statistically significant p-value at a 5% significance level.

The time period before a SENS announcement also has some implication for accuracy, as this MAPE was high due to the forecast being made available a year prior to the dividend SENS announcement. This is in agreement with the findings of Clement and Tse (2003), who found that long forecast horizons are associated with greater levels of uncertainty. This also has implications for investors as they respond better to analysts' earlier forecasts although this is generally less accurate than the analysts' forecasts shortly before target announcements are released (Ramnath et al., 2008).

6.8 Hypothesis 2a Discussion

Analyst's dividend per share forecasts (dps) six months before the SENS announcement are more accurate than the analysts dps forecast one month before a dividends announcement, because there is no information contained in the build-up to the announcements.

The alternative hypothesis states that analyst's dividend per share consensus forecasts (dps) six months before a SENS announcement are less accurate than the analysts' dps forecast one month before a dividends announcement because there is information contained in the build-up to the announcements.

$$H2a_0 = \mu_1 - \mu_2 = 0$$

$$H2a_a = \mu_1 \neq \mu_2$$

Where:

μ_1 = Analyst's consensus dividends forecasts 6 months prior to dividend announcements

μ_2 = Analyst's consensus dividends forecasts 1 month prior to dividend announcements

The results for the sample less than negative 10% dividend payout ratio change of 61 firms as per table 13 as given in figure 15, indicated that the analysts' consensus dividend forecasts six months prior to a dividend announcement is less accurate than the dividend per share forecast one month before a dividend announcement therefore accuracy increases with time. The t-test revealed a p-value of 0.004 from table 14, which is statistically significant at a 5% level. The null hypothesis is therefore rejected as analysts' forecast accuracy improves closer to the time of a dividend announcement as there is information contained in the buildup to the announcement.

This means that the JSE is inefficient and this is in agreement with Ward and Muller (2010); Bhana (1997) and Mlambo and Biekpe (2007) all of whom investigated the efficient market hypothesis and found the JSE to be inefficient. The results are supported by the Bhana (1997) who investigated 250 companies from the JSE and besides finding the JSE to be inefficient, also found that share dividends are used as a signaling device by managers and investors can use share dividends as an inexpensive and unambiguous signaling device. The time period before the SENS announcement also has some implication for accuracy as this MAPE was high due to the forecast being made available a year prior to the SENS announcement. This is in agreement with the findings of Clement and Tse (2003) who found that long forecast horizons are associated with greater levels of uncertainty. This will also have implications for investors as investors respond better to analysts' forecasts earlier to the period of the announcement although this is generally less accurate than the analysts' forecasts shortly before target announcements are released (Ramnath et al., 2008).

The results for the sample greater than 10% payout ratio change of 63 firms as per table 17 as given in figure 16, indicated that the analysts' consensus dividend forecasts six months prior to a dividend announcement were just as accurate as the dividend per share forecast one month before a dividend announcement, and therefore analysts' consensus forecast accuracy increases with time. The T-test revealed a p-value of 0.113 from table 18, which is statistically insignificant. The null hypothesis is therefore accepted as analysts' forecast accuracy improves closer to the time of a dividend announcement as there is no information contained in the build-up to the announcement. However there is a possibility that because the 12 month MAPE results showed a significant result where analysts' forecast accuracy did change based on the build-up to the announcement date, that this build-up could have been so significant that at six months the forecast was already quite accurate. There was not much of a change between the six month analysts' consensus dividend per share forecast and the one month dividend per share forecast. All of the effects of the information in the build-up to the announcement were already captured in the earlier forecasts.

Consensus forecasts were used in these investigations which are less biased, and as there are no incentives from individual firms and therefore are more reliable (Beyer & Guttman, 2011). The accuracy of the forecasts by individual analysts is not as good as that of consensus analysts, which is supported by the 'portfolio effect' mentioned by Conroy and Harris (1987) where the forecast error is reduced due to a cancellation effect of individual errors. This improved accuracy of dividend per share forecasts for six months before SENS announcements is supportive of the findings of Clement and Tse (2003) and Ramnath et al. (2008) who indicate that timing of analysts' forecasts are important as there are implications for investors. There is a positive trend between analyst forecast accuracy and profitability (Ertimur et al., 2007 & Kadous et al., 2009), which means that this result will end in profitability for investors. This will mean that inefficiency in the JSE is supported and investors will receive some added advantage by following analysts' consensus forecasts.

7 Conclusion

7.1 Main Findings

This aim of this research is to evaluate the impact of dividend related SENS announcements on the share price both before and after the announcement. The objective is to assess if there is a long-term impact on the share price after a SENS announcement, and to assess the accuracy of analyst consensus forecasts, to establish if there is information contained in the build-up to the announcement.

The results of the hypothesis tests indicated for the sample of SENS dividend announcements that were taken from a change in payout that was less than negative 10%, that the JSE is efficient in communicating information resulting in insignificant abnormal returns. However for the hypothesis test on the sample of SENS dividend announcements that were taken from a change in payout ratio that was more than 10%, it was found that the JSE is inefficient in communicating information through the SENS announcement platform resulting in abnormal returns at a 5% significance level. Therefore one can conclude that the JSE has a weak form of market efficiency.

The results of the above hypothesis tests also had implications for share prices. The conclusion is that share price is affected by dividend announcements due to the result of abnormal returns at a 5% significance level. There is some information contained in the dividend SENS announcements. There is also a long term impact on the share price even 200 days after the dividend related announcement has occurred.

The mean average percentage error results for the sample of less than negative 10% change in dividend payout ratio revealed that there is information contained in the build-up to dividend announcements that has a significant impact on the accuracy of analysts' consensus dividend per share forecasts as analysts' forecast accuracy increases from a year before a dividend announcement up until the announcement date. The mean average percentage error results for the sample of greater than 10% change in payout ratio showed that there is some information contained in the buildup to dividend announcements that has a significant impact on the accuracy of analysts dividends per share forecast a year before the dividends. However the analyst's

dividend per share forecasts six months before a dividends announcement, for the sample of dividend payout ratio change more than 10%, did not show a significant impact on the accuracy of analysts' forecast, which is explained as a finding abnormality. The conclusion, therefore, is that analysts forecast accuracy does improve closer to the announcement date and there is information contained in dividend related SENS announcements. The JSE is again relatively inefficient.

7.2 Managerial Implications and Recommendations

The relative inefficiency of the JSE has implications for signals by the management teams of firms listed on the JSE. With the JSE being inefficient, investors can take advantage of inside information which could result in an advantage for share trading. Management must ensure that all the information available relating to the dividends is promptly included in the share price and those SENS announcements with all available information relating to dividends is communicated as soon as possible.

Dividend smoothing over a long period may initially cause investors to have a positive outlook of a firm when dividends are consistent, however in the long run; a false indication of the performance of the firm is given. Dividend payout policies must be sound so that there is no room for dividend smoothing. Strategically, there might be a need for dividends to be declared despite a fall in earnings, but this should then be communicated through the SENS announcements in order to promote transparency and a more efficient stock exchange.

Timing of analysts' forecasts has implications for investors who can start to follow analysts' consensus forecasts for specific share codes with the hope that this results in profitability. The implications for management is that if analysts' consensus dividend forecasts indicate a low or no dividends per share forecasts for a specific firm, this could result in investors removing or reducing their investment with that specific firm based on the forecast. It is then up to management to be as transparent as possible and to make the announcement sufficiently in advance, explaining the reason for the reduction in dividends. The decrease in dividend could be due to expansion and growth or a merger and acquisition.

7.3 Recommendations for Future Research

Research in the distribution of the payout by companies between shares repurchases and dividends, and which the investor would prefer, versus which payment method the company would prefer, should be conducted in South Africa. Share repurchasing did not form part of the scope of this research but is closely related to dividends with most literature viewing share repurchases and dividends as substitutes. Popularity of share repurchases versus dividends in South Africa has increased since share repurchasing is still a new option. Due to the relatively new concept, this will assist both the investor, who will be aware of his choices and the benefits thereof, as well as the companies conducting the research, to better manage their shareholder needs and to prevent agency theory from having too big an impact on the company.

Cash flow data was not easily available so cash flow influences on dividends declared could not be investigated. The ratio between dividends and retained earnings or the amount of growth a firm should consider could also not be investigated per company. The implications of insider trader information could not be investigated due to the lack of availability of this information. Future research should be considered in the area of cash flow availability and what influences the tough decisions that are made on the amount of cash that should be paid out as dividends or kept as retained earnings for future growth of the firm.

Future research can also conduct an investigation into the accuracy of analysts' cash flow forecasts in South Africa using an article by Pae and Yoon (2012) entitled 'Determinants of Analysts Cash Flow Forecast Accuracy'. This is due to the increase in the demand for cash flow accuracy among investors partly; because of the concern for the quality of earnings currently due to the ease of manipulation of earnings. Cash flow is less susceptible to manipulation and should provide a more accurate trend.

This research should be repeated using actual SENS announcements from the SENS database and utilising a keyword search to find dividend related announcements per company. This will be very time consuming as the keyword search provides the researcher with a great deal of data and will require a very patient researcher. The bootstrapping distribution technique should then be used to retest the hypothesis.

Future research can be conducted into investigating the link between Hofstede's cultural dimensions and the capital market as conducted by Fidrmuc and Jacobs (2010), for South Africa. This qualitative piece of research will consist of interviews with persons from the industry as well as some quantitative study on what details can be associated with these cultural dimensions from the numbers.

Another area for future research is the area of behavioural finance and the influence cognitive and emotional biases either individual or collective on the share price.

Future research could repeat this study focusing on an extended period of time of dividend declarations by companies so as to increase the amount of abnormal returns that can be calculated for a specific firm, thereby resulting in a more accurate average abnormal return for a company. This result will assist in clarifying this research as to whether the JSE is efficient or inefficient.

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9 Annexure A

Table 19: Sample for less than negative 10% dividend payout ratio change

| Code | Event Date | Code | Event Date | Code | Event Date | Code | Event Date | Code | Event Date | Code | Event Date |
|------|-------------|------|-------------|------|-------------|------|-------------|------|-------------|------|-------------|
| ABL | 23 Nov 2009 | AMA | 29 Aug 2008 | APN | 16 Sep 2008 | BNT | 19 Dec 2002 | CDZ | 13 Mar 2006 | CPN | 22 May 1992 |
| ABL | 21 Nov 2011 | AMS | 24 Jul 1984 | AQP | 25 Nov 2009 | BRN | 06 Mar 2006 | CDZ | 05 Mar 2007 | CPN | 19 May 1999 |
| ACE | 09 Sep 2009 | AMS | 09 Feb 2009 | AQP | 16 Aug 2011 | BRN | 28 Feb 2007 | CKS | 29 May 1985 | CRG | 03 May 1992 |
| ACE | 23 Sep 2011 | AMS | 08 Feb 2010 | ART | 27 Jun 2000 | BRN | 24 Feb 2009 | CKS | 26 May 1987 | CRM | 07 Sep 2010 |
| ACL | 10 Feb 2010 | ANG | 21 Jan 1994 | ART | 15 Jun 2010 | BRT | 06 Mar 2006 | CKS | 29 May 1991 | CRW | 01 Jul 1996 |
| ACL | 07 Feb 2012 | ANG | 21 Jan 1998 | ASA | 02 Jun 2003 | BRT | 28 Feb 2007 | CKS | 26 May 1995 | CRW | 30 Jun 1997 |
| ACP | 05 Jun 2008 | ANG | 10 Feb 2006 | ASR | 29 Sep 1989 | BRT | 24 Feb 2009 | CKS | 30 May 2003 | CSB | 28 Sep 2000 |
| ADH | 06 Mar 2002 | ANG | 13 Feb 2007 | ASR | 21 Sep 1994 | BSR | 10 Sep 1992 | CKS | 25 May 2006 | CSO | 15 Feb 2001 |
| ADI | 06 May 2009 | ANG | 15 Feb 2012 | ASR | 25 Sep 1996 | BSR | 23 Mar 2001 | CKS | 27 May 2009 | CSO | 12 Feb 2003 |
| ADR | 31 Mar 1992 | AON | 26 Sep 2002 | ASR | 25 Aug 2011 | BSR | 03 Mar 2005 | CKS | 31 May 2011 | CSO | 26 Feb 2009 |
| ADR | 31 Mar 1993 | AON | 07 Nov 2003 | BAT | 06 Jun 2003 | BSR | 22 Mar 2012 | CLH | 13 Aug 2010 | CSO | 23 Feb 2011 |
| AER | 25 Jun 2008 | AON | 14 Nov 2005 | BAT | 25 May 2010 | BSS | 27 Sep 2011 | CMH | 23 Apr 2009 | CUL | 08 Dec 2009 |
| AET | 29 Sep 2009 | AON | 21 Sep 2006 | BAT | 03 Jun 2011 | BVT | 01 Sep 2008 | CML | 15 Nov 2005 | CVI | 24 Aug 1999 |
| AFE | 18 Feb 1987 | AON | 22 Nov 2007 | BAW | 14 Nov 2011 | BWI | 14 Nov 2011 | CML | 13 Nov 2007 | DAW | 14 Sep 2001 |
| AFE | 19 Feb 1994 | AOO | 26 Sep 2002 | BDM | 28 Jun 2007 | CAC | 15 Oct 1987 | CML | 10 Nov 2009 | DCT | 21 Jun 2011 |
| AFE | 20 Feb 2007 | AOO | 07 Nov 2003 | BEL | 18 Mar 1998 | CAC | 25 Feb 1997 | CMO | 10 May 2010 | DLV | 21 Nov 1986 |
| AFE | 23 Feb 2010 | AOO | 14 Nov 2005 | BEL | 16 Mar 2004 | CAC | 24 Feb 2000 | COM | 03 Sep 2003 | DLV | 23 May 2000 |
| AFX | 18 Feb 2010 | AOO | 21 Sep 2006 | BEL | 16 Mar 2009 | CAC | 22 Feb 2001 | COM | 08 Sep 2004 | DLV | 21 May 2002 |
| AGL | 28 Feb 2003 | AOO | 22 Nov 2007 | BIL | 30 Aug 2000 | CAP | 30 Jul 1993 | COM | 17 Sep 2008 | DLV | 27 May 2003 |
| AGL | 20 Feb 2009 | APK | 06 May 2009 | BIL | 24 Aug 2005 | CAT | 08 Sep 2011 | COM | 13 Sep 2011 | DLV | 30 May 2006 |
| AGL | 19 Feb 2010 | APN | 24 Sep 1993 | BIL | 24 Aug 2011 | CCL | 26 Aug 2008 | CPL | 28 Jan 2010 | DLV | 03 Jun 2008 |
| DRD | 20 Aug 2009 | FPT | 28 Oct 2004 | HAR | 16 Aug 2010 | HYP | 01 Mar 2007 | JSC | 20 Apr 2004 | LON | 18 Nov 2008 |
| DRD | 29 Aug 2011 | FVT | 25 Jun 2009 | HCI | 26 Jun 2006 | HYP | 03 Mar 2011 | KEL | 23 Nov 2010 | LON | 16 Nov 2009 |
| DTA | 02 Mar 2005 | GDN | 27 May 2010 | HCI | 15 May 2009 | IDQ | 31 Oct 2001 | KGM | 29 Sep 2006 | MAS | 17 Feb 1989 |
| DTA | 24 Feb 2006 | GFI | 08 Jun 1994 | HDC | 25 Jan 2000 | IDQ | 18 Nov 2002 | KGM | 25 Sep 2007 | MAS | 26 Feb 1993 |
| DTA | 20 Feb 2007 | GFI | 27 Jul 1998 | HLM | 15 Feb 2010 | ILV | 22 May 2007 | KIO | 18 Feb 2010 | MAS | 08 Mar 2001 |
| DTA | 15 Feb 2011 | GFI | 01 Aug 2002 | HPA | 18 Aug 2010 | IMP | 19 Aug 1986 | KIO | 09 Feb 2012 | MAS | 26 Mar 2003 |
| DTC | 11 May 2011 | GFI | 03 Aug 2006 | HPA | 18 Aug 2011 | IMP | 18 Aug 1992 | LBH | 05 Mar 2002 | MAS | 09 Mar 2009 |
| EHS | 12 Feb 1990 | GFI | 06 Aug 2009 | HPB | 18 Aug 2010 | IMP | 16 Aug 1995 | LBH | 02 Mar 2005 | MCU | 21 May 2002 |
| EHS | 09 Feb 1994 | GIJ | 28 Sep 2010 | HPB | 18 Aug 2011 | IMP | 27 Aug 2009 | LBH | 07 Mar 2006 | MCU | 19 Jun 2006 |
| EHS | 10 Feb 2004 | GIJ | 23 Aug 2011 | HWA | 01 Apr 1986 | ING | 22 Jul 2004 | LBH | 24 Feb 2011 | MDC | 10 May 2007 |

| Code | Event Date | Code | Event Date | Code | Event Date | Code | Event Date | Code | Event Date | Code | Event Date |
|------|-------------|------|-------------|------|-------------|------|-------------|------|-------------|------|-------------|
| EHS | 06 Feb 2007 | GND | 24 Feb 2000 | HWA | 01 Apr 1989 | INL | 21 May 2009 | LBH | 01 Mar 2012 | MDC | 26 May 2010 |
| EHS | 06 Feb 2008 | GRF | 01 Feb 1986 | HWA | 30 Apr 1992 | INP | 21 May 2009 | LNF | 15 May 1990 | MIP | 07 Feb 1992 |
| EHS | 24 Mar 2010 | GRF | 13 Sep 1993 | HWA | 05 Mar 1999 | IQG | 05 May 2011 | LNF | 14 Jun 1991 | MIP | 27 Jan 1995 |
| ELI | 20 Jul 2011 | GRF | 28 Aug 1998 | HWA | 10 Mar 2000 | ISA | 30 May 2008 | LNF | 28 Feb 1995 | MIP | 06 Feb 1998 |
| ELR | 23 Sep 2005 | GRT | 18 Apr 2000 | HWN | 16 Mar 1999 | ITR | 07 Jun 2006 | LNF | 23 Aug 2002 | MIP | 22 Feb 2002 |
| EMI | 18 Aug 2010 | GRT | 24 Apr 2001 | HWN | 13 Mar 2001 | ITR | 29 May 2009 | LNF | 23 Aug 2004 | MIP | 02 Mar 2005 |
| ERB | 17 May 2011 | GRT | 05 Sep 2005 | HWN | 25 Mar 2002 | JCD | 16 Jul 1998 | LNF | 14 Sep 2007 | MIP | 09 Feb 2007 |
| ESR | 19 May 2009 | HAR | 22 Jul 1991 | HWN | 05 Mar 2007 | JDG | 15 Nov 2010 | LNF | 01 Oct 2009 | MIP | 19 Dec 2007 |
| ESR | 26 May 2011 | HAR | 05 Jul 1993 | HWN | 05 Mar 2012 | JSC | 27 May 1992 | LNF | 28 Sep 2010 | MIP | 23 Dec 2008 |
| EXL | 30 Sep 2010 | HAR | 25 Jul 1996 | HYP | 18 Mar 1998 | JSC | 30 Mar 1998 | LON | 10 Dec 2004 | MMI | 26 Nov 1997 |
| FBR | 14 May 2003 | HAR | 02 Aug 2004 | HYP | 02 Mar 2006 | JSC | 13 Apr 2000 | LON | 16 Nov 2006 | MMI | 12 Mar 2003 |
| MMI | 11 Mar 2009 | MST | 28 Aug 2009 | NHM | 04 Aug 2005 | PAM | 24 Feb 1999 | PPR | 28 Sep 2010 | RTN | 12 Nov 2008 |
| MML | 18 May 2009 | MTA | 21 Feb 1992 | NHM | 25 Aug 2008 | PAM | 17 Feb 2000 | PSG | 19 Apr 2010 | RTO | 26 Oct 1985 |
| MML | 19 May 2011 | MTA | 23 Mar 2001 | NHM | 20 Aug 2010 | PAM | 24 Jan 2002 | PWK | 28 Mar 1996 | RTO | 26 Sep 2002 |
| MMP | 12 Feb 1993 | MTA | 23 Mar 2009 | NPK | 28 Nov 2002 | PAM | 02 Feb 2009 | RAC | 21 Dec 2009 | RTO | 07 Nov 2003 |
| MMP | 23 Dec 1994 | MTA | 23 Mar 2012 | NPN | 25 Jun 1999 | PAM | 07 Feb 2011 | RBW | 06 May 1993 | RTO | 14 Nov 2005 |
| MMP | 24 Dec 1996 | MTX | 16 Sep 2002 | NPN | 24 Jun 2003 | PAM | 06 Feb 2012 | RBW | 05 May 1995 | RTO | 22 Nov 2007 |
| MMP | 30 Dec 1997 | MTX | 26 Aug 2004 | NTC | 19 Nov 2007 | PCN | 12 Nov 2007 | RDF | 09 Oct 2006 | RTO | 12 Nov 2008 |
| MMP | 23 Dec 1999 | MUR | 01 Sep 1986 | NWL | 02 Oct 1995 | PFG | 06 Dec 2010 | RDF | 29 Oct 2007 | SAB | 22 May 2003 |
| MMP | 27 Dec 2001 | MUR | 25 Aug 1988 | NWL | 29 Oct 2008 | PGR | 02 Jun 2010 | RDF | 28 Oct 2009 | SAC | 23 Feb 2009 |
| MMP | 23 Dec 2004 | MUR | 29 Aug 1997 | OAO | 22 Apr 2008 | PHM | 27 Sep 2006 | RDF | 04 Nov 2010 | SAL | 21 Jan 1988 |
| MMP | 08 Mar 2006 | MUR | 31 Aug 2000 | OAO | 09 Jun 2009 | PHM | 01 Oct 2007 | RES | 08 Feb 2007 | SAL | 10 Mar 1993 |
| MNP | 21 Feb 2011 | MUR | 31 Aug 2011 | OML | 28 Feb 2005 | PHM | 02 Oct 2009 | RES | 04 Feb 2010 | SAP | 12 Feb 1986 |
| MNY | 23 Jun 2003 | NCS | 08 Sep 1989 | OML | 04 Mar 2009 | PKH | 30 May 2011 | RLF | 14 Sep 2011 | SAP | 26 Apr 1994 |
| MNY | 20 Jun 2008 | NCS | 03 Jan 1997 | OMN | 30 Mar 1984 | PMV | 27 Sep 2004 | RLO | 11 Nov 1998 | SAP | 07 Nov 2002 |
| MNY | 30 Jun 2009 | NCS | 29 May 1998 | OMN | 30 Mar 1985 | PPC | 09 Nov 2010 | RLO | 25 Nov 2008 | SAP | 09 Nov 2006 |
| MNY | 24 Jun 2011 | NCS | 13 Jun 2003 | OMN | 11 Feb 1994 | PPR | 18 Sep 1992 | RLO | 18 Nov 2009 | SAP | 06 Nov 2008 |
| MOB | 01 Sep 2000 | NCS | 24 Jun 2005 | OMN | 19 Mar 1997 | PPR | 14 Sep 1999 | RTN | 26 Oct 1985 | SAP | 09 Nov 2009 |
| MRF | 02 Mar 2010 | NCS | 30 Jun 2008 | OMN | 20 Jun 2007 | PPR | 29 Sep 2003 | RTN | 26 Sep 2002 | SBL | 30 Sep 1993 |
| MRF | 06 Mar 2012 | NED | 11 Nov 1986 | ORE | 30 Sep 2011 | PPR | 12 Oct 2006 | RTN | 07 Nov 2003 | SBL | 29 Sep 1994 |
| MST | 31 Aug 2007 | NEP | 09 Feb 2012 | PAM | 27 Feb 1997 | PPR | 28 Sep 2007 | RTN | 14 Nov 2005 | SBL | 25 Sep 2001 |
| MST | 29 Aug 2008 | NHM | 07 Aug 2003 | PAM | 19 Feb 1998 | PPR | 22 Sep 2009 | RTN | 22 Nov 2007 | SBL | 26 Sep 2003 |
| SBL | 28 Sep 2005 | SNU | 25 Jun 2008 | SYC | 18 May 2006 | WHL | 26 Aug 2010 | | | | |
| SBL | 27 Sep 2006 | SOH | 10 Mar 2009 | TKG | 13 Jun 2011 | WKF | 27 Mar 2009 | | | | |
| SBL | 30 Sep 2008 | SOH | 01 Mar 2011 | TON | 23 Feb 2004 | WNH | 01 Dec 1988 | | | | |
| SBO | 04 May | SOV | 15 May | TON | 23 Feb | WNH | 01 Dec | | | | |

| Code | Event Date | Code | Event Date | Code | Event Date | Code | Event Date | Code | Event Date | Code | Event Date |
|------|-------------|------|-------------|------|-------------|------|-------------|------|------------|------|------------|
| | 1991 | | 2003 | | 2009 | | 1999 | | | | |
| SBV | 16 Mar 2001 | SOV | 30 Apr 2008 | TPC | 30 Jun 1993 | WNH | 05 Dec 2002 | | | | |
| SDH | 01 Oct 2007 | SPA | 29 May 1991 | TPC | 28 Sep 2001 | WTL | 17 Sep 2009 | | | | |
| SDH | 12 Oct 2011 | SPA | 21 May 1993 | TRE | 01 Sep 2000 | YRK | 01 Mar 1993 | | | | |
| SER | 30 Sep 2008 | SPA | 14 Apr 1997 | TRE | 01 Mar 2011 | ZSA | 07 Feb 1989 | | | | |
| SHP | 18 Sep 1985 | SPA | 02 Jun 2000 | TRE | 16 Feb 2012 | ZSA | 31 Jan 1992 | | | | |
| SHP | 08 Oct 1991 | SPA | 21 May 2007 | TSH | 19 Mar 2007 | ZSA | 08 Feb 1996 | | | | |
| SHP | 20 Apr 1995 | SPA | 26 May 2010 | TSH | 16 Mar 2009 | ZSA | 07 Feb 2001 | | | | |
| SHP | 28 Aug 2000 | SPG | 16 Sep 2008 | TSX | 20 Mar 1986 | ZSA | 07 Feb 2003 | | | | |
| SIM | 27 Feb 1988 | SPP | 17 Nov 2010 | TSX | 29 May 2007 | ZSA | 13 Feb 2004 | | | | |
| SLM | 09 Mar 2006 | SRN | 30 Sep 2008 | TSX | 28 May 2008 | ZSA | 27 Feb 2007 | | | | |
| SLM | 11 Mar 2010 | SUI | 31 Aug 2001 | TTO | 03 Jun 2010 | ZSA | 25 Feb 2010 | | | | |
| SNT | 24 Nov 1987 | SUI | 29 Aug 2003 | VIL | 31 May 1996 | | | | | | |
| SNT | 15 Nov 1995 | SUI | 29 Aug 2007 | VIL | 01 Jul 1997 | | | | | | |
| SNT | 25 Feb 2004 | SUI | 27 Aug 2009 | VLE | 31 May 2007 | | | | | | |
| SNT | 22 Feb 2005 | SVB | 27 May 2005 | VMK | 16 May 2008 | | | | | | |
| SNT | 04 Mar 2010 | SVB | 05 May 2009 | VOX | 20 Nov 2006 | | | | | | |
| SNT | 01 Mar 2011 | SVN | 16 Mar 2001 | WHL | 25 Aug 2005 | | | | | | |

Table 20: Sample for more than 10% dividend payout ratio change

| Code | Event Date | Code | Event Date | Code | Event Date | Code | Event Date | Code | Event Date | Code | Event Date |
|------|-------------|------|-------------|------|-------------|------|-------------|------|-------------|------|-------------|
| ABL | 21 Nov 2001 | AFE | 20 Feb 1991 | ANG | 07 Feb 2008 | ASO | 23 Nov 2010 | BSR | 15 Mar 2007 | CLH | 13 Aug 2009 |
| ABL | 17 Nov 2003 | AFE | 25 Feb 2008 | ANG | 17 Feb 2011 | ASO | 17 Nov 2011 | BSS | 01 Oct 2010 | CLI | 17 Aug 2004 |
| ABL | 15 Nov 2004 | AFX | 26 Oct 2006 | AON | 04 Sep 2001 | ASR | 18 Sep 1991 | BVT | 12 Aug 1992 | CMH | 21 Apr 2010 |
| ABL | 13 Nov 2006 | AFX | 23 Feb 2012 | AON | 05 Nov 2004 | ASR | 02 Sep 2010 | BVT | 31 Aug 2009 | CML | 14 Nov 2006 |
| ABL | 24 Nov 2008 | AGL | 13 Apr 2000 | AOO | 14 Sep 1990 | BAT | 23 Feb 1990 | CAC | 23 Feb 1999 | CML | 09 Nov 2010 |
| ACE | 22 Sep 2010 | AGL | 13 Mar 2002 | AOO | 03 Sep 1991 | BAT | 12 Jun 2002 | CAC | 20 Feb 2002 | CMO | 01 Jun 2011 |
| ACL | 18 Feb 2004 | AGL | 18 Feb 2011 | AOO | 04 Sep 2001 | BAT | 30 Jun 2004 | CAT | 25 Aug 2010 | CMP | 17 Mar 2011 |
| ACL | 08 Feb 2011 | AIP | 23 Nov 2010 | AOO | 05 Nov 2004 | BAT | 30 May 2008 | CCL | 12 Sep 2003 | CND | 15 Nov 2011 |
| ACP | 17 May 2007 | ALM | 19 Jun 2007 | APK | 09 May 2000 | BAT | 25 May 2009 | CCL | 23 Sep 2004 | COM | 03 Sep 2002 |
| ACP | 04 Jun 2009 | ALT | 04 May 1994 | APK | 10 May 2010 | BCX | 16 Aug 2005 | CCL | 22 Aug 2005 | COM | 07 Sep 2005 |
| ACT | 21 Dec 2010 | ALT | 04 May 2004 | APK | 09 May 2011 | BCX | 10 Nov 2011 | CCL | 24 Aug 2007 | COM | 15 Sep 2009 |
| ADH | 23 Mar 2004 | ALT | 20 Apr 2011 | APN | 22 Aug 2001 | BEG | 30 Jun 2011 | CDZ | 28 Feb 2005 | CPL | 30 Jan 2009 |
| ADH | 14 Mar 2005 | AMA | 05 Nov 2010 | APN | 15 Sep 2010 | BEL | 14 Mar 2000 | CDZ | 30 May 2011 | CPL | 04 Feb 2011 |
| ADI | 07 May 2003 | AMS | 12 Feb 2007 | AQP | 16 Aug 2010 | BIL | 27 May 2009 | CKS | 26 May 1994 | CPL | 01 Feb 2012 |
| ADI | 04 May 2006 | AMS | 07 Feb 2011 | ARH | 16 Aug 2010 | BLU | 24 Aug 2010 | CKS | 31 May 2000 | CPN | 29 May 1996 |
| ADR | 13 Apr 1995 | AMS | 13 Feb 2012 | ARI | 03 Sep 2007 | BNT | 20 Dec 2001 | CKS | 28 May 2004 | CRG | 03 May 1991 |
| ADR | 06 Mar 2003 | ANG | 21 Jan 1993 | ARL | 14 Nov 2008 | BRT | 12 Mar 2004 | CKS | 27 May 2005 | CRG | 21 Apr 1994 |
| ADR | 29 Jun 2004 | ANG | 20 Jan 1995 | ART | 18 Mar 1997 | BSR | 06 Mar 1998 | CKS | 24 May 2010 | CRG | 13 May 2003 |
| AEG | 05 Sep 2011 | ANG | 19 Jan 1996 | ART | 24 Jun 2011 | BSR | 10 Mar 1999 | CLH | 16 Aug 2000 | CRG | 20 May 2011 |
| AER | 11 Jun 2009 | ANG | 27 Jan 2005 | ASO | 12 Nov 2009 | BSR | 05 Mar 2004 | CLH | 12 Aug 2004 | CRM | 07 Sep 2009 |
| CRM | 08 Sep 2011 | CRM | 07 Sep 2009 | DLV | 04 Jun 2007 | EMI | 17 Aug 2011 | GRT | 22 Apr 1999 | HWN | 04 Mar 2008 |
| CSB | 28 Aug 1998 | CRM | 08 Sep 2011 | DRD | 21 Aug 2008 | EOH | 10 Oct 2002 | GRT | 25 Aug 2004 | HWN | 05 Mar 2009 |
| CSB | 21 Aug 2001 | CSB | 28 Aug 1998 | DRD | 26 Aug 2010 | EQS | 23 Aug 2011 | GRT | 27 Jul 2006 | HYP | 02 Mar 2010 |
| CSB | 20 Sep 2011 | CSB | 21 Aug 2001 | DSY | 06 Sep 2006 | ERB | 03 Jun 2010 | GRT | 27 Aug 2008 | ILA | 15 Mar 2011 |
| CSO | 12 Feb 2002 | CSB | 20 Sep 2011 | DTA | 01 Mar 2004 | ESR | 21 May 2008 | GRT | 26 Aug 2009 | ILA | 27 Mar 2012 |
| CSO | 14 Feb 2007 | CSO | 12 Feb 2002 | DTA | 19 Feb 2010 | EXL | 30 Sep 2008 | HAR | 20 Jul 1992 | ILV | 20 May 2004 |
| CSO | 09 Mar 2010 | CSO | 14 Feb 2007 | DTA | 27 Mar 2012 | EXL | 28 Sep 2011 | HAR | 25 Jul 1995 | IMP | 30 Aug 1991 |
| CSO | 23 Feb 2012 | CSO | 09 Mar 2010 | DTC | 16 May 2006 | FBR | 14 May 2002 | HAR | 01 Aug 2001 | IMP | 20 Aug 1998 |
| CUL | 06 May 2003 | CSO | 23 Feb 2012 | DTC | 13 May 2010 | FPT | 02 Nov 2006 | HAR | 08 Aug 2005 | IMP | 30 Aug 2007 |
| CUL | 27 May 2005 | CUL | 06 May 2003 | EFG | 09 Nov 2011 | GFI | 07 Jun 1993 | HAR | 17 Aug 2009 | IMP | 26 Aug 2010 |
| CUL | 19 Dec 2008 | CUL | 27 May 2005 | EHS | 11 Feb 1991 | GFI | 13 Jun 1997 | HAR | 15 Aug 2011 | ING | 28 Feb 2006 |
| CVN | 29 Nov 2011 | CUL | 19 Dec 2008 | EHS | 10 Jan 1992 | GFI | 27 Aug 1999 | HCI | 27 Jun 2005 | IQG | 16 Apr 2010 |
| DAW | 27 Nov 2003 | CVN | 29 Nov 2011 | EHS | 10 Feb 1995 | GFI | 02 Aug 2001 | HCI | 25 May 2007 | ISA | 29 May 2006 |
| DCT | 05 Apr 2004 | DAW | 27 Nov 2003 | EHS | 13 Feb 2002 | GFI | 04 Aug 2005 | HCI | 04 Jun 2010 | ISA | 31 May 2007 |

| Code | Event Date | Code | Event Date | Code | Event Date | Code | Event Date | Code | Event Date | Code | Event Date |
|------|-------------|------|-------------|------|-------------|------|-------------|------|-------------|------|-------------|
| DCT | 19 Apr 2006 | DCT | 05 Apr 2004 | EHS | 08 Feb 2005 | GIJ | 29 Aug 2007 | HPA | 20 Aug 2009 | ISA | 28 May 2010 |
| DCT | 20 Apr 2010 | DCT | 19 Apr 2006 | EHS | 02 Feb 2006 | GIJ | 25 Aug 2009 | HPB | 20 Aug 2009 | ISA | 24 May 2011 |
| DGC | 09 Sep 2003 | DCT | 20 Apr 2010 | EHS | 16 Mar 2009 | GND | 01 Mar 2001 | HWA | 01 Jun 1991 | ITR | 30 May 2005 |
| DLV | 20 May 1999 | DGC | 09 Sep 2003 | ELI | 20 Jul 2010 | GPL | 22 Sep 2010 | HWA | 02 May 1994 | ITR | 18 Jun 2008 |
| DLV | 22 May 2001 | DLV | 20 May 1999 | ELR | 28 Sep 2004 | GRF | 26 Aug 1994 | HWN | 14 Mar 2000 | ITR | 06 May 2011 |
| DLV | 04 Jun 2007 | DLV | 22 May 2001 | EMI | 27 Aug 2009 | GRF | 01 Sep 1997 | HWN | 16 Feb 2004 | IVT | 02 May 1995 |
| IVT | 16 May 2000 | LNF | 17 Aug 2001 | MIP | 15 Mar 2006 | MOB | 22 Feb 2008 | MUR | 25 Aug 1999 | NTC | 24 Nov 2008 |
| JDG | 23 Nov 2004 | LNF | 03 Sep 2003 | MIP | 17 Dec 2009 | MOB | 18 Feb 2010 | MUR | 28 Aug 2002 | NWL | 24 Oct 2007 |
| JDG | 16 Nov 2009 | LNF | 11 Sep 2008 | MIX | 07 Jun 2010 | MOR | 17 Aug 2011 | NCS | 08 Sep 1990 | OAO | 15 Apr 2010 |
| JSC | 21 Apr 1993 | LNF | 14 Oct 2011 | MMI | 26 Nov 1998 | MPC | 25 May 2005 | NCS | 19 Aug 1991 | OCE | 12 Nov 2004 |
| JSC | 10 Apr 2003 | LON | 29 Nov 2001 | MMI | 10 Mar 2004 | MPC | 26 May 2010 | NCS | 26 Jun 2002 | OCE | 09 Nov 2005 |
| JSC | 19 Apr 2005 | LON | 12 Dec 2003 | MMI | 12 Mar 2008 | MRF | 01 Mar 2011 | NCS | 25 Jun 2004 | OLG | 24 Aug 2010 |
| JSC | 27 Sep 2011 | LON | 16 Nov 2010 | MMI | 10 Mar 2010 | MSM | 26 Aug 2004 | NCS | 29 Jun 2006 | OLI | 30 Sep 2009 |
| JSE | 10 Mar 2008 | MAS | 21 Feb 1994 | MML | 29 Apr 2010 | MSM | 25 Aug 2011 | NCS | 03 Jul 2007 | OML | 25 Feb 2002 |
| KAP | 08 Sep 2010 | MAS | 19 Feb 2002 | MMP | 21 Feb 1992 | MST | 02 Sep 2003 | NED | 13 Feb 2003 | OML | 26 Feb 2007 |
| KDV | 29 Mar 2011 | MAS | 24 Mar 2006 | MMP | 29 Dec 1993 | MST | 02 Sep 2004 | NEP | 11 Feb 2011 | OMN | 12 Feb 1993 |
| KGM | 13 Sep 2004 | MDC | 15 May 1992 | MMP | 22 Dec 1995 | MST | 01 Sep 2006 | NHM | 02 Aug 2001 | PAM | 15 Feb 1991 |
| KIO | 16 Feb 2009 | MDC | 10 May 2006 | MMP | 24 Dec 1998 | MTA | 17 May 1991 | NHM | 05 Aug 2004 | PAM | 24 Feb 1994 |
| KIO | 10 Feb 2011 | MDC | 20 May 2009 | MMP | 28 Dec 2000 | MTA | 16 Mar 2000 | NHM | 03 Aug 2006 | PAM | 04 Feb 2008 |
| LBH | 27 Feb 2003 | MFL | 31 Aug 2011 | MMP | 27 Dec 2002 | MTA | 18 Mar 2010 | NPK | 06 Nov 2001 | PAM | 09 Feb 2010 |
| LBH | 26 Feb 2009 | MIP | 28 Jan 1994 | MNP | 23 Feb 2010 | MTA | 15 Mar 2011 | NPK | 23 Nov 2005 | PAN | 01 Sep 2009 |
| LBH | 25 Feb 2010 | MIP | 26 Jan 1996 | MNY | 06 May 2002 | MTN | 11 Jun 2004 | NPN | 26 Jun 1998 | PAN | 28 Sep 2011 |
| LEW | 22 May 2006 | MIP | 05 Feb 1999 | MNY | 29 Jun 2006 | MTN | 09 Mar 2011 | NPN | 29 Jun 2000 | PCN | 18 Nov 2002 |
| LNF | 05 Mar 1992 | MIP | 09 Feb 2001 | MNY | 24 May 2007 | MTX | 27 Aug 2003 | NPN | 27 Jul 2001 | PCN | 17 Nov 2003 |
| LNF | 25 Feb 1994 | MIP | 28 Feb 2003 | MNY | 30 Jun 2010 | MUR | 30 Aug 1996 | NPN | 29 Jun 2004 | PCN | 14 Nov 2005 |
| LNF | 27 Feb 1997 | MIP | 27 Feb 2004 | MOB | 01 Mar 2005 | MUR | 28 Aug 1998 | NTC | 15 Nov 2006 | PET | 08 Sep 2010 |
| PFG | 28 Nov 2011 | RBW | 05 May 1994 | RTO | 21 Sep 2006 | SHP | 18 Sep 1984 | SNU | 24 Jun 2009 | SUR | 11 Sep 2008 |
| PGR | 20 May 2004 | RBW | 16 May 2002 | SAP | 17 Apr 1991 | SHP | 18 Sep 1986 | SOV | 07 May 2002 | SVB | 26 May 2003 |
| PGR | 01 Jun 2005 | RBW | 20 May 2004 | SAP | 15 Apr 1992 | SHP | 26 Aug 1988 | SOV | 30 Apr 2004 | SVB | 08 Jun 2007 |
| PGR | 04 Jun 2009 | RBW | 10 Jun 2009 | SAP | 10 May 1995 | SHP | 28 Aug 1990 | SPA | 26 May 1992 | SVB | 11 May 2010 |
| PHM | 30 Sep 2004 | RDF | 10 Oct 2005 | SAP | 12 Nov 2001 | SHP | 25 Apr 1994 | SPA | 29 Apr 1996 | SYC | 18 May 2005 |
| PHM | 29 Sep 2008 | RDF | 30 Oct 2008 | SAP | 10 Nov 2003 | SHP | 23 Aug 1999 | SPA | 18 May 1999 | SYC | 23 May 2008 |
| PHM | 04 Oct 2010 | RDF | 03 Nov 2011 | SAP | 08 Nov 2004 | SHP | 19 Aug 2003 | SPA | 05 Apr 2004 | SYC | 04 Jun 2009 |
| PIK | 27 Mar 1995 | RES | 10 Feb 2006 | SAP | 10 Nov 2005 | SLM | 07 Mar 2002 | SPA | 22 Apr 2005 | SYC | 09 Jun 2011 |
| PKH | 31 May 2010 | RES | 08 Feb 2008 | SAP | 08 Nov 2007 | SLM | 06 Mar 2008 | SPA | 02 Mar 2009 | TAS | 24 May 2011 |
| PMV | 11 Dec | RLF | 15 Sep | SBL | 30 Sep | SLM | 05 Mar | SPA | 28 Feb | TLM | 01 Oct |

| Code | Event Date | Code | Event Date | Code | Event Date | Code | Event Date | Code | Event Date | Code | Event Date |
|------|-------------|------|-------------|------|-------------|------|-------------|------|-------------|------|-------------|
| | 2003 | | 2010 | | 1992 | | 2009 | | 2011 | | 2010 |
| PNC | 21 Sep 2004 | RLO | 15 Nov 2000 | SBL | 21 Sep 2000 | SNT | 13 Nov 1985 | SPG | 03 Jun 2002 | TMT | 02 Feb 2011 |
| PPC | 30 Oct 2007 | RLO | 27 Nov 2003 | SBL | 27 Sep 2002 | SNT | 19 Nov 1986 | SPP | 11 Nov 2009 | TMT | 15 Nov 2011 |
| PPC | 11 Nov 2009 | RLO | 21 Nov 2007 | SBL | 30 Sep 2004 | SNT | 20 Nov 1990 | SRN | 23 Oct 2007 | TON | 20 Feb 2003 |
| PPR | 03 Oct 2002 | RLO | 17 Nov 2010 | SBO | 10 Jun 1992 | SNT | 16 Nov 1994 | SSK | 19 May 2009 | TON | 21 Feb 2005 |
| PPR | 26 Sep 2011 | RTN | 04 Sep 2001 | SBO | 01 Jun 1993 | SNT | 24 Feb 1999 | SUI | 01 Sep 2004 | TON | 25 Feb 2008 |
| PSG | 21 Apr 2008 | RTN | 05 Nov 2004 | SDH | 17 Sep 2002 | SNT | 25 Feb 2008 | SUI | 28 Aug 2006 | TPC | 27 Aug 2003 |
| PSG | 20 Apr 2009 | RTN | 21 Sep 2006 | SDH | 15 Sep 2004 | SNT | 24 Feb 2009 | SUI | 29 Aug 2008 | TPC | 30 Aug 2006 |
| RAC | 11 Mar 2011 | RTO | 31 Oct 1990 | SDH | 07 Oct 2010 | SNU | 18 Mar 1997 | SUI | 27 Aug 2010 | TRE | 01 Mar 2005 |
| RAH | 26 Jun 2006 | RTO | 04 Sep 2001 | SER | 13 Aug 1997 | SNU | 31 May 2001 | SUI | 29 Aug 2011 | TRE | 23 Feb 2007 |
| RAH | 01 Sep 2010 | RTO | 05 Nov 2004 | SER | 24 Oct 2007 | SNU | 21 Jun 2007 | SUR | 12 Sep 2003 | TRE | 18 Feb 2010 |
| TSH | 20 Mar 2003 | WNH | 04 Dec 2000 | | | | | | | | |
| TSH | 10 Mar 2004 | WNH | 07 Dec 2001 | | | | | | | | |
| TSH | 14 Mar 2008 | WNH | 08 Dec 2005 | | | | | | | | |
| TSX | 31 May 2006 | WNH | 09 Dec 2009 | | | | | | | | |
| TSX | 26 May 2009 | YRK | 27 Jan 1988 | | | | | | | | |
| TTO | 10 Jul 2008 | YRK | 31 Jan 1991 | | | | | | | | |
| TTO | 28 Jun 2011 | YRK | 31 Jan 1992 | | | | | | | | |
| UBU | 15 Sep 2011 | YRK | 15 Feb 1995 | | | | | | | | |
| UNI | 10 Mar 2009 | YRK | 28 Feb 2005 | | | | | | | | |
| VIL | 29 May 1992 | ZED | 07 Apr 2009 | | | | | | | | |
| VIL | 27 May 1993 | ZSA | 19 Feb 1985 | | | | | | | | |
| VIL | 26 May 1994 | ZSA | 31 Jan 1991 | | | | | | | | |
| VIL | 02 Jun 1995 | ZSA | 02 Feb 1995 | | | | | | | | |
| VLE | 19 May 2003 | ZSA | 06 Feb 1997 | | | | | | | | |
| VLE | 16 May 2008 | ZSA | 03 Feb 1999 | | | | | | | | |
| VMK | 10 May 2010 | ZSA | 02 Feb 2000 | | | | | | | | |
| WBO | 17 May 1994 | ZSA | 06 Feb 2002 | | | | | | | | |
| WBO | 18 May 1995 | ZSA | 24 Feb 2006 | | | | | | | | |
| WHL | 23 Aug 2006 | ZSA | 25 Feb 2008 | | | | | | | | |
| WNH | 01 Dec 1997 | ZSA | 06 Feb 2012 | | | | | | | | |