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THE PERFORMANCE OF BROKERAGE FIRMS IN SOUTH AFRICA

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A research report submitted to the Faculty of Commerce, Law and Management, University of the Witwatersrand, in partial fulfilment of the requirements for the degree of Master of Business Administration

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ABSTRACT

Previous research has reached no consensus on the performance of brokerage firms' stock recommendations.

This study evaluates whether brokerage firms' stock recommendations have investment value, and whether individual investors can profit from these stock recommendations.

An event study was used to determine if stock recommendations produced significant abnormal returns. The abnormal returns were calculated by stripping out three market effects from the returns of shares listed on the JSE, namely the size effect, the value effect and the resources effect. The removal of these market effects ensured that abnormal returns could be better attributed to published consensus recommendations.

The research shows that consensus recommendations do not provide investment value. The research did find positive abnormal returns for stocks which are the subject of upgrade recommendations. However, individual investors could not actually profit from upgrade consensus recommendations as the magnitude of the abnormal returns would not be sufficient to offset transaction costs and broker commissions.

DECLARATION

I, Grant McLaren, declare that this research report is my own work except as indicated in the references and acknowledgements. It is submitted in partial fulfilment of the requirements for the degree of Master of Business Administration in the University of the Witwatersrand, Johannesburg. It has not been submitted before for any degree or examination in this or any other university.

Grant Harold McLaren

Signed at ……

On the …….. day of ……. 2008

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CHAPTER 1: INTRODUCTION

1.1 Purpose of the study

The purpose of this study is to evaluate the advice of professional brokerage firms with regards to individual shares and to determine if these provide value to individual investors.

1.2 Context of the study

Since the seminal paper by Cowles (1933), academics have been divided as to the value of brokerage firms' stock recommendations. In his pioneering study, Cowles (1933) studied the individual stock recommendations of 16 financial services companies and 20 fire insurance companies over a 4½ year period. He concluded that these companies failed to exhibit any skill in investment and that comparable results could be achieved through the random selection of stocks.

Following Cowles' (1933) paper, numerous studies have addressed this issue, with findings both that brokerage firms' stock recommendations produce superior performance and findings that these recommendations provide no superior performance when compared with the general market. Recently Barber, Lehavy, McNichols and Trueman (2001) found that an investment strategy based on the publicly available recommendations of analysts could generate significant gross annual abnormal returns when compared with a market index. In this study, a portfolio was constructed based on consensus (average) analyst recommendations with portfolio rebalancing daily based on new consensus recommendations or changes in existing recommendations.

The popular press shares the debate regarding this subject, with both views on the value of brokerage firms' recommendations finding support.

One of the most famous tests for stock picking was run in the Wall Street Journal for 14 years from 1988 to 2002 (Jasen 2002). In this test, the performance of stocks chosen by investment professionals were compared with

randomly picked stocks chosen by throwing darts at a dartboard as well as to the performance of the Dow Jones Industrial Average. In 142 six-month contests the investments professionals beat the darts 87 times (losing 55 times) and beat the Dow Industrial Average 76 times (losing 66 times). Consensus from the study was that there was no clear winner with regards to professionals' stock recommendations versus the market in general or even randomly chosen stocks.

However, there are many reports of poor performance of brokerage firms' financial recommendations. An article in the business press in the United States in 2002 described how financial analysts at well known investment banks internally ridiculed the very recommendations that they published (Noceera 2002). Noceera (2002) believed that this situation arose as a result of conflicts within brokerage firms. With the advent of online share trading, investors can bypass brokerage firms when purchasing stocks. Therefore, the brokerage firms which publish recommendations publicly do not necessarily enjoy commissions on the transactions based on these very recommendations. Research is therefore an unprofitable exercised for the brokerage firms and often becomes biased by investment bankers and the internal agendas within the brokerage firms.

While quantitative academic research in South Africa on the performance of brokerage firms' recommendations exists, it is limited. In South Africa the most notable analysis of brokerage firms' recommendations is published in the popular press and is the Financial Mail's annual analyst ranking (Ranking the Analysts 2008). However, this is based on a qualitative survey whereby questionnaires are sent to financial institutions and asset managers. Firms and analysts are then ranked according to a set of predetermined criteria.

1.3 Problem statement

The aim of the research is to evaluate whether brokerage firms' stock recommendations have investment value.

The researcher proposes to investigate whether brokerage firms' stock recommendations produce abnormal returns in recommended shares.

The abnormal return is the actual return of a stock in a period less the normal return which could have been expected for the stock had the recommendation not been published. This normal return of the stock should be predicted using a model. In this study a model which removes common market effects for JSE listed shares, which could influence the expected return, is used.

Based on the abnormal returns, it is determined whether individual investors could profit from stock recommendations.

1.4 Significance of the study

The study attempts to measure the value of brokerage firms' stock recommendations.

The study uses an event study to determine if the recommendations have investment value. This could identify a trading strategy for individual investors to profit from brokerage firm stock recommendations.

Furthermore, the results from this study could be used to contribute to the debate regarding the market-form efficiency on the JSE.

1.5 Delimitations and limitations

1.5.1 *Delimitations*

This study will be limited to the consensus forecasts published by I-Net Bridge for JSE listed shares between May 2005 and March 2008.

This study does not attempt to identify the methods which brokerage firms use to analyse and subsequently recommend listed stocks. This study focuses on identifying the value of these recommendations and whether individual investors can profit the recommendations.

1.5.2 *Limitations*

This study will not attempt to quantify the returns of recommended stocks relative to the average market during the relevant period. It rather focuses on identifying the abnormal performance of recommended stocks.

The results of this study could be used to reach conclusions about the market efficiency of the JSE. This is however not the focus of this research.

1.6 Definition of terms

Abnormal return (AR)

The abnormal return is the actual return of a stock in a period less the normal return of the stock which could have been expected in the period. The expected return of the stock is usually calculated using a market model such as the CAPM.

Average abnormal return (AAR)

The average of ARs for a particular period

Brokerage firm

A financial firm which charges commissions to buy and sell stocks on behalf of its clients. In addition, brokerage firm publish investment recommendations which are either sold or distributed to clients.

Bull market

A period during which share prices generally rise or are expected to rise. Interestingly, the term bull market is derived from the way in which a bull would attack an opponent. Generally the bull thrusts its horns in the air and this is a metaphor for the upward trend of the market.

Capital Asset Pricing Model (CAPM)

An economic model for pricing securities based on the relationship between risk and expected return. According to the CAPM the expected return on a share is

equal to the return of on a risk free asset plus a risk premium, based on the riskiness of the share.

Consensus recommendation

A consensus recommendation is an average of analysts' recommendations concerning a particular stock.

Cumulative average abnormal return (CAAR)

The CAAR is the aggregation of AARs over an event window.

Earnings yield ratio (EY)

The earnings per share for the most recent 12 months divided by the current market price of the share. The earnings' yield is the reciprocal of the price-to-earnings (P/E) ratio

Event study

Research which attempts to determine if particular events produce abnormal returns in stocks

Event window

The event window is the period of time over which an event study is performed.

FTSE/JSE TOP 40 Index

The index of the forty largest companies, by market capitalisation, listed on the JSE. The FTSE/JSE Top 40 is regarded as a leading measure of the South African market as a whole.

Growth share

Companies whose share earnings grow at above average rates relative to the market. Growth stocks are characterised by low EYs.

JSE

The JSE Securities Exchange South Africa

Market effects

Characteristics or factors within share markets which explain the variation in share returns. Market effects include size, value and momentum.

Market Effects Control Model

The asset pricing model used in this study which removes three market effects from the abnormal returns of stocks listed on the JSE, namely the size effect, the value effect and the resources effect. These dominant market effects are removed from the abnormal returns in order to provide a better measure of the impact of consensus recommendations on the performance of shares.

Market capitalisation

Market capitalisation is a measure of a listed company's size. It is the value of all issued shares and is the product of the number of shares and the current market price.

Resource shares

In South Africa, shares classified under the Mining or Oil and Gas indices on the JSE are collectively referred to as resources shares.

Value share

Companies whose share earnings grow at low rates relative to the market average. Sometimes value shares are referred to as 'cheap' shares. Value shares are characterised by high EYs

CHAPTER 2: LITERATURE REVIEW

2.1. Introduction

The first part of the review will provide an overview on the efficiency of capital markets and of the JSE in particular. Market efficiency is an important theme which underpins the evaluation of brokerage firm recommendations.

Section 2.3 and Section 2.4 discuss the literature concerning the value of broker recommendations. The question as to whether financial professionals can outperform the market always draws a large amount of debate. The majority of academic research concludes that the recommendations of brokerage firms do not provide superior returns. However, there is research to suggest the contrary and that recommendations do indeed have investment value.

One of the main sources of difference between the two schools regarding broker recommendations is the approach used to evaluate the performances. The final section of the literature review presents a review on the methodologies employed in broker recommendation and related studies.

2.2. Market efficiency

The concept of market efficiency is central to finance (Dimson and Mussavian 1998). Dimson and Mussavian (1998) explain that the term efficiency is used to describe the informational efficiency of financial markets. In such markets, relevant information is impounded into the price of financial assets.

Earlier work by Fama (1969), described the efficient market hypothesis whereby stock prices fully reflect all available information. Much of the early studies of efficient markets assumed that successive price changes were independent, and in addition were identically distributed (Fama 1969). These two assumptions support the “random walk model”.

Fama (1965) describes that the random walk model implies that stock price changes are not affected by previous history and therefore past performance or

even current price cannot be used to predict future price in any meaningful way. The successive price changes of individual stocks are independent and the future price of the stock is therefore no more predictable than a random number.

The random walk model raises important issues concerning the work of market analysts (Fama 1965). Fama (1965) noted that if this model is an accurate description of stock markets and successive price changes are independent, then the predictions of professionals are of no real value.

Many empirical tests have been performed to determine if markets are indeed efficient. Fama (1970) conducted an extensive review of the efficient market model. He divided previous studies of tests on the efficient market hypothesis into three categories:

- Weak-form efficient markets where market prices fully reflect all historical prices in the current prices of stocks.
- Semi-strong-form efficient markets which reflect all publicly available information such as earning announcements in addition to information reflected in the weak-form market.
- Strong-form efficient markets which reflect all information known to any of the market participants. Therefore private information known to only certain investors or groups is fully reflected in stock prices.

Weak form tests of the efficient market model have strongly supported the efficient market hypothesis (Fama 1970). Furthermore, Fama (1970) concluded that semi-strong form tests in which prices are assumed to fully reflect publicly available information have also supported the efficient market hypothesis.

Strong-form tests where prices reflect all available information generally support the efficient market hypothesis but cases of market inefficiency have been identified (Fama 1970). These typically relate to cases where corporate insiders or investment specialists have access to private information.

Several studies of the JSE have found that the JSE is an efficient capital market (Gilbertson and Roux 1977, Strebel 1977). Gilbertson and Roux (1977) performed tests on the performance of professionally managed portfolios. They reasoned that if such portfolios were to achieve consistently superior performances relative to that of the market as a whole, some form of inefficiency would have to be present within the market. They found that the fund managers were not able to outperform the market and concluded that the JSE is an efficient capital market.

Strebel (1977) also found evidence of efficiency on the JSE. However, Strebel (1977) concluded that the efficient market hypothesis only applied to half the shares traded on the JSE; those with high average annual trading volumes.

The validity of the efficient market hypothesis for the JSE is of significance to this study. Efficiency of the JSE implies that the analysis of either trends and patterns of stocks or the acquisition and analysis of stock relevant information cannot be expected to produce superior investment performance (Gilbertson and Roux 1977). Therefore, as Fama (1965) concluded in his initial study into market efficiency, the average professional analysts should produce a return no better than that obtained randomly. However, Fama (1965) continues that it is the different judgements of analysts concerning currently available information which could lead them to consistently outperform randomly selected stocks even in an efficient market environment.

2.3. Broker recommendations do not provide superior performance

Most of the early research suggests that recommendations do not outperform the market. One of the earliest studies on this subject was the seminal paper by Cowles (1933). In this study the individual stock recommendations of 16 financial services companies and 20 fire insurance companies were analysed over a 4½ year period between January 1928 and July 1932. The average records of these companies in the stocks which they selected were found to fall below the average performance of the stock market. Furthermore, Cowles

(1933:323) concluded that comparable results could be achieved through the random selection of stocks and that the companies “failed to exhibit definitely the existence of any skill in investment”.

Subsequent research mostly supported Cowles (1933) findings that brokerage firms do not on average outperform passive benchmarks. Diefenbach (1972) assessed the value of recommendations received from the institutional research departments of brokerage firms during an 80 week period between 1967 and 1969. He found that the average performance of these investment recommendations did not provide a result which was much better than the performance of Standard & Poor’s Index of 425 Industrials for the same period. He believed that comparable investments results could be achieved through a random selection process.

In 1975, McCain and Millar linked market efficiency to the performance of recommendations. The aim of this study was to determine if market efficiency accounted for the fact that recommendations did not provide abnormal profits. McCain and Millar (1975) measured recommended share price changes relative to the New York Stock Exchange Index, and concluded that short-run prices were in fact affected by the recommendations. This was not consistent with an efficient capital market but it was noted that the sample was small and the market period limited. However, over a longer six month period the recommendations did not provide any significant returns. McCain and Millar (1975) concluded that although the short term recommendations’ returns were positive, the magnitude of the stock price changes were not large enough to produce a significantly better return than the market.

Dimson and Marsh (1984) further investigated market efficiency and share recommendations. This study comprised more than 4,000 share forecasts made by 35 UK stockbrokers and internal analysts at a large UK investment institution during 1980 and 1981. They noted that as the value of investment advice was eroded rapidly by publication due to the efficiency of the market, this study of unpublished recommendations would give a better indication of brokers’ forecasting ability. Dimson and Marsh (1984:1257) concluded that the recommendations did in fact “reveal a small but potentially useful degree of

forecasting ability" but that much of the information content was discounted into the market within the first month. This observation of superior performance contradicted much of the research at the time. Therefore, in a follow up study Dimson and Fraletti (1986) examined in detail the performance of stocks recommended by a leading UK broker in 1983. This study was based on verbal recommendations made prior to, or in the absence of, publication. The researchers were unable to detect any evidence of significant abnormal performance of the recommended stocks. Therefore, although the Dimson and Marsh (1984) study found value in unpublished recommendations, the follow up study failed to find statistically significant evidence of superior performance of recommendations.

A study by Ashton (1988) illustrated an important issue in investment performance studies. In this study Ashton (1988) criticised the Dimson and Fraletti (1986) study for concluding that it could not find any significant abnormal performance by the recommended stocks. Ashton (1988) contends that studies often fail to detect abnormal performance (when such performance is indeed present) due to statistical evidence being insufficient to reject a null hypothesis that the market is efficient. This result is generally referred to as a Type II error, whereby a Hypothesis Test erroneously accepts the null hypothesis (Kohler 2002). Ashton (1988:845) argues that with the small sample size in the Dimson and Fraletti (1986) study and the large variance of the abnormal performance, the student t test used to detect significant abnormal performance is "doomed to failure".

More recent research continues to support the earlier findings. Desai and Jain (1995) examined the published stock recommendations made by prominent money managers (so called "superstars") over a twenty-four year period from 1968 to 1991 in the United States. They found that on average these money managers did not seem to posses superior skills in recommending stocks. Furthermore they found no significant abnormal returns for periods of one to three years. They therefore concluded that investors who read the recommendations would not profit from the advice.

2.4. Broker recommendations do provide superior performance

There are several studies which report good performance for brokerage firms' recommendations.

Groth, Lewellen, Schlarbaum and Lease (1979) conducted a study of a brokerage house's common stock recommendations from January 1964 through December 1970. They found that the recommendations did provide abnormal returns, but interestingly these were in the period six months prior to the respective recommendations and up to and including the first month of the recommendation. Groth, et. al. (1979) concluded that this was due to the fact that companies which were performing well would attract attention resulting in news items being published in the press. This would then attract the attention of the research staff in brokerage houses, often resulting in investment recommendations. This would explain the superior results during the six months prior to the recommendations. In addition, if the securities market is indeed efficient, share prices should at all times reflect all available information. Therefore upon the publication of the recommendations, the market would react quickly to the analyses contained therein. Thus, rather than the share moving slowly upward over a number of months as information slowly flowed into the market place, the stock price would quickly re-adjust to a new level which would account for the analyses contained in the recommendation.

Stanley, Lewellen and Schlarbaum (1981) reasoned that individual investors pay for research, either directly through subscriptions to investment advisory services or indirectly through commissions charged by the brokerage firms which supply recommendations. They therefore surmised that as research was in demand within a private-enterprise economy, it had to have value. Stanley et al. (1981) conducted a study to determine if professional investment advice offered the potential for individual investors to earn positive excess returns. They concluded that investors could achieve positive excess returns if they acted on a brokerage firm's research advice. However, they did note that the opportunity for these returns was dependant on the investors receiving the

investment advice on a timely basis and the fact that they would be able to execute transactions in the recommended stocks at the prices that hypothetical returns had been calculated at.

Stanley et. al. (1981) highlighted the phenomenon of ‘leakage’ which could negatively influence investors’ returns. ‘Leakage’ refers to information which is leaked by a brokerage firm’s account executives, to their customers, prior to the publication of the brokerage research. Leakage, together with Groth et. al’s (1979) findings that superior performing stocks attract the attention of brokerage houses’ research, led Stanley et al. (1981) to concluded that excess returns were sometimes evident even prior to the publication of the brokerage research on a specific stock.

In a review of studies of professional investment advice, Bjerring, Lakonishok and Vermaelen (1983) noted that the more recent studies at that time reported positive abnormal returns. They believed that these results could be attributed to the fact that these studies had more carefully been adjusted for risk. In their paper, Bjerring et al. (1983) evaluated the brokerage advice of a leading Canadian brokerage house between September 1977 and February 1981. Abnormal returns were calculated using a market model which adjusted for risk. Bjerring et al. (1983) concluded that the brokerage firm’s recommendations performed significantly better than expected (as defined by the market model) during the test period of three and a half years. Furthermore evidence of timing was illustrated by the fact that stocks generated positive abnormal returns while on the brokerage firm’s recommended list, and zero abnormal returns upon removal from the list.

Several studies have been performed from a different perspective, but with similar results. Ferber (1958) studied the recommendations of four major stock market services in the United States during a three month period in 1953. In this study he examined the effect of the recommendations on the price of the stocks. The effect on the stock price was analysed both prior to a recommendation and following it. Ferber (1958) concluded that prices of stocks recommended did generally move in the direction indicated, but with the principal price move occurring in the first week and particularly on the day

following the publication of recommendation. He did however note that the magnitude of the price move was small and that investors would require large transactions to profit from the recommendations.

A study by Davies and Canes (1978) also found that stock prices adjusted to analysts' recommendations. However, this study focused on second-hand recommendations, provided to investors after the recommendations had first been provided to an analyst's clients. In their research, Davies and Canes (1978) rejected the strong-form efficient market hypothesis based on the observation that recommendations released to a small group of investors (analyst's clients) were not immediately and fully reflected in the stock price. Therefore, upon secondary dissemination to investors, the recommendations did indeed have a significant impact on the stock price. They argued that the few clients with the inside information were not be able to eliminate all abnormal returns available due to the limitations within their portfolios or the required brokerage costs. Therefore, the stock price adjustments were not completed until the information was widely known. Based on their evaluations, Davies and Canes (1978) concluded that stock analysts do provide economically valuable information to clients and investors. Furthermore, although their research contradicted much research at the time which concluded that analysts' recommendations were worthless, Davies and Canes (1978) argued that their results were supported by the fact that analysts' research services could only really persist if they produced a real economic product. They reasoned that research services could only produce and sell information to clients if this information could provide abnormal returns.

Womack (1996) conducted an analysis of buy and sell recommendations by analysts at major US brokerage firms in the period 1989 – 1991. This analysis was also conducted from the perspective of stock price changes as a result of the recommendations. He found that these recommendations had substantial impacts on the stock prices, both immediately upon publication of the recommendation, and in subsequent months. Therefore, while this research did not specifically address investors profiting from the recommendations, it did conclude that brokerage research does indeed have investment value as

“analysts appear to have market timing and stock picking abilities” Womack (1996:137).

Several recent studies have found evidence identifying abnormal returns for portfolios comprising analysts’ stock recommendations. Barber, Lehavy, McNichols and Trueman (2001) examined whether investors could profit from the publicly available recommendations of analysts published in the US between 1985 and 1996. In this study, a portfolio was constructed based on consensus (average) analyst recommendations with portfolio rebalancing daily based on new consensus recommendations or changes in existing recommendations. The performance of the portfolio was compared with the performance of the market index with a resulting gross annual abnormal return of over 4%. Barber et. al. (2001) did however note that the performance of the portfolio required a great deal of trading which would generate high transaction costs. They therefore concluded that investors would not really be able to profit from the recommendations as they did not produce positive abnormal net returns.

In South Africa, studies by Bhana (1990) and Prayag and van Rensburg (2006) found that brokers’ recommendations provided investment value.

Bhana (1990) studied the recommendations of two stockbroking firms and two investment advisory services during a ten year period from January 1979 to December 1988. Bhana (1990) found that both the stockbroking firms and the investment advisory services provided a valuable service to their clients. He concluded that clients could earn positive abnormal returns by investing in recommended shares. Bhana (1990) reasoned that the firms’ superior investment recommendations were attributable to the fact that the firms had superior access to new information which they could process more quickly and efficiently in addition to a potential for acquiring inside information.

Prayag and van Rensburg (2006) studied buy, hold and sell consensus recommendations of shares listed on the JSE in the period March 2000 through to April 2003. Prayag and van Rensburg (2006) studied both the returns which an investor could achieve by holding portfolios based on the analysts’

recommendations as well as the performance of portfolios based on changes in the analysts' consensus recommendations. In particular the study investigated whether a valuable investment strategy could be developed by acting exclusively on changes in analysts' consensus recommendations.

Prayag and van Rensburg (2006) found that only buy recommendations resulted in significant returns, while the hold and sell recommendations produced insignificant returns. Furthermore, in their study of changed recommendations, Prayag and van Rensburg (2006) found that an investor could generally earn significantly higher returns by acting on downgrade recommendations rather than simply following the buy, hold and sell consensus recommendations. Both shares which changed from a hold to a sell recommendation as well as shares which changed from a buy to a hold recommendation earned negative abnormal returns.

2.5. Methodological issues

Previous studies have not reached a common conclusion as to the performance of brokers' recommendations. However, the results of studies are critically dependant on the evaluation techniques employed (Walker and Hatfield 1996). Stock index comparisons and event study methodologies are the techniques which have most commonly been used.

2.5.1 Stock index comparisons

Many of the studies, particularly the earlier ones utilised stock index comparisons Cowles (1933) compared the performance of recommended stocks with the performance of the stock market. The percentage gain or loss of each recommendation over its recommended period was compared with the gain or loss of the stock market in the same period. The total of these results for each service was then calculated every six months and reduced to an effective annual rate. Similarly, Diefenbach (1972) calculated the percentage differences in performance between recommended stocks and the S&P 425. Diefenbach

chose this method of measuring performance relative to the market due to the ease of calculation.

In their critique of the evaluation of analysts' performance, Walker and Hatfield (1996) noted that the choice of the appropriate benchmark is crucial when performing comparisons of stock performance relative to a stock index. "Stock index comparisons are the least reliable because recommended stocks often exhibit greater risk than the benchmark selected" (Walker and Hatfield 1996:26).

2.5.2 Event studies

Many of the studies have employed event study methodologies to evaluate the performance of recommendations. Fama, Fisher, Jensen and Roll (1969) introduced the event study methodology in a paper which evaluated the adjustment of stock prices to share splits. The object of an event study is to assess the extent to which performance during an event is abnormal, i.e. the extent to which the performance is different to that which would normally be expected.

Brown and Warner (1980, 1985) further developed event studies. They concluded that a market model based on the Capital Asset Pricing Model (CAPM) which adjusts for risk performs best under a wide variety of conditions to predict normal expected returns.

Since these early papers, event study methodology has been widely used and has become "the standard method of measuring security price reactions to some announcement or event" (Binder, 1998:111).

In event studies, an event is defined as something which will potentially have some form of financial impact, is unanticipated by the market and provides some type of new information to the market (McWilliams and Siegel 1997). The actual returns of stocks around events are then compared with the normal returns which could have been expected for the stocks had the events not occurred. The difference between these actual returns and expected returns are

defined as the abnormal return (MacKinlay 1997; McWilliams and Siegel 1997). The abnormal returns are aggregated into a cumulative average abnormal return *CAAR* (MacKinlay 1997) Overall inferences are then drawn from the cumulative average abnormal return with the expected value of *CAAR* being zero in the absence of abnormal performance during an event study (Walker and Hatfield 1996).

CHAPTER 3: HYPOTHESIS

The research discussed in the literature review has shown that there is no consensus on the performance of brokerage recommendations. Some research has found that the recommendations do not outperform the market (Cowles 1933; Diefenbach 1972; McCain and Millar 1975; Dimson and Fraletti 1986; Desai and Jain 1995). However, other research does report good performance for brokerage firm recommendations (Ferber 1958; Davies and Canes 1978; Groth, et. al. 1979; Stanley et. al. 1981; Bjerring et. al 1983; Bhana (1990), Womack 1996, Barber et. al. 2001, Prayag and van Rensburg 2006). Therefore the hypothesis to be tested seeks to determine if a brokerage firms' recommendations do outperform the market.

Consensus stock recommendations published by I-Net Bridge will form the basis of the hypothesis test:

H_0 : The cumulative average abnormal return on the consensus recommended shares is not significantly different from zero.

H_A : The cumulative average abnormal return on the consensus recommended shares is significantly different from zero.

$H_0 : CAAR_{T1,T2} = 0$

$H_A : CAAR_{T1,T2} \neq 0$

CHAPTER 4: RESEARCH METHODOLOGY

The research methodology used in this study is based on the event study methodology as developed by Fama, Fisher, Jensen and Roll (1969). Fama et. al. (1969) introduced this event study methodology in a paper which evaluated the adjustment of stock prices to share splits. Since then event study methodology has been widely used and has become “the standard method of measuring security price reactions to some announcement or event” (Binder, 1998:111).

The methodology section initially describes the general event study method used in the study. The actual method used is detailed in Section 4.2. The population and sample to be used are both identified, including the sources used to collect the data, in Section 4.3 and Section 4.4 respectively. The validity and reliability of the data is discussed in Section 4.5.

4.1 Research methodology /paradigm

The methodology to be used is the event study method.

The event study method was developed to measure the effect of an event on stock prices (McWilliams and Siegel 1997). The standard approach is based on estimating a market model for each stock and calculating an abnormal return associated with an event

The event study methodology has become the standard method of measuring security price reaction to announcements or events (Binder 1998). Brown and Warner (1984) concluded that an event study methodology based on the market model performs well under a wide variety of conditions. In his review of event studies, MacKinlay (1997) concluded that the most successful applications of event studies have been in corporate finance with event studies dominating the empirical research in this area.

An event study generally comprises several steps (MacKinlay 1997, McWilliams and Siegel 1997):

4.1.1 Define the event and the relevant period

The first step in an event study is to define the event of interest. This event should potentially have some form of financial impact, be unanticipated by the market and provide some type of new information to the market (McWilliams and Siegel 1997).

4.1.2 Identify the event dates

The date on which the event occurred must be defined. Henderson (1990) notes that in certain cases this is not the actual date on which the event occurred but rather the date when the market could have first anticipated the news.

4.1.3 Choose appropriate event windows

The event window is the period of time over which the impact of the event will be observed to determine if anything unusual happens (Henderson 1990).

The length of the event window used in an event study is a crucial issue in research design (McWilliams and Siegel 1997).The event window could be as short as only a single day, which would be the date of the event. However, longer windows could allow for the capture of the full impact of the event. The period prior to the event may also be of interest in cases where the information may be known to certain market participants prior to publication.

McWilliams and Siegel 1997 warn that long event windows are exposed to confounding effects. Over a longer event window, secondary events could occur which affect the event studied. Such confounding events need to be identified and controlled such that conclusions drawn from the event study are not drawn into dispute.

In measuring and analysing abnormal returns, it is normal to index the abnormal returns in event time. As such the event date is defined as event time zero. (MacKinlay 1997). The event window would then include the periods of interest prior to and after the event date.

4.1.4 Calculate abnormal returns during the event windows

An abnormal return is the actual return of a stock in a period less the normal return of the stock which could have been expected had the event not occurred (MacKinlay 1997; McWilliams and Siegel 1997).

Therefore the general formula for the calculation of abnormal returns is as follows:

$$AR_{it} = R_{it} - E(R_{it})$$

where

AR_{it} = the abnormal return of stock i in time period t

R_{it} = the actual return of stock i in time period t

$E(R_{it})$ = the expected normal return of stock i in time period t

4.1.5 Aggregate the abnormal returns

Abnormal returns can be calculated for each share recommended in a particular period. An average abnormal return can then be calculated for the event period (MacKinlay 1997, Binder 1998):

$$AAR_t = \frac{1}{N}\sum_{i=1}^{N} AR_{it}$$

where

AAR_t = the average abnormal return of all recommended shares in period t

N = the number of recommended shares in the sample

The abnormal returns must then be aggregated in order to draw overall inferences for the recommendations (MacKinlay 1997). The cumulative average abnormal return is defined as:

$$CAAR_{T1,T2} = \sum_{t=T1}^{T2} AAR_t$$

where

$CAAR_{T1,T2}$ = the cumulative average abnormal return over event time period T1 to T2

The expected value of $CAAR_{T1,T2}$ would be zero in the absence of abnormal performance of the stocks (Walker and Hatfield 1996).

4.1.6 Test the significance of the aggregated abnormal return

Early event studies often used graphics as the primary method of interpretation. Plots of CAAR presented market reactions and the relative performance of recommendations (Henderson 1990). However, more recent studies make use of rigorous statistical testing.

The statistical significance of the abnormal returns must be assessed to determine if the recommendations outperform the market (Brown and Warner 1985). The null hypothesis which is tested is that the $CAAR_{T1,T2}$ is not significantly different from zero (Brown and Warner 1985; Walker and Hatfield 1996).

4.2 Research design

An event study was applied to the performance of brokerage firms' stock recommendations.

4.2.1 Define the events of interest

I-Net Bridge consensus recommendations between the period 1 May 2005 and 31 March 2008, for JSE listed stocks, were studied.

Typically these recommendations are rated as either 'buy', 'buy+', 'hold-', 'hold', 'hold+', 'sell-' and 'sell'. For the purposes of this study these consensus

recommendations were simply divided into three categories, namely ‘buy’, ‘hold’ or ‘sell’.

An event was defined each time a consensus recommendation for a stock changed, i.e from a ‘buy’ to a ‘sell’. There were therefore six different events:

- **Buy** recommendation changed to **hold** recommendation
- **Hold** recommendation changed to **sell** recommendation
- **Sell** recommendation changed to **hold** recommendation
- **Hold** recommendation changed to **buy** recommendation
- **Buy** recommendation changed to **sell** recommendation
- **Sell** recommendation changed to **buy** recommendation

4.2.2 Identify the event dates

Generally, an investor would only have access to the consensus recommendations once they are published. Therefore the event date was defined as the date of publication of the consensus recommendation.

Following event time notation, this event date was defined as Day 0.

4.2.3 Choose appropriate event windows

In this study, an event window was chosen to measure the impact of the recommendation on the stock price. Therefore a period of ten trading days prior to the event date and ten trading days after the event date was selected.

The ten days prior to the recommendation were selected to determine if the recommendations were leaked prior to the publication date. This is possible since analysts may distribute the recommendations internally to their firms or to select clients prior to the publication date.

The ten days following the event date would capture the effect of the recommendation.

4.2.4 Calculate abnormal returns

For each stock recommendation, the abnormal return was calculated for each day in the event window for the recommended stock. The abnormal return is the actual return of a stock on a particular day less the normal return of the stock which could have been expected had the event not occurred.

The formula for the calculation of the abnormal return is as follows:

$$AR_{it} = R_{it} - E(R_{it})$$

where

AR_{it} = the abnormal return of stock i on day t

R_{it} = the actual return of stock i on day t

$E(R_{it})$ = the expected normal return of stock i on day t

There are numerous approaches to calculating the expected normal return of a given stock.

4.2.6.1. The Simple Market Model

One of the methods most frequently used in event studies to measure the expected normal return of a stock is a risk adjusted market model based on the capital asset pricing model (CAPM) developed by Lintner, Mossin and Sharpe (Groth et. al 1979, Walker and Hatfield 1996, MacKinlay 1997, Barber et. al. 2001):

$$E(R_{it}) = \alpha_i + \beta_i R_{mt} + \varepsilon_{it}$$

where

α_i = alpha, the CAPM intercept

β_i = the systematic risk of stock i relative to the market

R_{mt} = the return of the market over time period t

ε_{it} = the unpredictable component of the expected return

4.2.6.2. Market anomalies

There are several contradictions to the simple CAPM model (Fama and French 1992).

The CAPM model predicts a simple relationship between average stock returns and β (Fama and French 1992). However, a large amount of research finds that this simple relationship between β and average return is weak, with other factors needing to be considered to better predict returns.

In their original study in 1992, Fama and French studied the returns of American shares over the time period 1963-1990. They concluded that the average stock returns were not simply related to β, and that size and book-to-market equity were required to adequately predict average stock returns.

The size effect refers to the relationship between average stock returns and the total market value of a company (Fama and French 1992). This relationship was first documented by Banz (1980). Banz (1980) studied the relationship between stock returns and the total market value of the company. He discovered a strong negative relationship between average return and company size, concluding that smaller firms generally have higher returns while larger firms generally have lower returns.

The value effect refers to the relationship between average returns and company's book-to-market-equity (Fama and French 1992, 1996). In a study of US stocks between the period 1963 to 1980, Basu (1983) found a significant relationship between earnings' yield and the returns of US stocks. Basu (1983)

concluded that the stocks of firms with high E/P ratios earned on average higher returns than the stocks of firms which had low E/P ratios.

4.2.6.3. Multifactor Market Model

Fama and French (1996) developed a model to capture the market anomalies of the size effect and the value effect using a three-factor model:

$$R_i - R_f = \alpha_i + b_i(R_m - R_f) + s_i SMB + h_i HML + \varepsilon_i$$

where

R_i = the actual return of stock i over time period t

R_f = the risk free rate over time period t

R_m = the market return over time period t

α_i = the alpha intercept term

b_i, = the coefficient loading for the excess return of the market portfolio

s_i, = the coefficient loading for the excess return of the small stock portfolio over the big stock portfolio

h_i = the coefficient loading for the excess return of the value stock portfolio over the growth stock portfolio

SMB = 'small minus big', the difference between the return on a portfolio of small stocks and the return on a portfolio of big stocks

HML = 'high minus low', the difference between the return on a portfolio of high book-to-market stocks (value stocks) and the return on a portfolio of low book-to-market stocks (growth stocks)

ε_{it} = the error term

4.2.6.4. Market anomalies on the JSE

Mordant (2002) developed an asset-pricing model to cater for market anomalies on the JSE. This asset pricing model was closely based on that developed by Fama and French (1996).

The model was developed to remove three market effects from abnormal returns of stocks listed on the JSE:

- Size effect
- Value effect
- Resources effect

The resources effect was included since the JSE is strongly influenced by commodity prices (Mordant 2002). This third effect would therefore account for this imbalance in average stock returns.

Mordant (2002) called this asset pricing model which was developed the Market Effects Control Model:

$$E(R_{i,t}) = \alpha_{i,t} + \beta_{i,1}SVN_t + \beta_{i,2}SVR_t + \beta_{i,3}SGN_t + \beta_{i,4}SGR_t + \beta_{i,5}LVN_t + \beta_{i,6}LVR_t + \beta_{i,7}LGN_t + \beta_{i,8}LGR_t + \varepsilon_{i,t}$$

where

$E(R_{i,t})$ = the expected return of stock i in period t

$\alpha_{i,t}$ = alpha intercept term of stock i in period t

$\beta_{i,1}...\beta_{i,8}$ = beta coefficients on each control portfolio return

ε_{it} = the error term

$SVN_t...LGR_t$ = returns on each of eight control portfolios

Control portfolios were built which comprised all the stocks on the JSE divided into portfolios that mimicked the market anomalies of the size effect, value effect and the resources effect (Mordant 2002). Within these portfolios, size was defined as either large or small, the value effect was defined as either a value or growth share and for the resources effect stocks were categorised as either resource or non-resource.

Combinations of the above portfolio categories produced eight control portfolios:

LVR = Large, Value, Resources

LVN = Large, Value, Non-Resources

LGR = Large, Growth, Resources

LGN = Large, Growth, Non-Resources

SVR = Small, Value, Resources

SVN = Small, Value, Non-Resources

SGR = Small, Growth, Resources

SGN = Small, Growth, Non-Resources

4.2.6.5. Calculation of expected returns

The expected normal return of the recommended stocks was calculated using Mordant's (2002) Market Effects Control Model. However, size was defined as large, medium or small rather than only large or small. This resulted in twelve control portfolios as compared to Mordant's (2002) eight control portfolios.

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

where

$\beta_{i,1}...\beta_{i,12}$ = beta coefficients on each control portfolio return

$SVN_t ... LGR_t$ = returns on each of twelve control portfolios

Control portfolios were built which comprised the top 160 listed stocks (by market capitalisation) on the JSE between the period 1 May 2005 and 31 March 2008. These portfolios removed the following three market anomalies from the abnormal return calculations:

- Size effect
- Value effect
- Resources effect

Mordant's (2002) method of constructing control portfolios was adopted.

Companies' size was measured using their market capitalisation. Initial market capitalisation as at the 31st December 2004 was used to define the size portfolios. Companies were ranked in descending order of market capitalisation. The stocks with the 40 largest market capitalisations (which constitute the FTSE/JSE Top 40 Index) were categorised as the large portfolio. Stocks ranked as 41st to 100th by market capitalisation were categorised as the medium portfolio. The stocks rated 101st to 160th by market capitalisation were categorised as the small portfolio.

Market capitalisation data was updated on a yearly basis and the control portfolios adjusted accordingly.

The value effect categorises a company as either a value or a growth stock. The companies' earnings yield ratios (EY) was used for this classification. EY ratios were obtained on a quarterly basis and the top 160 companies (by market capitalisation) were ranked at each interval in descending order according to EY ratios. The median EY ratio was calculated and all companies with EY ratios less than median were defined as the growth stocks while stocks with EY ratios greater than the median EY were categorised as the value stocks.

The resource effect categorisation was based on the JSE's sector classifications. All mining and non-mining resource stocks were classified as resources. The balance of stocks was classified as non-resources.

4.2.6.6. Calculation of the actual returns

The actual return of stock i on day t is calculated as:

$$R_{it} = \frac{P_t - P_0}{P_0}$$

R_{it} = the actual return of stock i on day t

P_0 = the price of stock i at the beginning of day t (i.e. day t-1 closing price)

P_t = the price of stock i at the end of day t

4.2.5 Aggregate the abnormal returns

An average abnormal return will be calculated for each day in the event study time index:

$$AAR_t = \frac{1}{N}\sum_{i=1}^{n} AR_{it}$$

where

AAR_t = the average abnormal return in event day t

N = the number of recommended shares in the sample

The average returns will then be aggregated in order to draw an overall inference for the recommendations. The cumulative average abnormal return is defined as:

$$CAAR_{T1,T2} = \sum_{t=T1}^{T2} AAR_t$$

where

$CAAR_{T1,T2}$ = the cumulative average abnormal return over time period T1 to T2

4.2.6 Test the significance of the abnormal returns

In a review of event studies, Henderson (1990) noted that there are two main issues in statistical testing. The first issue is whether to use a parametric or nonparametric test. The second issue is which test statistic to employ.

*4.2.6.1. **Parametric vs. Non-Parametric Tests***

In their studies measuring abnormal returns, Brown and Warner (1980, 1985) found that standard parametric t-tests are reasonably well specified under a variety of conditions. These findings have been supported by Berry et. al. (1990) who concluded that the student t statistic is an appropriate test statistic for studies using daily return data. In addition, Berry et. al. (1990) added that nonparametric tests are in fact poorly specified and should only be used with caution. In a review of event studies, Henderson (1990) concluded that nonparametric tests are an unnecessary complication and generally do not work well.

Implicit to parametric tests is the assumptions that the underlying population distribution is normal (Newbold 1991, Kohler 2002). A parametric test is therefore well suited to event studies with average abnormal returns generally independent, identically distributed and normal (Brown and Warner 1985:8)

4.2.6.2. Test statistic

A standard t-test statistic can be used to assess the statistical significance of cumulative average abnormal returns (Brown and Warner 1985).

The student t-test is generally defined as (Newbold 1991, Cryer and Miller 1994, Kohler 2002):

$$t = \frac{\overline{X} - \mu}{s_x / \sqrt{n}}$$

where

$\overline{X}$ = the sample mean

μ = the population mean

s_x = the sample standard deviation

n = the number of sample observations

In an event study, for a single day, the t-test statistic would be expressed as (Henderson 1990):

$$\text{Student } t = \frac{AAR_t - 0}{s_t}$$

where

s_t = the estimated standard deviation of the average abnormal return for all the recommended shares for that particular day

To calculate the s_t, the estimated standard deviation for each stock's one-day abnormal return is calculated during an estimation period prior to the event (Henderson 1990):

$$s_i = \sqrt{\frac{\sum_{t=-k}^{t=-1} \left(AR_{it} - \overline{AR_{it}}\right)^2}{k}}$$

where

s_i = the estimated standard deviation of a single stock for a particular day

k = the number of days in the estimation period

and

$$\overline{AR_i} = \frac{1}{k} \sum_{t=-k}^{t=-1} AR_{it}$$

$\overline{AR_i}$ = the average abnormal return of stock i over the estimation period

The standard deviation of the average abnormal return for a single day is then calculated as follows (Henderson 1990):

$$s_t = \sqrt{\frac{\sum_{i=1}^{N} s_i^2}{N}}$$

where

N = the number of recommended shares in the single day sample

The variance for the cumulative average abnormal return (*CAAR)* during the event period is calculated by summing the daily s_t^2 and dividing by the number of stocks (Henderson 1990). The standard deviation is the square root of the variance. Therefore the standard deviation of CAAR over the event period can be estimated (Binder 1998):

$$s(CAAR_{T1,T2}) = \sqrt{\sum_{t-T1}^{T2} s_i^{\,2}}$$

where

$s(CAAR_{T1,T2})$ = the estimated standard deviation of the cumulative average abnormal return

The overall test statistic is therefore defined as follows:

$$t = \frac{CAAR_{T1,T2}}{\sqrt{\sum_{t-T1}^{T2} s_i^{\,2}}}$$

4.3 Population and sample

4.3.1 Population

The population comprises brokerage firms' published stock recommendations for shares listed on the JSE Securities Exchange.

4.3.2 Sample and sampling method

The sample used in this study was all the consensus forecasts published by I-Net Bridge between the period 1st May 2005 and 31st March 2008.

The consensus forecasts produced by I-Net Bridge are compiled from analysts' submissions. The consensus forecast is a median value of the individual forecasts received.

4.4 Data collection

The consensus forecasts were obtained from I-Net Bridge for the period 1 May 2005 to 31 March 2008.

Daily closing share prices and share data were obtained from the Sharenet database:

- The daily closing share prices were obtained for all shares listed on the JSE between 1 January 2002 and 31 March 2008.
- Earnings yield data was obtained for all the shares listed on the JSE between 1 January 2005 and 31 March 2008. This was used to categorise shares as either value or growth.

Daily closing share prices were also obtained from Standard Online Share trading for random cross-check purposes.

Market capitalisation data for all the shares listed on the JSE for the period 1 January 2005 to 31 March 2008 was obtained from the official JSE website

(www.JSE.co.za). The market capitalisations were obtained from quarterly review data published by the JSE.

4.5 Validity and reliability

Validity of the research project refers to the “accuracy, meaningfulness and credibility” of the study as a whole (Leedy and Ormrod 2001:103). Reliability can be defined as "the consistency with which a measuring instrument yields a certain result when the entity being measured hasn't changed" (Leedy & Ormrod, 2001:31).

Jankowizc (1995) describes validity of research as relating to the accuracy of the research and that ideally some alternative form of measurement should arrive at the same answer as the method followed in the research.

4.5.1 External validity

External validity refers to the extent to which conclusions drawn from a specific study can be generalised to other areas (Leedy and Ormrod 2005). Leedy and Ormrod (2005) suggest two methods to increase the external validity of a study. The first is to use a representative sample and the second is through replication in a different context.

The sample in this study was consensus forecasts published by I-Net Bridge. These consensus forecasts are essentially the averaged forecasts of a number of brokerage firms. The external validity of this study could be improved if the individual research forecasts of each brokerage firm were available and random sample selections from these were used.

However, the study used a methodology, namely an event study, which has been employed in a large number of different studies. The event study methodology has become the standard method of measuring security price reaction to announcements or events (Binder 1998). Furthermore, the most successful applications of event studies have been in corporate finance with event studies dominating the empirical research in this area (MacKinlay 1997).

The success of event studies in similar research therefore served as a validity check.

4.5.2 Internal validity

Internal validity refers to the extent which the researcher is able to draw accurate conclusions from a study (Leedy and Ormrod 2005). This involves reducing the possibility that the research results came about due to reasons other than those concluded in the study.

The event study methodology has been applied in previously in studies which measure the performance of share recommendations. Therefore, a well designed event study should produce results which clearly evaluate the performance of brokerage firms' recommendations.

4.5.3 Reliability

Reliability refers to the extent to which the results are consistent within the study (Leedy and Ormrod, 2005).

To ensure reliability, the data used was collected from two reputable sources and cross-checks performed.

CHAPTER 5: PRESENTATION OF RESULTS

Before presenting the results from the event study, the average market performance on the JSE during the period of the study will be discussed briefly. In addition, the market effects during this period will also be presented and discussed.

5.1 Market performance

The overall performance of the JSE for the period of the study from the 1st May 2005 to the 31st March 2008 is shown in Figure 1.

Figure 1: JSE All-Share performance



The market could be defined as a bull market during the period of the study with a clear uptrend in market prices as shown in Figure 1. There were however three specific instances where the market declined during this period, namely May 2006, August 2007 and January 2008.

Overall the market produced a positive return during the period of 133%.

5.2 Market effects

Twelve control portfolios were constructed to remove three market effects from the abnormal returns of stocks listed on the JSE, namely size, value and the resources effect.

Figure 2 shows the time series returns of the 12 control portfolios over the period of the study.

Figure 2: Control portfolio's performance

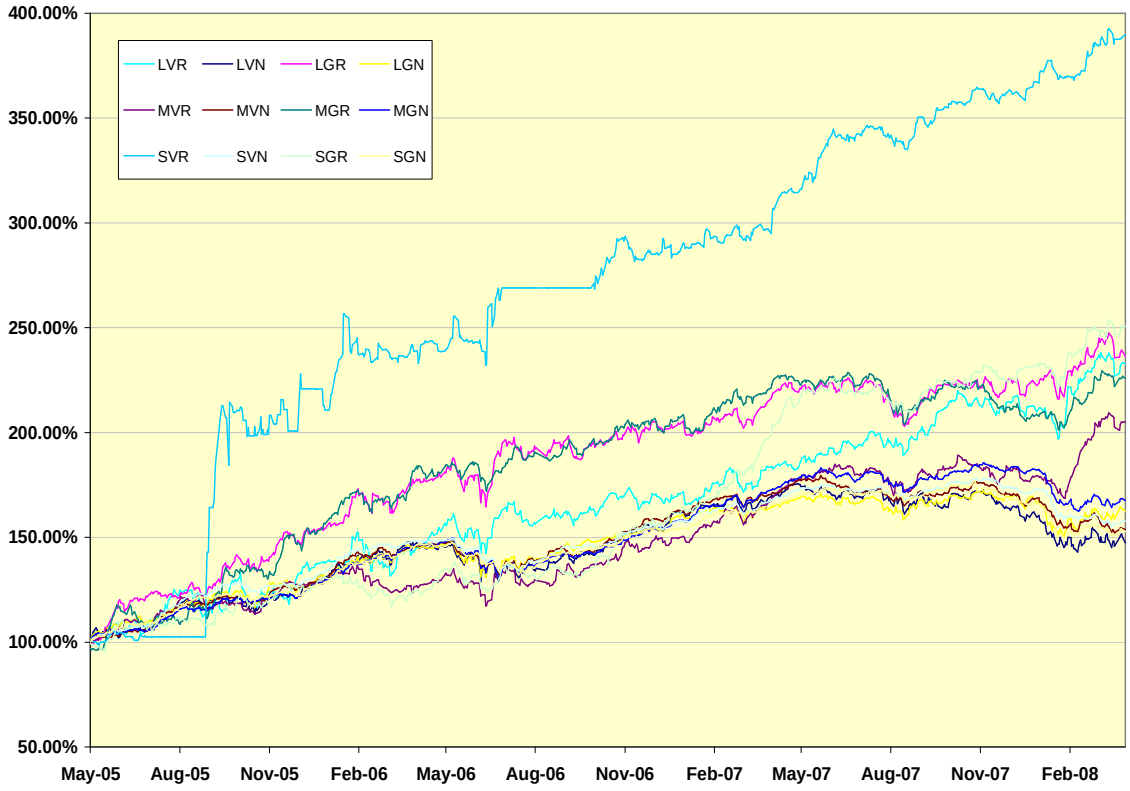


Figure 2 shows a fairly wide range of returns depending on the effects within each control portfolio. The control portfolio returns ranged between a 47% return over the period of the study to a 290% return over this period. The small, value resources portfolio (SVR) was the best performing portfolio and the large, value, non-resources portfolio (LVN) the worst performing. Furthermore, the six

resources control portfolios were the top six performing control portfolios overall, with the six non-resources control portfolios the bottom six performing.

Figure 2 illustrates the impact which the size, value and resources effect has on shares listed on the JSE during the period of the study. By removing these three market effects it will be easier to identify abnormal returns associated with stock recommendations.

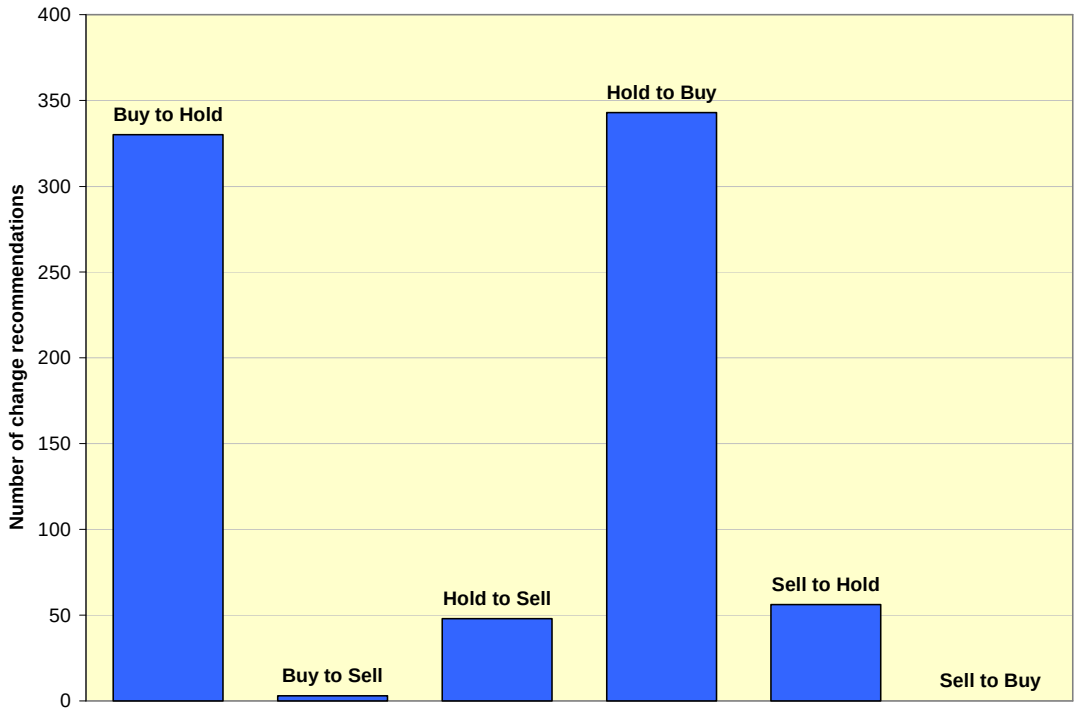
5.3 Sample

The characteristics of the sample used in the study are discussed in this section.

The consensus recommendations used were obtained from I-Net Bridge for the period 1 May 2005 to 31 March 2008. These recommendations were analysed to identify changes in consensus recommendation for each stock. This provided a sample of 780 changed consensus recommendations.

Figure 3 shows the consensus recommendation sample used in the study. The sample is largely made up of ‘buy to hold’ and ‘hold to buy’ recommendations with 330 and 343 recommendations in the two respective categories. The ‘buy to sell’ category contains only three recommendations and the ‘sell to buy’ category no recommendations.

Figure 3: Sample of consensus recommendations



5.3 Results of the Hypothesis

The null hypothesis states that the cumulative average abnormal return on the consensus recommended shares is not significantly different from zero.

The alternative hypothesis states that the cumulative average abnormal return on the consensus recommended shares is significantly different from zero.

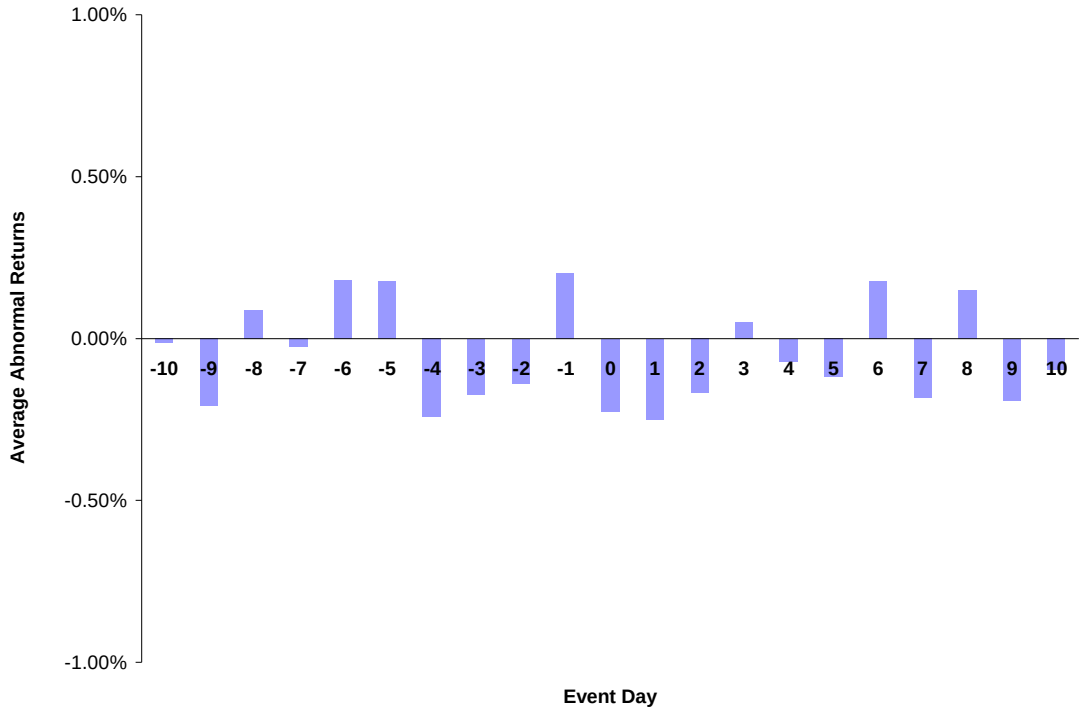
The hypothesis was tested individually on each of the consensus recommendation change categories. The Market Effects Control Model was used to calculate the abnormal returns in the event study.

The Market Effects Control Model removed three market effects from the abnormal returns of stocks listed on the JSE, namely the size effect, the value effect and the resources effect. With these dominant market effects removed, the abnormal returns would then provide a better measure of the impact of the consensus recommendations on the performance of shares.

5.3.1 Buy to hold recommendations

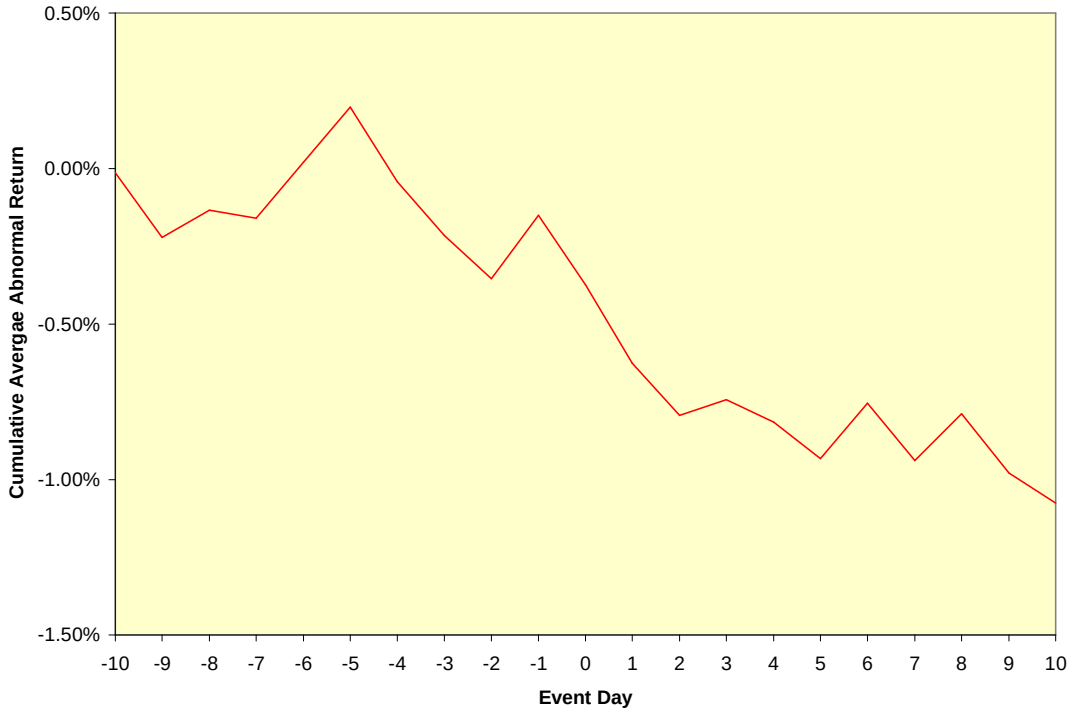
Figure 4 shows the AARs for all buy recommendations changed to hold recommendations over the period of the event study. Following event time notation, the event date on which each recommendation was published is defined Day 0. The event window chosen measured the impact of the recommendations from ten trading days prior to the recommendations to ten trading days after the event date. As might be expected for downgrade recommendations, many of the abnormal returns for the 'buy-hold' recommendations were negative.

Figure 4: Average abnormal returns for buy to hold recommendations



The CAAR for the sample of 'buy-hold' recommendations is shown in Figure 5.

Figure 5: Cumulative average abnormal returns for buy to hold recommendations



Although the CAAR for the 'buy-hold' recommendations was negative for the period of the study, the statistical significance of the CAAR needs to be determined in order to be able to draw conclusions about these recommendations.

A summary of the significance tests for 'buy-hold' recommendations over the event window is shown in Table 1.

Table 1: Significance of AARs and CAAR for 'buy-hold' sample

Average Abnormal Returns			
Event Day	AAR	T-statistic	Significant at 5% level
Day -10	-0.01%	-0.019	No
Day -9	-0.21%	-0.295	No
Day -8	0.09%	0.123	No
Day -7	-0.03%	-0.036	No
Day -6	0.18%	0.255	No
Day -5	0.18%	0.254	No
Day -4	-0.24%	-0.342	No
Day -3	-0.17%	-0.245	No
Day -2	-0.14%	-0.197	No
Day -1	0.20%	0.289	No
Day 0	-0.22%	-0.319	No
Day +1	-0.25%	-0.356	No
Day +2	-0.17%	-0.238	No
Day +3	0.05%	0.071	No
Day +4	-0.07%	-0.101	No
Day +5	-0.12%	-0.169	No
Day +6	0.18%	0.253	No
Day +7	-0.18%	-0.262	No
Day +8	0.15%	0.215	No
Day +9	-0.19%	-0.270	No
Day +10	-0.10%	-0.137	No
Cumulative Average Abnormal Returns			
	CAAR	T-statistic	Significant at 5% level
CAAR (Day -10 to Day +10)	-1.08%	-0.320	No
CAAR (Day -5 to Day +5)	-0.95%	-0.279	No

Table 1 shows that the negative abnormal return on the day of a recommendation was -0.22%. This negative abnormal return is commensurate with a downgrade recommendation. Furthermore the abnormal returns on the two days following the recommendation were also negative returns of -0.25% and -0.17% respectively. Moreover, the abnormal returns on seven of the ten event days following the recommendation date were negative.

Table 1 also shows negative abnormal returns prior to the recommendation date. Although the abnormal return the day before the recommendation was 0.20%, event day -2, -3 and -4 produced negative returns of -0.14%, -0.17% and -0.24% respectively.

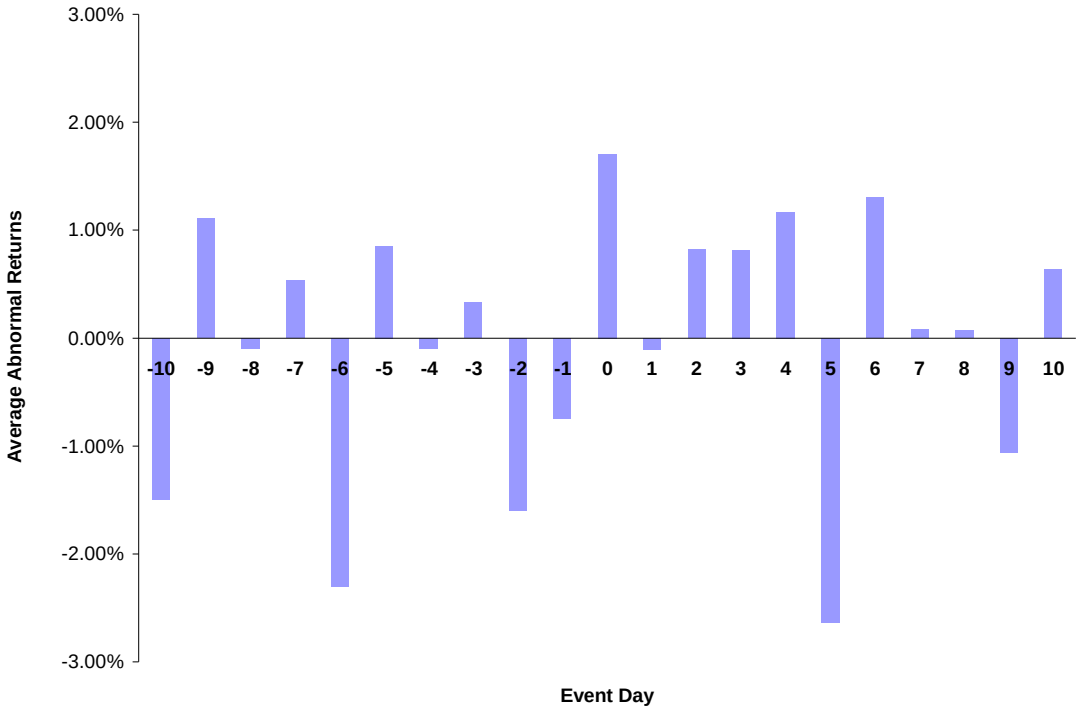
Table 1 shows that none of the AARs were significant at a 5% level.

The CAAR over the event window was -1.08% but was not significant at a 5% level. A further CAAR was calculated for a shorter event window from Day -5 to Day +5. This CAAR was -0.95% but was also not significant at the 5% level.

5.3.2 Buy to sell recommendations

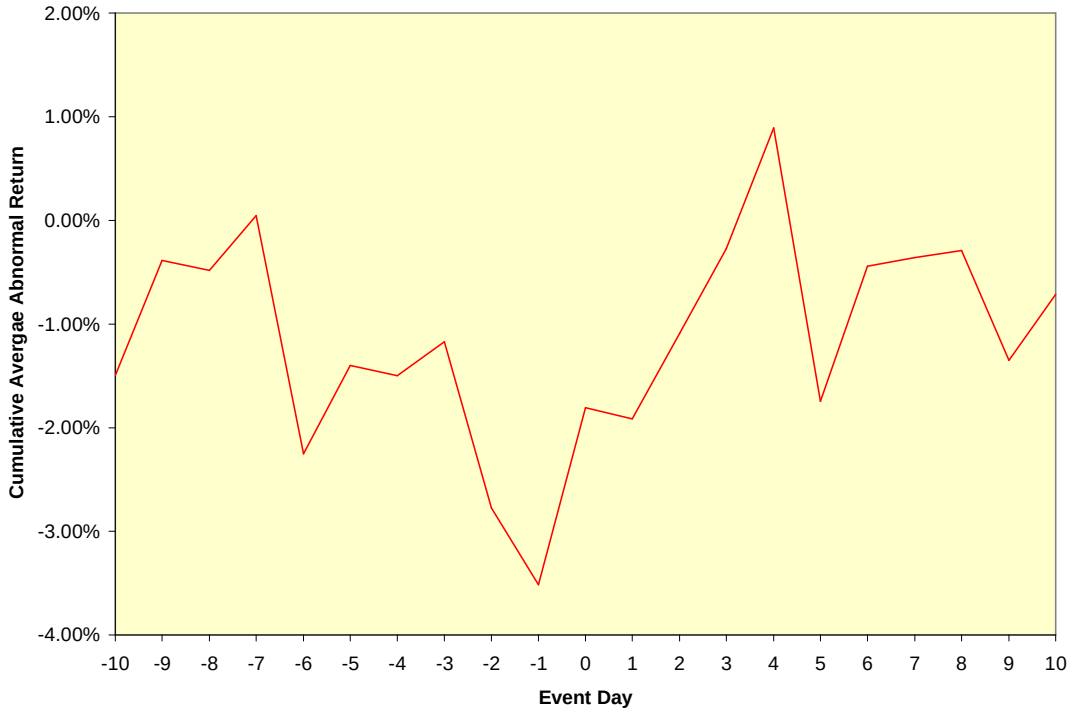
Figure 6 shows the AARs for all buy recommendations changed to sell recommendations. Recommendation changes of this type are quite extreme and therefore seldom published. Therefore the sample of the 'buy-sell' recommendations only comprised three recommendations over the period 1 May 2005 to 31 March 2008. The small sample size was not suitable for hypothesis testing, but was nevertheless included for completeness.

Figure 6: Average abnormal returns for buy to sell recommendations



The CAAR for the sample of 'buy-sell' recommendations is shown in Figure 7.

Figure 7: Cumulative average abnormal returns for buy to sell recommendations



A summary of the significance tests for 'buy-sell' recommendations is shown in Table 2.

Table 2: Significance of AARs and CAAR for 'buy-sell' sample

Average Abnormal Returns			
Event Day	AAR	T-statistic	Significant at 5% level
Day -10	-1.49%	-1.790	No
Day -9	1.11%	1.329	No
Day -8	-0.10%	-0.120	No
Day -7	0.53%	0.639	No
Day -6	-2.30%	-2.757	Yes
Day -5	0.85%	1.022	No
Day -4	-0.10%	-0.120	No
Day -3	0.33%	0.396	No
Day -2	-1.60%	-1.923	No
Day -1	-0.74%	-0.889	No
Day 0	1.71%	2.049	Yes
Day +1	-0.11%	-0.132	No
Day +2	0.82%	0.987	No
Day +3	0.82%	0.981	No
Day +4	1.17%	1.399	No
Day +5	-2.64%	-3.161	Yes
Day +6	1.30%	1.562	No
Day +7	0.08%	0.097	No
Day +8	0.07%	0.083	No
Day +9	-1.06%	-1.270	No
Day +10	0.64%	0.763	No
Cumulative Average Abnormal Returns			
	CAAR	T-statistic	Significant at 5% level
CAAR (Day -10 to Day +10)	-0.71%	-1.781	No
CAAR (Day -5 to Day +5)	0.51%	1.365	No

Table 2 shows that the abnormal returns for 'buy-sell' were generally negative up to, and including, the day of the recommendation. However, the abnormal return on Day 0 was 1.71%. In addition, the abnormal returns on event day +2, +3 and +4 were 0.82%, 0.82% and 1.17% respectively. These returns were contrary to what would be expected for a downgrade recommendation.

Table 2 shows that the abnormal returns on three of the event days was significant, including on Day 0, the day on which the recommendations were published. However, the small sample size used needs to be considered when viewing the significance of the abnormal returns since small samples can generally result in large variances.

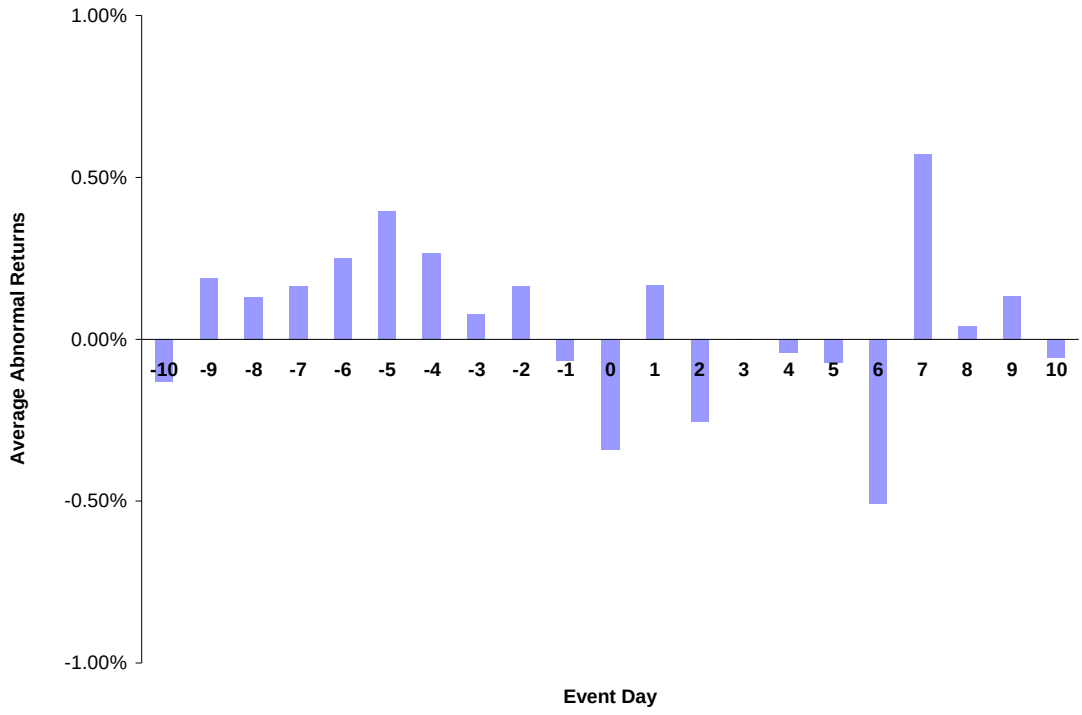
The CAAR over the event window period was -0.71%, but was not significant at a 5% level.

The Day -5 to Day +5 CAAR was 0.51% and was not significant at the 5% level.

5.3.3 Hold to sell recommendations

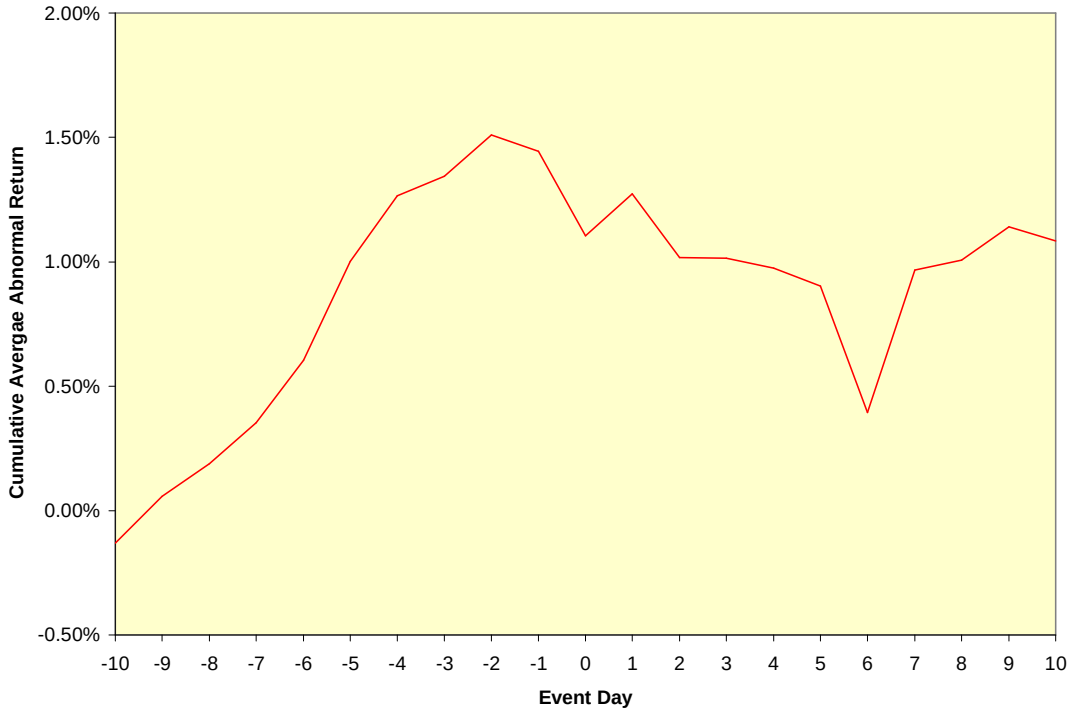
Figure 8 shows the AARs for all hold recommendations changed to sell recommendations over the period 1 May 2005 to 31 March 2008.

Figure 8: Average abnormal returns for hold to sell recommendations



The CAAR for the sample of ‘hold-sell’ recommendations is shown in Figure 9.

Figure 9: Cumulative average abnormal returns for hold to sell recommendations



A summary of the significance tests for 'hold-sell' recommendations is shown in Table 3.

Table 3: Significance of AARs and CAAR for 'hold-sell' sample

Average Abnormal Returns			
Event Day	AAR	T-statistic	Significant at 5% level
Day -10	-0.13%	-0.165	No
Day -9	0.19%	0.238	No
Day -8	0.13%	0.166	No
Day -7	0.16%	0.209	No
Day -6	0.25%	0.317	No
Day -5	0.40%	0.503	No
Day -4	0.27%	0.337	No
Day -3	0.08%	0.099	No
Day -2	0.17%	0.210	No
Day -1	-0.07%	-0.084	No
Day 0	-0.34%	-0.432	No
Day +1	0.17%	0.215	No
Day +2	-0.26%	-0.325	No
Day +3	0.00%	-0.002	No
Day +4	-0.04%	-0.052	No
Day +5	-0.07%	-0.091	No
Day +6	-0.51%	-0.644	No
Day +7	0.57%	0.725	No
Day +8	0.04%	0.052	No
Day +9	0.13%	0.170	No
Day +10	-0.06%	-0.073	No
Cumulative Average Abnormal Returns			
	CAAR	T-statistic	Significant at 5% level
CAAR (Day -10 to Day +10)	1.08%	0.848	No
CAAR (Day -5 to Day +5)	0.30%	0.232	No

Table 3 shows a majority of positive abnormal returns prior to the publication of the 'hold-sell' recommendation. The abnormal returns were negative on Day 0, the day on which the recommendations were published, as well as on Day +2, Day +4, Day +5 and Day +6.

None of the AARs were significant at the 5% level as shown in Table 3.

Furthermore, both the CAAR over the event window and the CAAR from Day -5 to Day +5 were positive, 1.08% and 0.30% respectively. Neither of the CAARs was significant at a 5% level.

5.3.4 Hold to buy recommendations

Figure 10 shows the AARs for all hold recommendations changed to buy recommendations over the event study.

Figure 10: Average abnormal returns for hold to buy recommendations

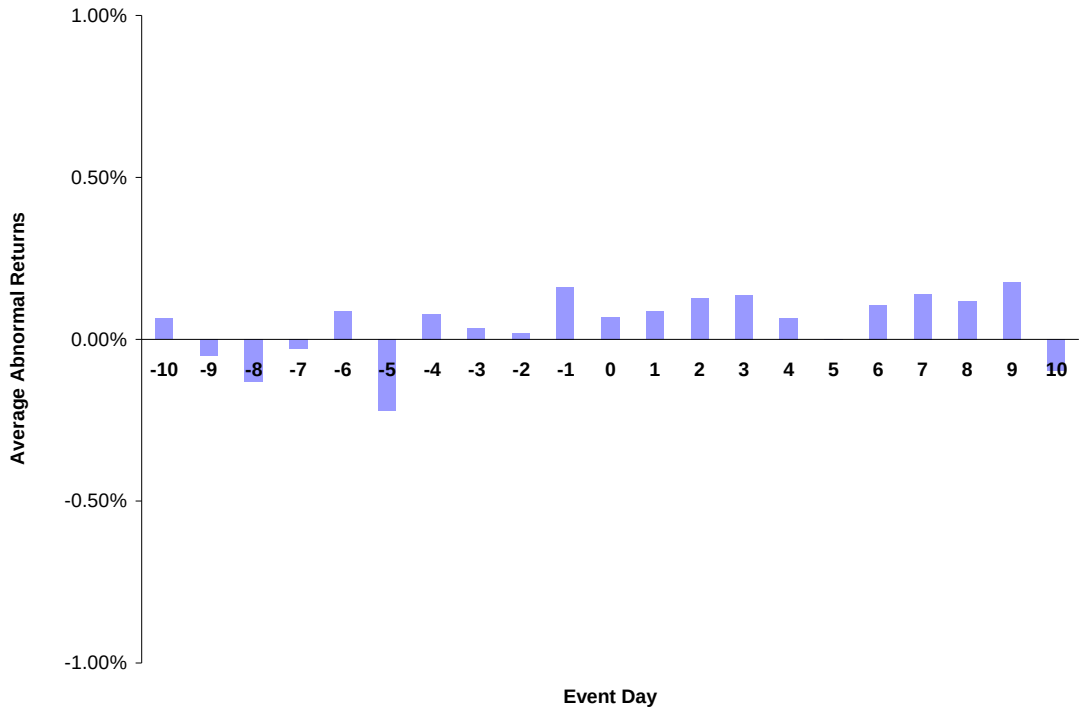
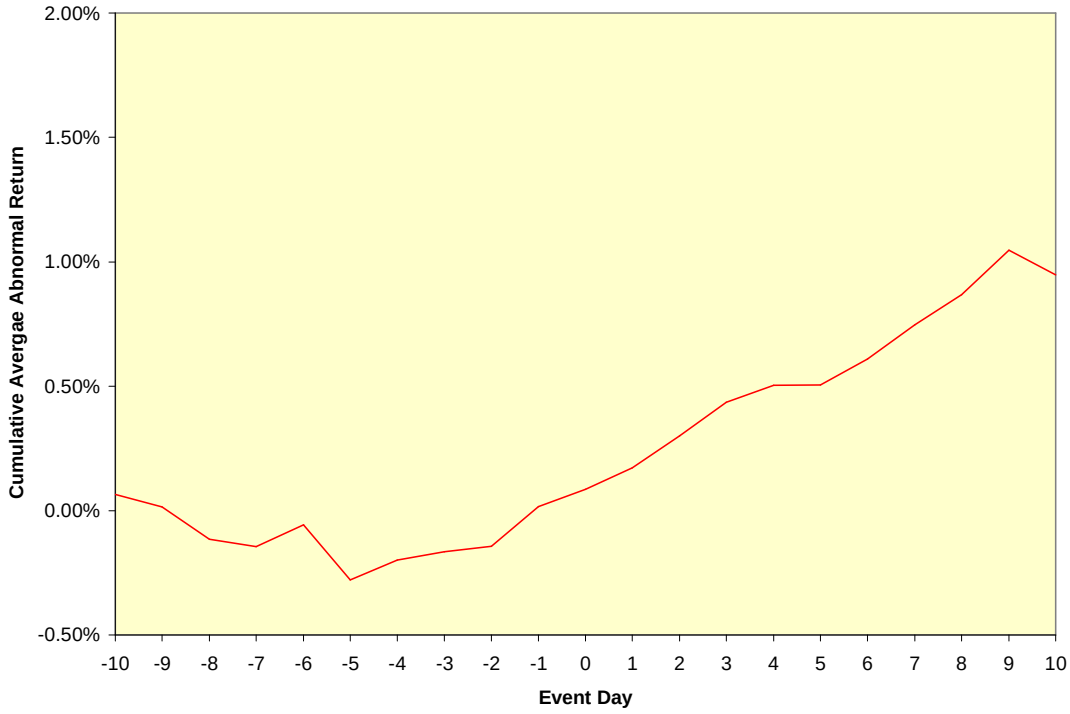


Figure 10 shows that the daily abnormal returns up to Day -6 were generally all negative. However, the abnormal returns from Day -4 to Day +9 were all positive, including the day the recommendations were published.

Figure 11: Cumulative average abnormal returns for hold to buy recommendations



The CAAR for the 'hold-buy' recommendations was positive for the period of the study as shown in Figure 11

Table 4: Significance of AARs and CAAR for 'hold-buy' sample

Average Abnormal Returns			
Event Day	AAR	T-statistic	Significant at 5% level
Day -10	0.06%	0.093	No
Day -9	-0.05%	-0.071	No
Day -8	-0.13%	-0.188	No
Day -7	-0.03%	-0.042	No
Day -6	0.09%	0.126	No
Day -5	-0.22%	-0.320	No
Day -4	0.08%	0.114	No
Day -3	0.03%	0.050	No
Day -2	0.02%	0.031	No
Day -1	0.16%	0.231	No
Day 0	0.07%	0.099	No
Day +1	0.09%	0.125	No
Day +2	0.13%	0.184	No
Day +3	0.14%	0.197	No
Day +4	0.07%	0.096	No
Day +5	0.00%	0.003	No
Day +6	0.10%	0.151	No
Day +7	0.14%	0.200	No
Day +8	0.12%	0.173	No
Day +9	0.18%	0.256	No
Day +10	-0.10%	-0.142	No
Cumulative Average Abnormal Returns			
	CAAR	T-statistic	Significant at 5% level
CAAR (Day -10 to Day +10)	0.95%	0.278	No
CAAR (Day -5 to Day +5)	0.56%	0.160	No

Table 4 shows that abnormal return four days prior to the publication of recommendation until nine days after the recommendations were published were all positive. These positive abnormal returns were expected for positive upgrade recommendations. However, none of these returns was significant at the 5% level.

The CAAR over the event window was 0.95% but was not significant at the 5% level.

Similarly, the CAAR over the shortened event window was 0.56% but was also not significant at the 5% level.

5.3.5 Sell to hold recommendations

Figure 12 shows the AARs for all sell recommendations changed to hold recommendations over the period 1 May 2005 to 31 March 2008.

Figure 12: Average abnormal returns for sell to hold recommendations

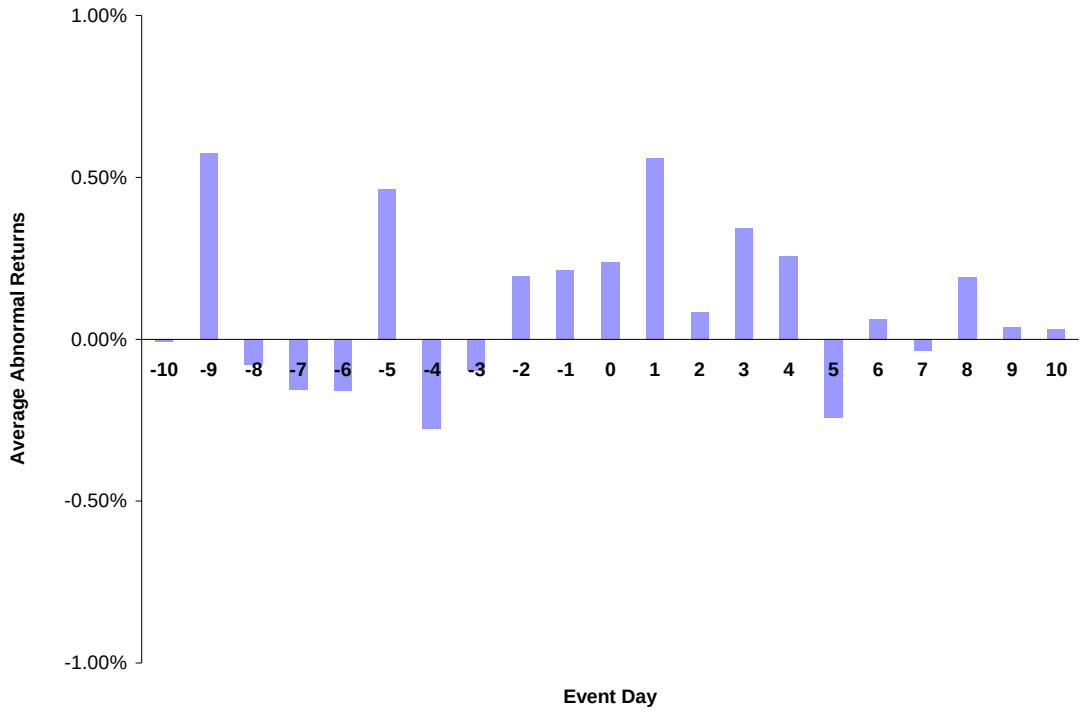


Figure 12 shows that the daily abnormal returns prior to the publications of the recommendations were predominantly negative. However, the returns from Day -2 through to Day +4 were all positive.

The CAAR for the sample of 'sell-hold' recommendations is shown in Figure 13.

Figure 13: Cumulative average abnormal returns for sell to hold recommendations

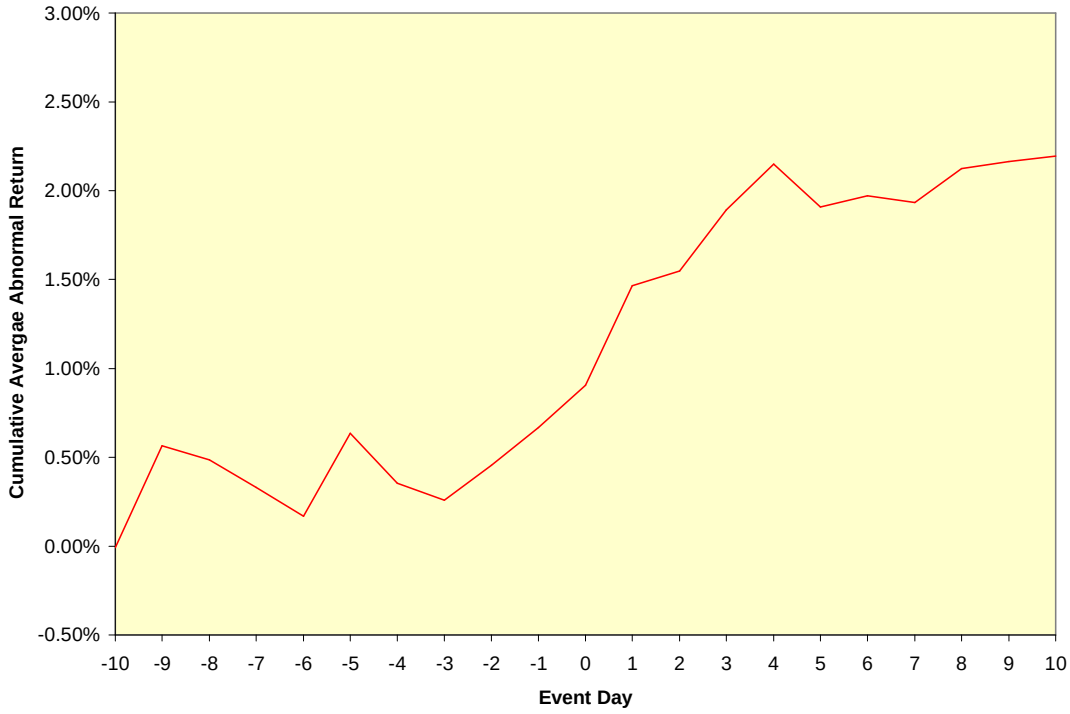


Figure 13 shows that the CAAR for the 'sell-hold' recommendations was positive, particularly between Day -2 and Day +4.

Table 5: Significance of AARs and CAAR for 'sell-hold' sample

Average Abnormal Returns			
Event Day	AAR	T-statistic	Significant at 5% level
Day -10	-0.01%	-0.011	No
Day -9	0.58%	0.703	No
Day -8	-0.08%	-0.097	No
Day -7	-0.16%	-0.192	No
Day -6	-0.16%	-0.196	No
Day -5	0.46%	0.568	No
Day -4	-0.28%	-0.341	No
Day -3	-0.10%	-0.118	No
Day -2	0.20%	0.239	No
Day -1	0.21%	0.260	No
Day 0	0.24%	0.290	No
Day +1	0.56%	0.685	No
Day +2	0.08%	0.103	No
Day +3	0.34%	0.421	No
Day +4	0.26%	0.314	No
Day +5	-0.24%	-0.296	No
Day +6	0.06%	0.077	No
Day +7	-0.04%	-0.045	No
Day +8	0.19%	0.234	No
Day +9	0.04%	0.047	No
Day +10	0.03%	0.039	No
Cumulative Average Abnormal Returns			
	CAAR	T-statistic	Significant at 5% level
CAAR (Day -10 to Day +10)	2.20%	1.397	No
CAAR (Day -5 to Day +5)	1.74%	1.075	No

Table 5 shows that the abnormal returns up to Day -3 were generally all negative. However, the abnormal returns for the following seven days were all positive, including the day the recommendations were published. However, none of these returns was significant at a 5% level.

The CAAR over the event window was 2.20% but was not significant at the 5% level.

The CAAR over the shortened event window was 1.74% but was not significant at the 5% level.

5.4 Summary of the results

Table 6 shows a summary of the CAARs for the six recommendation categories. The CAARs for two event windows are shown, namely Day -10 to Day +10 and Day -5 to Day +5.

Table 6: Summary of CAARs

	Event window: Day -10 to Day +10			Event window: Day -5 to Day +5		
Recommendation	**CAAR**	**T-statistic**	**Significant at 5% level**	**CAAR**	**T-statistic**	**Significant at 5% level**
Downgrade Recommendations						
Buy to hold	-1.08%	-0.320	No	-0.95%	-0.279	No
Buy to sell	-0.71%	-1.781	No	0.51%	1.365	No
Hold to sell	1.08%	0.848	No	0.30%	0.232	No
Upgrade Recommendations						
Hold to buy	0.95%	0.278	No	0.56%	0.160	No
Sell to hold	2.20%	1.397	No	1.74%	1.075	No

CHAPTER 6: DISCUSSION OF THE RESULTS

The study investigates the value of brokerage firms' published investment recommendations. The consensus recommendations for JSE listed stocks between the period May 2005 and March 2008 were studied.

Research is divided as to the value of brokerage firms' recommendations. Much research has found that the recommendations do not outperform the market (Cowles 1933; Diefenbach 1972; McCain and Millar 1975; Dimson and Fraletti 1986; Desai and Jain 1995). However, there is substantial research which does report good performance for brokerage firm recommendations (Ferber 1958; Davies and Canes 1978; Groth, et. al. 1979; Stanley et. al. 1981; Bjerring et. al 1983; Bhana (1990), Womack 1996, Barber et. al. 2001, Prayag and van Rensburg 2006).

To measure the value of the brokerage firms' recommendations, the abnormal returns of recommended shares were studied. These abnormal share returns are returns which exceed that which would normally be expected from the share had it not been the subject of a consensus recommendation.

The abnormal returns were calculated by stripping out three market effects from the returns of shares listed on the JSE, namely the size effect, the value effect and the resources effect. By removing these market effects, abnormal returns which could be attributed to the published consensus recommendations could be identified.

Consensus recommendations were divided into six distinct categories based on changes in the published recommendations. Prayag and van Rensburg (2006) used a similar methodology and found that investors could earn higher returns by acting on changes in consensus recommendations (both upgrades and downgrades) rather than just following consensus recommendations.

The downgrade recommendations did not produce significant abnormal returns. This result is consistent with the findings of Dimson and Fraletti (1986:157) who

“were unable to detect any evidence of significant abnormal performance by recommended stocks”.

The upgrade recommendations also did not produce significant abnormal returns. However, the general pattern of stock price movements for the two categories of upgraded stocks was similar. Figure 10: Average abnormal returns for hold to buy recommendations shows that four days prior to the publication of the consensus recommendations, the shares commenced a 14 day period of positive abnormal returns. Similarly, Figure 12: Average abnormal returns for sell to hold recommendations shows that two days prior to the publication of the consensus recommendations, the shares began a seven day positive abnormal return streak. Ferber (1958) found a similar pattern in his study into the short-run effects of recommendations on stock prices. Ferber (1958) also only found the pattern evident for buy recommendations and not for sell recommendations.

These positive abnormal returns are consistent with upgrade recommendations and the early abnormal returns prior to the publication of the consensus recommendations could point to leakage of the recommendations. Groth, et. al. (1979) concluded in their study that investment recommendations are often first disseminated to a brokerage firm’s account executives, then its customers and finally the broader population of investors. This could explain the reason for stocks performing better before and during the recommendation period.

Similarly, Stanley et. al. 1981 identified positive abnormal returns in connection with buy recommendations several days in advance of the publication of recommendations. Stanley et. al. 1981 identified leakage as a factor in these performances. Furthermore, Stanley et. al. 1981 reasoned that upgraded stocks were often companies which had experienced positive developments and news of this often prompted brokerage staff to analyse the shares. Therefore, positive abnormal returns prior to the publication of recommendations could be expected simply due to the fact that the shares had been attracting the attention of investors.

CAARs for five different downgrade and upgrade recommendation categories were calculated over two different event windows. Table 6: Summary of CAARs shows that none of these CAARs was statistically significant at a 5% level.

The null hypothesis stated that the CAAR on the consensus recommended shares is not significantly different from zero.

The alternative hypothesis stated that the CAAR on the consensus recommended shares is significantly different from zero.

Based on the CAARs calculated for the various recommendation categories, the null hypothesis cannot be rejected. The lack of significant abnormal returns is similar to findings by McCain and Millar (1975) and Dimson and Marsh (1984) wherein both identified abnormal returns but these were not statistically significant.

Although not significant, the pattern of positive abnormal returns for upgrade recommendations was positive. However, the pattern of abnormal returns for downgrade recommendations was not negative as might be expected. This finding of differences in the patterns of abnormal returns for upgrade and downgrade recommendations could be attributed to two factors.

Firstly, upgrade recommendations are generally of interest to a far larger audience of investors. Investors looking to invest in the market could always be influenced by positive recommendations when deciding on which shares to buy. In contrast, the downgrade recommendations are only really of interest to investors already invested in the shares which are the subject of the recommendation. Therefore, the potential number of trades based on negative recommendations are far smaller resulting in these recommendations having far less of an impact on share prices. This finding is supported by Davies and Canes (1978:45) who argued that investors do not generally have the ability to short sell stocks and as such ”an investor can only sell stocks already in his portfolio, whereas no such constraint affects his ability to buy”.

Secondly, investor psychology may be a factor which influences the performance of shares which are the subject of upgrade and downgrade

recommendations. Investors are generally reluctant to realize losses by selling shares whose prices have fallen following purchase and instead hold losing stocks too long (Kahneman and Riepe 1998). Therefore, downgrade recommendations could be largely ignored by investors and result in no impact on the recommended share's price. Furthermore, investor behaviour can be influenced by buy recommendations. A study by Beneish (1991) found significant average positive stock price performance for the publication of buy recommendations.

A further finding is the small number of consensus recommendations which are changed to sell. The 'hold-sell' category was the second smallest consensus recommendation category and the 'buy-sell' category was the smallest. This corresponds to the findings of Womack (1996) who reasoned that there are substantial risks in brokerage firms disseminating sell recommendations to investors. Womack (1996) speculated that sell recommendations could harm a brokerage firm's present and potential investment banking relationships and are therefore discouraged by firms' investment bankers. For this reason, downgrade recommendations could be censored by management to maintain relationships with client firms.

Womack (1996) further argues that since sell recommendations are issued less frequently, when issued they are more visible and attract more attention. Therefore an incorrect sell recommendation could be more costly for an analyst's reputation than an incorrect buy recommendation since other analysts would likely be making similar buy recommendations.

The result of this research is that investors are not likely to be able to profit from brokerage firm recommendations. The research found that in the ten days following the publication of consensus recommendations, the cumulative abnormal returns are positive for upgrade recommendations. 'hold-buy' recommendations produced a cumulative abnormal return of 0.93% during this period while 'sell-hold' recommendations produced a return of 1.53%. However, investors would need to offset these returns with transaction costs and broker commissions. This same conclusion was reached by Barber et. al. (2001), who noted that investment strategies based on analysts' stock recommendations

require a great deal of trading and therefore generate high transaction costs. Therefore, even in cases where abnormal returns are achieved on recommendations, the overall net return is not reliably greater than zero. Barber et. al. (2001) concluded that due to transaction costs, investors could not implement a successful trading strategy based on stock recommendations.

CHAPTER 7: CONCLUSIONS AND RECOMMENDATIONS

7.1 Conclusions of the study

The aim of this research was to evaluate whether brokerage firms' stock recommendations have investment value and whether individual investors can profit from these stock recommendations.

Previous work did not reach a consensus as to the investment value of brokerage firms' recommendations.

The research shows that consensus recommendations do not provide investment value. Upon the removal of three market effects from the returns of shares listed on the JSE, namely the size effect, the value effect and the resources effect, no significant abnormal performance for recommended shares could be detected.

Neither upgrade nor downgrade recommendations produced significant abnormal returns which investors could profit from. The research did reveal a typical pattern of abnormal returns for stocks which are the subject of upgrade recommendations. However, individual investors cannot actually profit from upgrade consensus recommendations as the magnitude of the abnormal returns would not be sufficient to offset transaction costs and broker commissions.

7.2 Suggestions for further research

The abnormal returns of upgrade recommendations produced a typical positive pattern around the publication of consensus recommendations. However, the downgrade recommendations did not produce a similar negative pattern. One of the causes for this discrepancy could be as a result of investor psychology and the decision processes of individual investors. A study which further

investigates the relationship between investor psychology and the performance of recommended stocks could be performed.

The event period chosen conforms to general literature on event studies and was selected to minimise the effect of confounding events. However further research using a longer post announcement event period is suggested. This could better assess the long term performance of brokerage firm recommendations. However, such research should also ensure that market effects are removed from the calculated abnormal returns such that the performances of the recommendations can be better analysed.

Further research could evaluate the value of brokerage firm recommendations through the creation of portfolios of shares based on recommendations. The performance of these portfolios could be assessed to determine the value of recommendations. However, the returns should be measured on a risk-adjusted basis in order to draw suitable inferences regarding brokerage firms' recommendations.

Finally, the fact that an industry exists in which brokerage firms publish recommendations contradicts the findings of this study. It is argued that if the recommendations were not economically valuable, demand for such information would eventually disappear. However, since large amounts of resources are dedicated within brokerage firms to producing recommendations and clients pay for this research, it can be inferred that it must have investment value. A further study into specific firm's recommendations, rather than the consensus recommendations used in this study, could perhaps reveal a large variation in the quality (and hence investment value) of brokerage firms' recommendations.

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APPENDIX A

Sample of consensus recommendations

	Buy-Hold		Buy-Sell		Hold-Sell		Hold-Buy		Sell-Hold	
1	ABL	14 Nov 2006	AMA	02 Jun 2006	ACL	23 Oct 2007	ABL	18 Sep 2006	ACL	07 Nov 2007
2	ABL	21 Nov 2006	CPI	14 Jan 2008	AMS	26 Sep 2005	ABL	15 Nov 2006	AEG	19 Sep 2005
3	ABL	24 Apr 2007	TIW	23 Sep 2005	ARI	02 Aug 2005	ABL	05 Feb 2007	AMA	19 Jul 2007
4	ABL	21 Aug 2007			AXC	18 Mar 2008	ABL	02 Jul 2007	AMS	07 Oct 2005
5	ABL	09 Nov 2007			CAT	22 Oct 2007	ABL	22 Aug 2007	ARI	21 Jun 2005
6	ABL	25 Feb 2008			DRD	03 Mar 2006	ABL	14 Nov 2007	ARI	11 Oct 2005
7	ACL	01 Sep 2005			DRD	02 May 2006	ABL	14 Mar 2008	AXC	30 Jan 2008
8	ACL	30 Jan 2006			DRD	20 Aug 2007	ACL	22 Aug 2005	CAT	16 Oct 2007
9	ACL	12 Apr 2006			DRD	18 Sep 2007	ACL	03 Nov 2005	CAT	18 Jan 2008
10	ACP	23 Jan 2008			FPT	03 May 2007	ACL	02 Mar 2006	CPI	14 Mar 2008
11	ACP	27 Feb 2008			GND	12 May 2006	ACL	23 Nov 2007	DRD	12 Jan 2006
12	AEG	27 Sep 2006			GND	12 Oct 2006	ACP	30 Jan 2008	DRD	12 Apr 2006
13	AEG	13 Nov 2006			GND	01 Oct 2007	ACP	12 Mar 2008	DRD	08 May 2006
14	AEG	04 Mar 2008			GND	18 Dec 2007	AEG	14 Sep 2006	DRD	06 Sep 2007
15	AEG	14 Mar 2008			ILV	18 Oct 2005	AEG	28 Sep 2006	DRD	20 Sep 2007
16	AFE	09 Jan 2007			ILV	20 Nov 2006	AEG	19 Feb 2008	GND	08 Jun 2006
17	AFE	31 Jan 2007			MAF	14 Aug 2006	AEG	10 Mar 2008	GND	12 Dec 2006
18	AFE	26 Apr 2007			MAF	28 Sep 2006	AEG	18 Mar 2008	GND	02 Oct 2007
19	AFE	27 Feb 2008			MAF	01 Dec 2006	AFE	05 Sep 2006	GND	03 Jan 2008
20	AFX	11 May 2007			MAF	14 Dec 2006	AFE	18 Jan 2007	ILV	14 Oct 2005
21	AGI	09 Oct 2007			MAF	17 Apr 2007	AFE	21 Feb 2007	ILV	24 Nov 2005
22	AGL	24 Jul 2006			MAF	02 Oct 2007	AFE	04 Feb 2008	ILV	29 Nov 2006
23	AGL	27 Nov 2006			NCL	25 May 2005	AFX	07 May 2007	MAF	27 Sep 2006
24	AGL	05 Feb 2007			NCL	03 Aug 2006	AGL	09 May 2006	MAF	05 Oct 2006
25	AGL	08 Oct 2007			NCL	17 Apr 2007	AGL	25 Jul 2006	MAF	12 Dec 2006
26	AGL	13 Feb 2008			NED	29 Jul 2005	AGL	31 Jan 2007	MAF	16 Apr 2007
27	AGL	04 Mar 2008			NHM	19 Jul 2005	AGL	18 Sep 2007	MAF	01 Oct 2007
28	ALT	14 Oct 2005			PAP	01 Sep 2005	AGL	28 Jan 2008	MAF	09 Nov 2007
29	ALT	02 Nov 2005			PAP	01 Feb 2006	AGL	26 Feb 2008	MVL	05 Sep 2005
30	AMS	11 Oct 2007			PAP	06 Dec 2007	ALT	05 Oct 2005	NCL	02 Aug 2006
31	ANG	15 May 2006			RES	15 Mar 2007	ALT	18 Oct 2005	NCL	16 Apr 2007
32	ANG	22 Jun 2006			RES	17 Apr 2007	AMS	12 Mar 2007	NCL	05 Oct 2007
33	ANG	03 Jul 2006			RES	14 Nov 2007	ANG	09 May 2006	NED	12 Aug 2005
34	ANG	02 Oct 2006			SAP	03 Oct 2006	ANG	07 Jun 2006	NHM	20 Jun 2005
35	ANG	12 Dec 2006			SYC	01 Feb 2006	ANG	23 Jun 2006	NHM	28 Nov 2005
36	ANG	14 Feb 2007			SYC	25 Jul 2006	ANG	25 Jul 2006	PAP	19 Oct 2005
37	ANG	14 Jan 2008			SYC	03 Aug 2006	ANG	24 Oct 2006	PAP	26 Jun 2006
38	APA	30 Aug 2006			SYC	14 Nov 2007	ANG	14 Dec 2006	PAP	23 Jan 2008
39	APA	28 Sep 2006			SYC	27 Feb 2008	ANG	11 Jan 2008	RBX	16 Jan 2008
40	APA	24 Jan 2007			SYC	18 Mar 2008	APA	14 Jul 2006	RES	16 Apr 2007
41	APA	05 Dec 2007			TIW	14 Oct 2005	APA	27 Sep 2006	RES	26 Sep 2007
42	APA	12 Feb 2008			TIW	12 Jan 2006	APA	14 Dec 2006	RES	05 Dec 2007
43	APA	14 Mar 2008			TIW	02 Mar 2006	APA	03 May 2007	SAP	13 Nov 2006
44	APB	02 Aug 2006			TON	23 Jul 2007	APA	07 Feb 2008	SYC	14 Jul 2006
45	APB	30 Aug 2006			TON	18 Mar 2008	APA	14 Feb 2008	SYC	02 Aug 2006
46	APB	12 Dec 2006			TSX	06 Feb 2006	APA	18 Mar 2008	SYC	30 Aug 2006
47	APB	24 Jan 2007			TSX	14 Dec 2006	APB	25 Jul 2006	SYC	05 Dec 2007
48	APB	18 Dec 2007			TSX	17 Apr 2007	APB	03 Aug 2006	SYC	14 Mar 2008
49	APB	07 Feb 2008					APB	05 Oct 2006	TIW	04 Oct 2005
50	APK	09 Dec 2005					APB	14 Dec 2006	TIW	18 Oct 2005
51	APK	18 Jun 2007					APB	03 May 2007	TIW	18 Jan 2006
52	APN	22 Aug 2005					APB	03 Jan 2008	TIW	24 Mar 2006
53	APN	13 Jan 2006					APK	19 Apr 2006	TON	26 Nov 2007
54	APN	03 Oct 2006					APN	29 Aug 2005	TSX	12 Dec 2006
55	APN	17 Nov 2006					APN	10 Feb 2006	TSX	16 Apr 2007
56	APN	06 Dec 2006					APN	25 Oct 2006	WAR	02 Nov 2005
57	APN	01 Oct 2007					APN	29 Nov 2006		
58	APN	18 Dec 2007					APN	31 Aug 2007		
59	APN	11 Jan 2008					APN	02 Oct 2007		
60	AQP	29 Mar 2007					APN	03 Jan 2008		
61	AQP	04 Dec 2007					APN	12 Feb 2008		

	Buy-Hold		Buy-Sell		Hold-Sell		Hold-Buy		Sell-Hold	
62	AQP	18 Dec 2007					AQP	25 May 2005		
63	AQP	08 Feb 2008					AQP	22 Oct 2007		
64	ARI	28 Sep 2006					AQP	05 Dec 2007		
65	ARI	12 Jan 2007					AQP	03 Jan 2008		
66	ARI	13 Apr 2007					ARI	27 Sep 2006		
67	ARI	06 Sep 2007					ARI	23 Nov 2006		
68	ARI	24 Oct 2007					ARI	12 Apr 2007		
69	ASA	18 Aug 2006					ARI	09 Jul 2007		
70	ATN	02 Oct 2007					ARI	11 Oct 2007		
71	ATN	18 Jan 2008					ARI	16 Jan 2008		
72	AVI	20 Jan 2006					ASA	25 Jul 2006		
73	AVI	01 Oct 2007					ASA	13 Jul 2007		
74	BAT	05 Sep 2005					ATN	01 Oct 2007		
75	BAT	12 Jan 2006					ATN	16 Oct 2007		
76	BAT	24 Jan 2006					ATN	11 Feb 2008		
77	BAT	30 Mar 2006					AVI	08 Sep 2005		
78	BAT	03 Aug 2006					AVI	18 Jun 2007		
79	BAT	28 Sep 2006					AVI	23 Oct 2007		
80	BAW	26 Jul 2005					BAT	04 Jul 2005		
81	BAW	23 Jul 2007					BAT	05 Dec 2005		
82	BAW	16 Jan 2008					BAT	18 Jan 2006		
83	BCX	14 Oct 2005					BAT	08 Mar 2006		
84	BCX	12 Jan 2006					BAT	02 Aug 2006		
85	BCX	14 Feb 2008					BAT	27 Sep 2006		
86	BEL	14 Mar 2008					BAT	07 Nov 2006		
87	BIL	12 Jan 2006					BAW	17 Jul 2007		
88	BIL	08 Dec 2006					BAW	24 Jul 2007		
89	BIL	19 Jul 2007					BAW	18 Jan 2008		
90	BIL	28 Sep 2007					BCX	18 Oct 2005		
91	BTG	02 Mar 2006					BCX	12 Feb 2008		
92	BTG	15 May 2007					BEL	18 Mar 2008		
93	BVT	20 Feb 2006					BIL	24 Oct 2005		
94	BVT	06 Apr 2006					BIL	20 Jan 2006		
95	CBH	15 Jan 2008					BIL	30 Jan 2007		
96	CLH	10 Mar 2006					BIL	07 Sep 2007		
97	CMH	16 Apr 2007					BTG	19 Jan 2006		
98	CML	14 Oct 2005					BTG	13 Oct 2006		
99	CML	02 Nov 2005					BVT	23 Aug 2005		
100	CML	12 Jan 2006					BVT	02 Mar 2006		
101	CML	20 Jun 2007					BVT	01 Jun 2006		
102	CML	02 Oct 2007					CLH	20 Feb 2006		
103	CML	03 Jan 2008					CLH	04 Jul 2006		
104	CPL	19 Feb 2008					CMH	17 Apr 2007		
105	CSL	21 Sep 2006					CML	18 Oct 2005		
106	DCT	19 Feb 2008					CML	05 Dec 2005		
107	DDT	03 Jan 2008					CML	18 Jan 2006		
108	DDT	18 Mar 2008					CML	19 Jul 2007		
109	DTC	04 Oct 2005					CML	18 Dec 2007		
110	DTC	14 Oct 2005					CML	16 Jan 2008		
111	DTC	30 Mar 2006					CPI	28 Feb 2007		
112	DTC	12 Dec 2006					CPL	23 Jan 2008		
113	DTC	17 Jan 2007					CSL	24 Mar 2006		
114	DTC	01 Oct 2007					DCT	29 Jan 2008		
115	DTC	18 Dec 2007					DDT	18 Dec 2007		
116	DTC	12 Feb 2008					DDT	14 Mar 2008		
117	DTC	14 Mar 2008					DTC	19 May 2005		
118	ECO	14 Oct 2005					DTC	11 Oct 2005		
119	ECO	12 Jan 2006					DTC	18 Oct 2005		
120	ECO	24 Jul 2006					DTC	14 Nov 2006		
121	ECO	27 Nov 2006					DTC	14 Dec 2006		
122	ECO	12 Dec 2006					DTC	21 Feb 2007		
123	ECO	21 Feb 2007					DTC	02 Oct 2007		
124	ELH	02 Sep 2005					DTC	03 Jan 2008		
125	ELH	17 Nov 2005					DTC	14 Feb 2008		
126	ELH	10 May 2006					DTC	18 Mar 2008		
127	ELH	05 Jul 2006					ECO	18 Oct 2005		
128	ELH	02 Aug 2006					ECO	29 Jun 2006		
129	ELH	04 Dec 2006					ECO	04 Aug 2006		
130	EMI	30 Jan 2006					ECO	04 Dec 2006		
131	EMI	16 Apr 2007					ECO	12 Feb 2007		
132	EMI	03 May 2007					ECO	28 May 2007		
133	ENL	14 Aug 2007					ELH	18 Oct 2005		
134	EXX	08 Oct 2007					ELH	23 Feb 2006		

	Buy-Hold		Buy-Sell		Hold-Sell		Hold-Buy		Sell-Hold	
135	FOS	12 Sep 2005					ELH	12 May 2006		
136	FOS	12 Jan 2006					ELH	07 Jul 2006		
137	FOS	02 Aug 2006					ELH	03 Aug 2006		
138	FOS	27 Sep 2006					EMI	03 Jan 2006		
139	FOS	18 Oct 2006					EMI	15 Mar 2007		
140	FOS	18 Sep 2007					EMI	17 Apr 2007		
141	FOS	18 Dec 2007					EMI	18 Mar 2008		
142	FOS	14 Mar 2008					EXX	04 Sep 2007		
143	FPT	23 Jan 2008					FBR	09 Jan 2008		
144	GDF	15 Dec 2005					FOS	07 Dec 2005		
145	GDF	27 Nov 2007					FOS	20 Jan 2006		
146	GFI	02 Aug 2006					FOS	03 Aug 2006		
147	GFI	30 Oct 2006					FOS	28 Sep 2006		
148	GFI	14 Jan 2008					FOS	20 Jun 2007		
149	GFI	14 Mar 2008					FOS	06 Dec 2007		
150	GND	08 Jul 2005					FOS	26 Feb 2008		
151	GRF	12 Aug 2005					FOS	18 Mar 2008		
152	GRF	27 Sep 2006					FPT	27 Feb 2008		
153	GRF	13 Nov 2006					FSR	25 May 2006		
154	GRF	03 Sep 2007					GDF	26 Jun 2006		
155	GRT	11 May 2005					GDF	19 Feb 2008		
156	GRT	12 Dec 2006					GFI	06 Feb 2006		
157	HPA	12 Mar 2008					GFI	03 Aug 2006		
158	HPB	24 Jan 2007					GFI	11 Jan 2008		
159	HVL	17 Jul 2006					GFI	26 Feb 2008		
160	IMP	12 Sep 2005					GRF	12 Sep 2006		
161	IMP	11 Oct 2007					GRF	28 Sep 2006		
162	IMP	24 Oct 2007					GRF	03 Jul 2007		
163	IMP	18 Dec 2007					GRT	05 Oct 2006		
164	IMP	11 Jan 2008					HPA	29 Jan 2008		
165	IMP	14 Mar 2008					HPB	15 Jan 2007		
166	INL	01 Oct 2007					HVL	07 Jun 2006		
167	INL	18 Dec 2007					HVL	25 Feb 2008		
168	INL	14 Mar 2008					IMP	29 Aug 2005		
169	INP	23 Jul 2007					IMP	09 Jun 2006		
170	INP	14 Mar 2008					IMP	22 Oct 2007		
171	IPL	02 Aug 2005					IMP	27 Nov 2007		
172	IPL	14 Oct 2005					IMP	03 Jan 2008		
173	IPL	10 Mar 2006					IMP	29 Feb 2008		
174	IPL	26 Nov 2007					IMP	18 Mar 2008		
175	IVT	14 Dec 2007					INL	21 Sep 2007		
176	JDG	13 Jan 2006					INL	02 Oct 2007		
177	JDG	23 Feb 2006					INL	03 Jan 2008		
178	JDG	24 Jul 2006					INL	18 Mar 2008		
179	JSE	30 Jul 2007					INP	08 Nov 2006		
180	JSE	01 Oct 2007					INP	13 Feb 2008		
181	KIO	01 Oct 2007					INP	18 Mar 2008		
182	KIO	30 Oct 2007					IPL	04 Oct 2005		
183	KMB	02 Aug 2005					IPL	17 Oct 2005		
184	KMB	26 Sep 2005					IPL	01 Jun 2006		
185	KMB	22 Jun 2006					IVT	12 Feb 2008		
186	LGL	24 Feb 2006					JDG	20 Jan 2006		
187	LGL	02 Aug 2006					JDG	19 Jun 2006		
188	LGL	06 Mar 2008					JSE	20 Aug 2007		
189	LON	17 Oct 2005					KAP	01 Oct 2007		
190	LON	27 Sep 2006					KIO	26 Sep 2007		
191	LON	12 Dec 2006					KIO	02 Oct 2007		
192	LON	26 Jan 2007					KMB	19 Jul 2005		
193	MDC	23 Sep 2005					KMB	15 Aug 2005		
194	MDC	05 Feb 2007					KMB	14 Jun 2006		
195	MDC	02 Oct 2007					LGL	24 May 2006		
196	MDC	05 Dec 2007					LGL	13 Nov 2007		
197	MET	16 Mar 2006					LON	27 Jul 2005		
198	MET	12 Dec 2006					LON	18 Sep 2006		
199	MPC	28 Nov 2005					LON	28 Sep 2006		
200	MPC	15 Jun 2006					LON	14 Dec 2006		
201	MPC	02 Aug 2006					MDC	13 Nov 2006		
202	MPC	27 Sep 2006					MDC	03 Sep 2007		
203	MPC	04 Oct 2006					MDC	09 Nov 2007		
204	MPC	12 Dec 2006					MET	01 Jun 2006		
205	MPC	22 Feb 2007					MPC	18 Oct 2005		
206	MPC	14 Mar 2008					MPC	26 May 2006		
207	MRF	26 Feb 2007					MPC	03 Jul 2006		

	Buy-Hold		Buy-Sell		Hold-Sell		Hold-Buy		Sell-Hold	
281	SNT	05 Dec 2005					SBK	13 Mar 2006		
282	SNT	23 Mar 2007					SHP	07 Nov 2007		
283	SOL	21 Feb 2007					SHP	06 Feb 2008		
284	SOL	13 Apr 2007					SHP	26 Feb 2008		
285	SOL	14 Mar 2008					SLM	02 Jun 2005		
286	SPP	03 Jul 2006					SLM	02 Aug 2006		
287	SPP	27 Nov 2006					SLM	15 Mar 2007		
288	SPP	05 Feb 2007					SLM	14 Mar 2008		
289	SPP	04 May 2007					SNT	04 Oct 2005		
290	SUI	12 Apr 2006					SNT	18 Oct 2005		
291	TBS	19 May 2006					SNT	15 Feb 2007		
292	TBS	27 Sep 2006					SOL	15 May 2006		
293	TBS	12 Dec 2006					SOL	12 Apr 2007		
294	TBS	30 Jan 2007					SOL	29 Jan 2008		
295	TBS	16 Apr 2007					SPP	01 Jun 2006		
296	TBS	01 Oct 2007					SPP	05 Jul 2006		
297	TBS	18 Dec 2007					SPP	04 Dec 2006		
298	TIW	28 Sep 2006					SPP	24 Apr 2007		
299	TIW	14 Dec 2006					SPP	17 May 2007		
300	TKG	17 Jul 2006					SUI	26 Jun 2006		
301	TKG	02 Aug 2006					TBS	29 May 2006		
302	TKG	27 Sep 2006					TBS	28 Sep 2006		
303	TKG	18 Oct 2006					TBS	14 Dec 2006		
304	TKG	21 Nov 2006					TBS	10 Apr 2007		
305	TKG	13 Aug 2007					TBS	17 Apr 2007		
306	TKG	01 Oct 2007					TBS	02 Oct 2007		
307	TKG	10 Oct 2007					TBS	03 Jan 2008		
308	TKG	12 Feb 2008					TIW	04 Jul 2005		
309	TKG	14 Mar 2008					TIW	27 Sep 2006		
310	TRU	11 Jul 2005					TIW	13 Dec 2006		
311	TRU	30 Jan 2007					TIW	10 May 2007		
312	TRU	26 Nov 2007					TKG	26 Jun 2006		
313	UTR	22 Mar 2006					TKG	24 Jul 2006		
314	VKE	14 Feb 2008					TKG	03 Aug 2006		
315	VKE	14 Mar 2008					TKG	28 Sep 2006		
316	VLE	27 Sep 2006					TKG	17 Nov 2006		
317	VLE	12 Dec 2006					TKG	31 Jul 2007		
318	VLE	16 Apr 2007					TKG	26 Sep 2007		
319	WBO	30 Aug 2005					TKG	02 Oct 2007		
320	WBO	02 Nov 2005					TKG	01 Feb 2008		
321	WBO	12 Jan 2006					TKG	14 Feb 2008		
322	WBO	15 May 2006					TKG	18 Mar 2008		
323	WBO	02 Aug 2006					TRU	24 Feb 2006		
324	WBO	30 Aug 2006					TRU	10 Oct 2007		
325	WHL	18 Oct 2005					TRU	29 Feb 2008		
326	WHL	21 Feb 2006					UTR	06 Feb 2006		
327	WHL	21 Jul 2006					VKE	12 Feb 2008		
328	WHL	27 Sep 2006					VKE	19 Feb 2008		
329	WHL	01 Oct 2007					VLE	28 Sep 2006		
330	WHL	26 Feb 2008					VLE	14 Dec 2006		
331							VLE	17 Apr 2007		
332							WBO	19 Oct 2005		
333							WBO	11 Nov 2005		
334							WBO	13 Jan 2006		
335							WBO	19 Jun 2006		
336							WBO	03 Aug 2006		
337							WBO	25 Jan 2008		
338							WHL	17 Oct 2005		
339							WHL	20 Jan 2006		
340							WHL	01 Jun 2006		
341							WHL	01 Sep 2006		
342							WHL	19 Jun 2007		
343							WHL	02 Oct 2007		

APPENDIX B

Expected and abnormal return calculations

Due to the size of the calculations, only summaries of calculations for the expected and abnormal returns for “sell-hold” recommendations are included as an example in Appendix B.

Share Code		ACL	AEG	AMA	AMS	ARI	ARI	AXC	CAT
Recommendation Date		07 Nov 2007	19 Sep 2005	19 Jul 2007	07 Oct 2005	21 Jun 2005	11 Oct 2005	30 Jan 2008	16 Oct 2007
Multiple Regression Coefficients									
SGN	β1	-0.4331	0.0836	0.1370	0.2979	0.0413	0.0194	-0.1126	0.0894
SGR	β2	0.1489	-0.0855	-0.0572	-0.0026	-0.0215	-0.0183	-0.1816	0.0507
SVN	β3	0.4254	-0.2144	0.9578	0.4194	0.2440	0.0259	1.9097	0.2894
SVR	β4	-0.0508	0.0492	-0.0808	-0.0364	0.0372	0.0100	0.1820	0.0618
MGN	β5	0.0896	0.4604	-0.6158	-0.4504	-0.0974	-0.0048	0.2458	0.1341
MGR	β6	-0.1863	-0.0532	-0.0719	0.0534	0.2874	0.4163	0.4418	0.0113
MVN	β7	0.1532	0.9412	0.7081	-0.4882	-0.3034	-0.1347	-0.4255	0.4550
MVR	β8	-0.1410	0.1688	-0.1207	0.1009	0.2626	0.1975	-0.0315	0.3501
LGN	β9	0.0411	0.0769	0.0386	0.4307	-0.0438	-0.0322	-0.3365	-0.4922
LGR	β10	0.0528	0.0611	0.0599	0.8966	0.3221	0.3325	-0.1616	-0.1291
LVN	β11	0.0142	-0.0044	0.3191	-0.1392	0.0488	-0.0764	0.1773	0.0585
LVR	β12	0.9675	-0.1076	-0.0048	0.2954	0.1513	0.1960	-0.1978	0.1757
Intercept	α	-0.0001	-0.0026	-0.0056	-0.0004	0.0006	0.0014	0.0113	-0.0024
Event Window									
	Day -10	24/10/07	05/09/05	05/07/07	23/09/05	06/06/05	27/09/05	16/01/08	02/10/07
	Day -9	25/10/07	06/09/05	06/07/07	26/09/05	07/06/05	28/09/05	17/01/08	03/10/07
	Day -8	26/10/07	07/09/05	09/07/07	27/09/05	08/06/05	29/09/05	18/01/08	04/10/07
	Day -7	29/10/07	08/09/05	10/07/07	28/09/05	09/06/05	30/09/05	21/01/08	05/10/07
	Day -6	30/10/07	09/09/05	11/07/07	29/09/05	10/06/05	03/10/05	22/01/08	08/10/07
	Day -5	31/10/07	12/09/05	12/07/07	30/09/05	13/06/05	04/10/05	23/01/08	09/10/07
	Day -4	01/11/07	13/09/05	13/07/07	03/10/05	14/06/05	05/10/05	24/01/08	10/10/07
	Day -3	02/11/07	14/09/05	16/07/07	04/10/05	15/06/05	06/10/05	25/01/08	11/10/07
	Day -2	05/11/07	15/09/05	17/07/07	05/10/05	17/06/05	07/10/05	28/01/08	12/10/07
	Day -1	06/11/07	16/09/05	18/07/07	06/10/05	20/06/05	10/10/05	29/01/08	15/10/07
	Day 0	07/11/07	19/09/05	19/07/07	07/10/05	21/06/05	11/10/05	30/01/08	16/10/07
	Day +1	08/11/07	20/09/05	20/07/07	10/10/05	22/06/05	12/10/05	31/01/08	17/10/07
	Day +2	09/11/07	21/09/05	23/07/07	11/10/05	23/06/05	13/10/05	01/02/08	18/10/07
	Day +3	12/11/07	22/09/05	24/07/07	12/10/05	24/06/05	14/10/05	04/02/08	19/10/07
	Day +4	13/11/07	23/09/05	25/07/07	13/10/05	27/06/05	17/10/05	05/02/08	22/10/07
	Day +5	14/11/07	26/09/05	26/07/07	14/10/05	28/06/05	18/10/05	06/02/08	23/10/07
	Day +6	15/11/07	27/09/05	27/07/07	17/10/05	29/06/05	19/10/05	07/02/08	24/10/07
	Day +7	16/11/07	28/09/05	30/07/07	18/10/05	30/06/05	20/10/05	08/02/08	25/10/07
	Day +8	19/11/07	29/09/05	31/07/07	19/10/05	01/07/05	21/10/05	11/02/08	26/10/07
	Day +9	20/11/07	30/09/05	01/08/07	20/10/05	04/07/05	24/10/05	12/02/08	29/10/07
	Day +10	21/11/07	03/10/05	02/08/07	21/10/05	05/07/05	25/10/05	13/02/08	30/10/07
Expected Returns									
	Day -10	-0.75%	-0.01%	-1.08%	-1.15%	-0.14%	-0.04%	-2.46%	0.01%
	Day -9	0.52%	0.00%	-0.15%	3.26%	-0.75%	0.42%	-0.28%	1.21%
	Day -8	1.74%	1.10%	-0.11%	0.87%	-0.11%	1.85%	0.38%	-0.45%
	Day -7	2.00%	0.21%	-0.05%	0.90%	-0.06%	0.52%	-4.34%	-0.02%
	Day -6	2.12%	0.40%	-0.83%	1.71%	0.77%	-0.53%	-1.01%	0.09%
	Day -5	-0.01%	0.97%	-0.86%	0.82%	2.44%	1.28%	1.10%	-0.15%
	Day -4	-1.52%	0.38%	-0.98%	-0.40%	-0.01%	-1.63%	2.21%	0.80%
	Day -3	-1.51%	0.55%	-0.38%	0.43%	-0.87%	-0.62%	1.05%	1.68%
	Day -2	-1.17%	0.96%	-0.88%	-2.42%	0.86%	-0.58%	-2.39%	-0.92%
	Day -1	1.61%	-0.86%	0.50%	-1.83%	-1.27%	0.23%	1.15%	-0.88%
	Day 0	1.30%	-0.37%	0.19%	-0.68%	-0.64%	0.90%	-0.71%	-1.40%
	Day +1	2.23%	-0.70%	0.48%	-0.71%	-1.00%	0.40%	-0.75%	0.13%
	Day +2	-0.34%	-0.94%	-0.53%	0.46%	0.43%	-1.48%	-1.36%	-0.35%
	Day +3	-0.39%	-2.12%	0.67%	0.10%	-0.08%	-1.06%	4.16%	0.23%
	Day +4	-1.36%	0.55%	-2.25%	-3.62%	-0.30%	1.53%	1.57%	-1.91%
	Day +5	0.39%	0.04%	-1.38%	-1.98%	-1.43%	0.09%	1.83%	0.22%
	Day +6	-1.85%	-0.35%	-1.45%	1.89%	1.57%	-1.55%	1.74%	0.54%
	Day +7	-1.03%	-0.38%	-0.78%	-0.45%	-0.06%	0.17%	0.97%	0.04%
	Day +8	-2.18%	-0.30%	0.11%	-3.65%	-0.09%	-0.37%	-0.39%	0.79%
	Day +9	1.55%	0.52%	-2.37%	1.01%	0.96%	1.86%	-1.44%	0.19%
	Day +10	-0.17%	-1.96%	-0.77%	-1.76%	0.26%	1.15%	0.26%	-0.61%
Abnormal Returns									
	Day -10	1.73%	0.76%	-1.25%	1.77%	0.14%	0.30%	-0.30%	-1.64%
	Day -9	-1.56%	4.25%	-0.80%	1.67%	0.75%	1.28%	-0.43%	-1.21%
	Day -8	0.14%	-1.60%	-2.54%	2.06%	-1.38%	-1.85%	-1.81%	0.45%
	Day -7	0.48%	-2.01%	-1.18%	0.81%	0.06%	-0.52%	-8.71%	-0.26%
	Day -6	-0.74%	-0.40%	3.33%	1.93%	-2.28%	-4.60%	-2.33%	-2.39%
	Day -5	-0.67%	4.82%	-1.34%	0.53%	-2.44%	4.13%	2.35%	0.15%
	Day -4	0.15%	0.03%	-1.76%	-1.54%	-1.53%	-2.21%	3.63%	-0.80%
	Day -3	0.82%	2.21%	0.64%	-3.86%	-1.94%	0.22%	-1.84%	-1.09%
	Day -2	1.51%	0.99%	3.18%	1.82%	5.25%	-0.35%	-3.48%	0.39%
	Day -1	-1.26%	3.89%	2.00%	-0.16%	0.66%	0.58%	0.03%	0.82%
	Day 0	-2.73%	3.24%	0.30%	0.68%	-0.27%	0.97%	-0.62%	1.40%
	Day +1	-2.37%	-1.16%	-4.61%	-1.03%	1.00%	-0.38%	0.41%	1.57%
	Day +2	-0.19%	1.57%	-0.73%	3.07%	0.49%	1.48%	1.36%	-1.33%
	Day +3	-0.46%	2.75%	-2.20%	5.34%	-0.53%	-1.60%	0.93%	-0.23%
	Day +4	0.50%	-0.49%	2.25%	2.23%	0.30%	1.17%	2.14%	2.20%
	Day +5	-1.01%	0.84%	-7.22%	0.34%	1.12%	-2.07%	-1.52%	-0.51%
	Day +6	0.94%	0.97%	4.01%	-0.37%	-1.57%	1.92%	2.91%	-0.54%
	Day +7	-0.81%	0.69%	4.12%	0.24%	4.64%	-1.21%	1.25%	-0.04%
	Day +8	1.82%	0.91%	2.04%	3.44%	-1.36%	-0.98%	3.29%	0.39%
	Day +9	-0.43%	1.61%	1.32%	-0.63%	-0.96%	4.99%	-0.96%	-0.19%
	Day +10	-0.20%	0.77%	-0.82%	-1.77%	-0.29%	-3.20%	0.03%	0.03%
Standard error of estimated return		0.0302	0.0342	0.0347	0.0360	0.0407	0.0391	0.0506	0.0419

Share Code		CAT	CPI	DRD	DRD	DRD	DRD	DRD	GND
Recommendation Date		18 Jan 2008	14 Mar 2008	12 Jan 2006	12 Apr 2006	08 May 2006	06 Sep 2007	20 Sep 2007	08 Jun 2006
Multiple Regression Coefficients									
SGN	β1	0.1330	0.4726	-0.3603	-0.3721	-0.3233	-0.1991	-0.1684	-0.3354
SGR	β2	0.1227	0.0560	0.0550	-0.0204	-0.0183	0.1176	0.1732	-0.0999
SVN	β3	0.2502	0.7109	-1.1328	-0.8283	-0.7838	0.5327	0.7869	0.5898
SVR	β4	0.0389	0.0668	0.0470	0.1062	0.1134	0.0817	0.0541	-0.0490
MGN	β5	0.0730	-0.3052	0.5818	0.4753	0.2574	-0.1605	0.0145	0.1498
MGR	β6	0.0639	-0.0352	1.3817	1.3889	1.4053	1.6295	1.6226	0.0253
MVN	β7	0.3579	0.2225	-0.2878	-0.5529	-0.4302	-0.4613	-0.6467	0.7641
MVR	β8	0.2948	-0.0773	0.4008	0.5010	0.4844	0.0763	-0.0480	-0.0385
LGN	β9	-0.3550	0.3572	-0.2656	0.0068	0.0825	0.2290	0.2975	-0.1350
LGR	β10	-0.1603	0.0211	0.7991	0.5887	0.4920	-0.0177	0.0849	0.2058
LVN	β11	0.0507	-0.3299	-0.1758	-0.4846	-0.5022	-0.4714	-0.7139	0.2671
LVR	β12	0.1843	0.1192	-0.1558	-0.1531	-0.1445	-0.0996	-0.1097	-0.0683
Intercept	α	-0.0023	0.0011	0.0032	0.0028	0.0033	-0.0120	-0.0109	0.0062
Event Window									
	Day -10	04/01/08	29/02/08	28/12/05	29/03/06	20/04/06	23/08/07	06/09/07	25/05/06
	Day -9	07/01/08	03/03/08	29/12/05	30/03/06	21/04/06	24/08/07	07/09/07	26/05/06
	Day -8	08/01/08	04/03/08	30/12/05	31/03/06	24/04/06	27/08/07	10/09/07	29/05/06
	Day -7	09/01/08	05/03/08	03/01/06	03/04/06	25/04/06	28/08/07	11/09/07	30/05/06
	Day -6	10/01/08	06/03/08	04/01/06	04/04/06	26/04/06	29/08/07	12/09/07	31/05/06
	Day -5	11/01/08	07/03/08	05/01/06	05/04/06	28/04/06	30/08/07	13/09/07	01/06/06
	Day -4	14/01/08	10/03/08	06/01/06	06/04/06	02/05/06	31/08/07	14/09/07	02/06/06
	Day -3	15/01/08	11/03/08	09/01/06	07/04/06	03/05/06	03/09/07	17/09/07	05/06/06
	Day -2	16/01/08	12/03/08	10/01/06	10/04/06	04/05/06	04/09/07	18/09/07	06/06/06
	Day -1	17/01/08	13/03/08	11/01/06	11/04/06	05/05/06	05/09/07	19/09/07	07/06/06
	Day 0	18/01/08	14/03/08	12/01/06	12/04/06	08/05/06	06/09/07	20/09/07	08/06/06
	Day +1	21/01/08	17/03/08	13/01/06	13/04/06	09/05/06	07/09/07	21/09/07	09/06/06
	Day +2	22/01/08	18/03/08	16/01/06	18/04/06	10/05/06	10/09/07	25/09/07	12/06/06
	Day +3	23/01/08	19/03/08	17/01/06	19/04/06	11/05/06	11/09/07	26/09/07	13/06/06
	Day +4	24/01/08	20/03/08	18/01/06	20/04/06	12/05/06	12/09/07	27/09/07	14/06/06
	Day +5	25/01/08	25/03/08	19/01/06	21/04/06	15/05/06	13/09/07	28/09/07	15/06/06
	Day +6	28/01/08	26/03/08	20/01/06	24/04/06	16/05/06	14/09/07	01/10/07	19/06/06
	Day +7	29/01/08	27/03/08	23/01/06	25/04/06	17/05/06	17/09/07	02/10/07	20/06/06
	Day +8	30/01/08	28/03/08	24/01/06	26/04/06	18/05/06	18/09/07	03/10/07	21/06/06
	Day +9	31/01/08	31/03/08	25/01/06	28/04/06	19/05/06	19/09/07	04/10/07	22/06/06
	Day +10	01/02/08	03/04/08	26/01/06	02/05/06	22/05/06	20/09/07	05/10/07	23/06/06
Expected Returns									
	Day -10	0.20%	0.55%	0.74%	-0.26%	-1.98%	-2.39%	0.85%	0.44%
	Day -9	-1.37%	-0.28%	2.55%	3.28%	-1.09%	-0.73%	2.84%	1.93%
	Day -8	0.12%	-0.09%	1.18%	1.11%	1.55%	1.06%	-2.57%	2.05%
	Day -7	-0.94%	-1.02%	4.31%	4.30%	1.85%	1.16%	-2.17%	-0.53%
	Day -6	-0.88%	-0.23%	0.12%	-2.31%	0.87%	-3.86%	-1.18%	-0.31%
	Day -5	-0.03%	-0.58%	-2.02%	2.10%	-2.05%	-3.29%	-0.99%	0.36%
	Day -4	-2.66%	-1.26%	1.36%	1.94%	7.62%	0.08%	3.08%	1.78%
	Day -3	0.26%	-0.90%	2.82%	-0.90%	1.43%	4.73%	-1.84%	0.26%
	Day -2	-2.61%	1.87%	-0.80%	-3.78%	1.05%	-0.48%	1.08%	-2.73%
	Day -1	-1.39%	-0.26%	-0.75%	0.84%	-1.41%	-1.78%	1.31%	-1.03%
	Day 0	-0.13%	1.32%	-2.91%	-0.13%	-0.13%	0.28%	-1.20%	-4.65%
	Day +1	-4.23%	-2.81%	3.34%	-3.32%	4.16%	1.92%	1.83%	3.86%
	Day +2	-1.91%	0.66%	7.03%	4.79%	1.04%	-2.67%	0.66%	0.14%
	Day +3	0.64%	-0.72%	-0.80%	2.28%	2.18%	-2.16%	0.74%	-3.57%
	Day +4	1.42%	-0.16%	0.48%	-2.09%	0.32%	-1.71%	2.20%	1.61%
	Day +5	-1.05%	0.96%	2.50%	-1.18%	-3.19%	-1.48%	-0.21%	2.74%
	Day +6	-1.79%	1.41%	1.31%	1.61%	-1.78%	2.66%	-3.08%	3.06%
	Day +7	0.21%	0.60%	0.55%	1.83%	1.80%	-2.16%	-1.99%	1.56%
	Day +8	0.85%	0.05%	-1.15%	1.18%	-1.61%	0.72%	-5.10%	0.92%
	Day +9	0.28%	0.48%	4.32%	-2.40%	-4.23%	1.44%	-2.38%	-0.39%
	Day +10	1.08%	0.00%	1.49%	7.85%	3.23%	-1.34%	-1.70%	-3.18%
Abnormal Returns									
	Day -10	-0.20%	-1.82%	-0.40%	-0.44%	0.01%	2.39%	2.44%	2.17%
	Day -9	1.31%	-1.34%	3.15%	3.31%	1.62%	2.01%	11.05%	1.46%
	Day -8	-0.63%	-0.35%	-2.88%	0.44%	-3.65%	-0.55%	2.57%	-2.21%
	Day -7	-1.63%	-0.79%	-3.35%	-2.67%	-1.85%	-3.17%	4.17%	-1.36%
	Day -6	0.59%	0.74%	6.38%	-4.43%	-0.76%	2.06%	10.20%	0.31%
	Day -5	-4.97%	0.05%	1.52%	1.91%	1.94%	2.24%	0.27%	-0.77%
	Day -4	7.92%	1.26%	4.67%	2.58%	-6.98%	3.36%	-4.53%	-2.70%
	Day -3	-3.49%	-0.78%	4.29%	-0.58%	-3.24%	-1.15%	4.78%	-2.38%
	Day -2	2.61%	-1.87%	-6.28%	4.00%	-2.56%	1.71%	-1.97%	-0.22%
	Day -1	-5.90%	-0.75%	3.61%	-2.55%	0.31%	5.43%	2.11%	-2.54%
	Day 0	0.13%	1.42%	0.13%	0.35%	1.02%	3.02%	3.99%	-2.76%
	Day +1	4.23%	2.81%	1.90%	1.47%	-2.28%	11.98%	-0.47%	4.74%
	Day +2	-3.66%	-0.64%	1.48%	1.28%	-1.47%	2.67%	-6.34%	2.99%
	Day +3	-0.64%	0.56%	-0.37%	-1.35%	13.35%	4.16%	0.32%	1.78%
	Day +4	-4.20%	-1.04%	-3.44%	0.13%	4.10%	10.73%	-5.71%	0.21%
	Day +5	1.05%	-0.94%	-2.50%	1.71%	3.10%	0.76%	3.85%	-0.15%
	Day +6	2.15%	-1.44%	3.90%	-3.70%	-2.28%	-4.11%	1.33%	0.08%
	Day +7	-4.05%	-0.60%	-3.77%	-1.83%	-3.21%	5.10%	0.03%	-0.29%
	Day +8	4.63%	-0.05%	0.21%	-1.07%	1.23%	-1.62%	1.28%	0.83%
	Day +9	-5.55%	-1.83%	-2.59%	2.29%	-2.94%	1.98%	2.76%	1.54%
	Day +10	2.62%	0.00%	-2.34%	-7.21%	-1.79%	4.13%	2.64%	1.23%
Standard error of estimated return		0.0411	0.0448	0.0699	0.0683	0.0682	0.0679	0.0697	0.0455

Share Code		GND	GND	GND	ILV	ILV	ILV	MAF	MAF
Recommendation Date		12 Dec 2006	02 Oct 2007	03 Jan 2008	14 Oct 2005	24 Nov 2005	29 Nov 2006	27 Sep 2006	05 Oct 2006
Multiple Regression Coefficients									
SGN	β1	-0.5966	0.1994	0.4399	0.0168	0.1327	0.3050	-0.0131	-0.0693
SGR	β2	-0.0550	-0.1243	-0.0875	-0.0501	-0.0603	-0.0188	-0.0490	-0.0661
SVN	β3	0.6726	0.1577	-0.0632	-0.4360	-0.3798	-0.5172	0.2364	0.2626
SVR	β4	-0.0455	-0.0044	0.0077	0.0058	-0.0050	0.0619	-0.0204	-0.0206
MGN	β5	0.0664	0.2029	0.1510	-0.0755	0.0400	0.3302	0.5812	0.6124
MGR	β6	0.0407	0.0044	0.0010	0.1436	0.1569	-0.0166	-0.0111	-0.0281
MVN	β7	0.5476	0.6252	0.5842	1.1937	0.9469	0.6443	0.6481	0.6895
MVR	β8	-0.0253	0.0854	0.2266	-0.0352	-0.0460	-0.0141	-0.0738	-0.0846
LGN	β9	0.3203	0.2393	0.3106	-0.1017	-0.2418	-0.4515	-0.4667	-0.4165
LGR	β10	0.1029	-0.0596	-0.0737	0.0859	0.1158	0.1586	0.1054	0.1212
LVN	β11	0.0612	-0.1564	-0.2476	-0.1916	-0.1267	-0.2126	0.1480	0.0793
LVR	β12	0.0116	0.1346	0.1435	0.1120	0.1467	0.1526	-0.1284	-0.1366
Intercept	α	0.0056	0.0038	0.0014	0.0003	-0.0001	0.0054	-0.0023	-0.0030
Event Window									
	Day -10	28/11/06	17/09/07	14/12/07	30/09/05	10/11/05	15/11/06	12/09/06	20/09/06
	Day -9	29/11/06	18/09/07	18/12/07	03/10/05	11/11/05	16/11/06	13/09/06	21/09/06
	Day -8	30/11/06	19/09/07	19/12/07	04/10/05	14/11/05	17/11/06	14/09/06	22/09/06
	Day -7	01/12/06	20/09/07	20/12/07	05/10/05	15/11/05	20/11/06	15/09/06	26/09/06
	Day -6	04/12/06	21/09/07	21/12/07	06/10/05	16/11/05	21/11/06	18/09/06	27/09/06
	Day -5	05/12/06	25/09/07	24/12/07	07/10/05	17/11/05	22/11/06	19/09/06	28/09/06
	Day -4	06/12/06	26/09/07	27/12/07	10/10/05	18/11/05	23/11/06	20/09/06	29/09/06
	Day -3	07/12/06	27/09/07	28/12/07	11/10/05	21/11/05	24/11/06	21/09/06	02/10/06
	Day -2	08/12/06	28/09/07	31/12/07	12/10/05	22/11/05	27/11/06	22/09/06	03/10/06
	Day -1	11/12/06	01/10/07	02/01/08	13/10/05	23/11/05	28/11/06	26/09/06	04/10/06
	Day 0	12/12/06	02/10/07	03/01/08	14/10/05	24/11/05	29/11/06	27/09/06	05/10/06
	Day +1	13/12/06	03/10/07	04/01/08	17/10/05	25/11/05	30/11/06	28/09/06	06/10/06
	Day +2	14/12/06	04/10/07	07/01/08	18/10/05	28/11/05	01/12/06	29/09/06	09/10/06
	Day +3	15/12/06	05/10/07	08/01/08	19/10/05	29/11/05	04/12/06	02/10/06	10/10/06
	Day +4	18/12/06	08/10/07	09/01/08	20/10/05	30/11/05	05/12/06	03/10/06	11/10/06
	Day +5	19/12/06	09/10/07	10/01/08	21/10/05	01/12/05	06/12/06	04/10/06	12/10/06
	Day +6	20/12/06	10/10/07	11/01/08	24/10/05	02/12/05	07/12/06	05/10/06	13/10/06
	Day +7	21/12/06	11/10/07	14/01/08	25/10/05	05/12/05	08/12/06	06/10/06	16/10/06
	Day +8	22/12/06	12/10/07	15/01/08	26/10/05	06/12/05	11/12/06	09/10/06	17/10/06
	Day +9	27/12/06	15/10/07	16/01/08	27/10/05	07/12/05	12/12/06	10/10/06	18/10/06
	Day +10	28/12/06	16/10/07	17/01/08	28/10/05	08/12/05	13/12/06	11/10/06	19/10/06
Expected Returns									
	Day -10	-0.59%	-0.47%	-1.83%	0.14%	0.97%	-0.07%	-0.24%	0.00%
	Day -9	1.08%	0.95%	-1.84%	-0.83%	0.31%	0.50%	0.69%	0.13%
	Day -8	1.56%	2.23%	-0.82%	0.40%	0.70%	-0.62%	-0.40%	-0.61%
	Day -7	1.16%	-0.23%	0.22%	-0.84%	0.05%	1.95%	-1.04%	-0.26%
	Day -6	0.46%	0.18%	1.58%	-0.42%	0.04%	1.05%	0.02%	-0.51%
	Day -5	0.70%	0.79%	1.22%	-0.23%	0.77%	1.55%	0.40%	-0.01%
	Day -4	-0.15%	0.82%	1.26%	-0.50%	0.14%	0.18%	0.02%	-0.59%
	Day -3	0.20%	1.26%	-0.45%	0.23%	0.29%	1.32%	0.24%	-0.87%
	Day -2	0.55%	0.84%	0.15%	0.25%	-0.19%	0.88%	-0.62%	0.06%
	Day -1	0.26%	0.14%	0.39%	-0.30%	-0.68%	0.45%	-0.13%	0.22%
	Day 0	-0.02%	1.66%	-1.20%	-0.46%	0.69%	0.80%	-0.44%	0.26%
	Day +1	1.28%	1.60%	-0.58%	1.68%	0.18%	1.02%	0.14%	0.12%
	Day +2	1.34%	0.44%	-1.63%	0.95%	0.34%	0.80%	-0.47%	-0.46%
	Day +3	1.43%	0.62%	0.35%	-0.97%	-0.51%	0.38%	-0.86%	-0.29%
	Day +4	0.83%	0.36%	-1.21%	0.29%	0.48%	0.90%	0.14%	0.12%
	Day +5	0.83%	0.36%	-1.66%	0.58%	0.09%	0.46%	0.30%	0.06%
	Day +6	2.32%	1.05%	-2.05%	0.32%	0.67%	0.53%	0.42%	0.78%
	Day +7	2.12%	1.22%	-2.81%	0.10%	-0.27%	0.05%	0.23%	-0.10%
	Day +8	0.28%	-0.60%	-1.00%	0.31%	-0.57%	0.22%	-0.38%	0.70%
	Day +9	2.34%	-0.26%	-2.74%	-0.66%	0.95%	0.11%	-0.30%	0.00%
	Day +10	0.81%	-0.17%	0.39%	-0.93%	0.06%	0.02%	0.12%	-0.73%
Abnormal Returns									
	Day -10	0.24%	0.47%	-3.23%	-0.54%	0.04%	0.37%	1.02%	-1.14%
	Day -9	1.22%	-0.95%	0.75%	0.83%	-0.31%	0.09%	3.92%	-1.09%
	Day -8	-0.75%	-0.99%	0.08%	1.12%	-1.70%	0.91%	-2.17%	-2.31%
	Day -7	-0.48%	1.07%	2.60%	1.34%	0.86%	1.25%	1.04%	-0.14%
	Day -6	-0.46%	1.24%	-2.93%	0.82%	0.06%	-1.89%	-0.02%	-3.10%
	Day -5	-0.97%	0.82%	1.98%	-1.66%	5.73%	0.73%	-1.16%	-1.03%
	Day -4	-0.59%	2.67%	0.56%	1.21%	-0.60%	-1.01%	-1.16%	-2.56%
	Day -3	-1.42%	0.11%	0.40%	0.07%	-4.07%	-1.60%	-1.20%	0.66%
	Day -2	0.34%	-1.07%	1.67%	3.75%	0.39%	-0.88%	-2.29%	8.00%
	Day -1	-1.96%	-1.61%	-2.44%	-1.63%	3.91%	0.68%	-0.27%	-2.44%
	Day 0	0.37%	-0.83%	-1.15%	0.46%	0.74%	-0.75%	-3.18%	-1.29%
	Day +1	-0.86%	1.29%	-1.08%	1.26%	-1.11%	0.31%	-1.18%	1.96%
	Day +2	0.52%	0.13%	2.22%	1.91%	-1.28%	1.94%	-2.69%	-1.58%
	Day +3	-1.29%	-1.34%	-1.75%	-1.07%	0.98%	2.07%	0.65%	0.25%
	Day +4	1.06%	0.36%	-1.08%	-0.10%	0.94%	0.92%	7.92%	-0.12%
	Day +5	-0.36%	-0.36%	0.02%	-2.47%	0.84%	-2.05%	-2.52%	-0.02%
	Day +6	-2.00%	-0.30%	-0.09%	-2.24%	3.96%	-0.27%	-1.45%	2.55%
	Day +7	-2.12%	-0.10%	0.82%	-1.08%	2.04%	-1.61%	1.86%	-1.71%
	Day +8	0.38%	-0.88%	-2.93%	2.16%	4.05%	-0.22%	-1.66%	-2.38%
	Day +9	-1.30%	0.63%	-1.66%	1.62%	-1.79%	-1.16%	0.26%	3.18%
	Day +10	-0.23%	0.17%	2.85%	-0.51%	0.79%	-0.02%	-0.12%	-0.28%
Standard error of estimated return		0.0426	0.0344	0.0327	0.0311	0.0318	0.0349	0.0474	0.0477

Share Code		MAF	MAF	MAF	MAF	MVL	NCL	NCL	NCL
Recommendation Date		12 Dec 2006	16 Apr 2007	01 Oct 2007	09 Nov 2007	05 Sep 2005	02 Aug 2006	16 Apr 2007	05 Oct 2007
Multiple Regression Coefficients									
SGN	β1	-0.0225	-0.1323	0.3031	0.2785	0.1098	-0.6709	-0.8783	-0.7344
SGR	β2	-0.0689	-0.0896	-0.1916	-0.2337	0.0194	0.0690	0.0282	0.0465
SVN	β3	0.0933	0.1183	-0.1365	-0.1905	-0.0501	0.4061	0.3908	0.2353
SVR	β4	-0.0193	-0.0303	-0.0346	-0.0344	0.0663	-0.0466	-0.0536	-0.0358
MGN	β5	0.6118	0.5381	0.4610	0.5365	-0.2517	0.6384	0.7351	0.7136
MGR	β6	-0.0623	-0.0337	-0.0309	-0.0233	0.4273	-0.0048	0.0759	-0.0105
MVN	β7	0.8412	0.9163	1.2845	1.3171	0.4338	0.4302	0.3253	0.4129
MVR	β8	-0.0538	-0.1453	-0.3045	-0.2610	0.2920	-0.0214	-0.0811	-0.0894
LGN	β9	-0.3841	-0.2488	-0.5668	-0.4911	0.4298	0.2049	0.3693	0.4001
LGR	β10	0.1274	0.1050	0.1314	0.1419	0.2150	0.1510	0.1689	0.1836
LVN	β11	0.0096	-0.0913	-0.0462	-0.1059	-0.3270	-0.0304	-0.0611	-0.1017
LVR	β12	-0.1434	-0.1290	-0.1001	-0.1387	-0.1456	-0.0780	-0.0972	-0.0649
Intercept	α	-0.0018	-0.0016	-0.0002	0.0001	-0.0014	-0.0031	-0.0014	0.0001
Event Window									
	Day -10	28/11/06	29/03/07	14/09/07	26/10/07	22/08/05	19/07/06	29/03/07	20/09/07
	Day -9	29/11/06	30/03/07	17/09/07	29/10/07	23/08/05	20/07/06	30/03/07	21/09/07
	Day -8	30/11/06	02/04/07	18/09/07	30/10/07	24/08/05	21/07/06	02/04/07	25/09/07
	Day -7	01/12/06	03/04/07	19/09/07	31/10/07	25/08/05	24/07/06	03/04/07	26/09/07
	Day -6	04/12/06	04/04/07	20/09/07	01/11/07	26/08/05	25/07/06	04/04/07	27/09/07
	Day -5	05/12/06	05/04/07	21/09/07	02/11/07	29/08/05	26/07/06	05/04/07	28/09/07
	Day -4	06/12/06	10/04/07	25/09/07	05/11/07	30/08/05	27/07/06	10/04/07	01/10/07
	Day -3	07/12/06	11/04/07	26/09/07	06/11/07	31/08/05	28/07/06	11/04/07	02/10/07
	Day -2	08/12/06	12/04/07	27/09/07	07/11/07	01/09/05	31/07/06	12/04/07	03/10/07
	Day -1	11/12/06	13/04/07	28/09/07	08/11/07	02/09/05	01/08/06	13/04/07	04/10/07
	Day 0	12/12/06	16/04/07	01/10/07	09/11/07	05/09/05	02/08/06	16/04/07	05/10/07
	Day +1	13/12/06	17/04/07	02/10/07	12/11/07	06/09/05	03/08/06	17/04/07	08/10/07
	Day +2	14/12/06	18/04/07	03/10/07	13/11/07	07/09/05	04/08/06	18/04/07	09/10/07
	Day +3	15/12/06	19/04/07	04/10/07	14/11/07	08/09/05	14/08/06	19/04/07	10/10/07
	Day +4	18/12/06	20/04/07	05/10/07	15/11/07	09/09/05	15/08/06	20/04/07	11/10/07
	Day +5	19/12/06	23/04/07	08/10/07	16/11/07	12/09/05	16/08/06	23/04/07	12/10/07
	Day +6	20/12/06	24/04/07	09/10/07	19/11/07	13/09/05	17/08/06	24/04/07	15/10/07
	Day +7	21/12/06	25/04/07	10/10/07	20/11/07	14/09/05	18/08/06	25/04/07	16/10/07
	Day +8	22/12/06	26/04/07	11/10/07	21/11/07	15/09/05	21/08/06	26/04/07	17/10/07
	Day +9	27/12/06	30/04/07	12/10/07	22/11/07	16/09/05	22/08/06	30/04/07	18/10/07
	Day +10	28/12/06	02/05/07	15/10/07	23/11/07	19/09/05	23/08/06	02/05/07	19/10/07
Expected Returns									
	Day -10	-0.90%	0.13%	0.07%	1.72%	1.21%	1.61%	0.68%	-0.80%
	Day -9	0.29%	0.21%	-0.33%	0.73%	0.50%	0.44%	0.85%	-1.41%
	Day -8	-0.09%	-0.07%	0.06%	-1.98%	-0.20%	-0.49%	-0.23%	0.13%
	Day -7	-0.05%	-0.36%	-0.54%	-0.29%	-1.18%	-0.50%	0.74%	0.59%
	Day -6	-0.52%	0.28%	-0.27%	-0.36%	0.94%	0.32%	0.30%	1.42%
	Day -5	0.23%	-0.87%	-0.83%	1.26%	-2.76%	0.76%	-0.53%	-0.50%
	Day -4	0.11%	-0.22%	-0.46%	0.82%	0.80%	0.48%	1.05%	0.00%
	Day -3	-0.02%	0.46%	0.05%	-0.54%	0.43%	-0.31%	-0.81%	1.04%
	Day -2	-0.74%	-0.30%	1.01%	-0.16%	0.67%	0.51%	0.83%	0.66%
	Day -1	-0.63%	0.49%	0.12%	-0.64%	2.20%	-1.24%	0.05%	0.24%
	Day 0	-0.91%	0.69%	-0.18%	0.17%	0.99%	-0.29%	1.36%	-0.43%
	Day +1	-0.02%	-0.48%	0.04%	-1.49%	0.65%	-0.70%	0.52%	0.74%
	Day +2	0.89%	-0.08%	1.98%	1.34%	0.97%	0.05%	-1.09%	-0.40%
	Day +3	-0.19%	-0.22%	-0.09%	0.27%	1.14%	-0.07%	-0.59%	0.44%
	Day +4	0.44%	0.19%	0.73%	-0.07%	2.14%	0.03%	1.17%	-0.81%
	Day +5	-0.07%	0.39%	-0.57%	1.03%	2.24%	0.18%	0.93%	-0.89%
	Day +6	0.21%	0.30%	-0.61%	-0.02%	-1.06%	1.71%	-0.95%	0.05%
	Day +7	0.11%	0.25%	0.19%	-0.85%	0.69%	-0.55%	-0.08%	0.04%
	Day +8	0.66%	0.44%	-0.05%	-0.93%	2.72%	0.48%	-0.20%	0.64%
	Day +9	0.50%	0.86%	-1.00%	-0.78%	2.52%	0.06%	0.54%	1.14%
	Day +10	-0.15%	-0.38%	-0.63%	-1.62%	2.62%	-0.20%	-0.34%	-0.49%
Abnormal Returns									
	Day -10	0.90%	0.24%	-0.07%	0.14%	-1.21%	0.24%	1.52%	-0.61%
	Day -9	1.77%	-0.21%	-3.02%	0.18%	-2.44%	4.67%	-6.94%	-0.14%
	Day -8	2.74%	-1.56%	-0.06%	4.33%	0.20%	-0.16%	6.87%	-0.13%
	Day -7	0.08%	2.03%	-0.23%	-1.65%	-0.14%	-0.59%	-0.74%	0.32%
	Day -6	1.76%	-2.61%	2.59%	0.18%	-4.28%	-0.32%	-1.63%	0.38%
	Day -5	2.06%	1.58%	1.02%	-1.62%	4.83%	-0.21%	0.83%	-0.98%
	Day -4	-1.09%	-3.49%	-1.62%	4.26%	-1.48%	1.70%	-0.08%	-1.67%
	Day -3	1.05%	-0.03%	1.88%	0.20%	-0.43%	0.42%	-0.53%	1.83%
	Day -2	2.32%	3.67%	-2.53%	0.34%	-1.69%	1.19%	1.80%	1.88%
	Day -1	0.11%	-0.46%	0.84%	-5.41%	0.89%	3.13%	2.88%	-0.93%
	Day 0	1.43%	-0.87%	-0.58%	-3.11%	-0.99%	0.60%	-1.29%	2.18%
	Day +1	0.72%	0.48%	0.15%	3.58%	-0.65%	2.96%	0.55%	-1.94%
	Day +2	-0.03%	-1.59%	-1.98%	-1.23%	0.56%	5.99%	1.02%	-0.41%
	Day +3	1.55%	2.11%	0.09%	-0.56%	-0.62%	-5.99%	-0.11%	-0.44%
	Day +4	-1.41%	-0.56%	-3.02%	0.18%	-2.86%	0.17%	-0.39%	0.52%
	Day +5	0.00%	1.61%	2.53%	-0.81%	-0.27%	0.52%	-0.58%	0.31%
	Day +6	0.33%	-0.44%	1.38%	-0.61%	0.41%	2.19%	1.58%	-0.35%
	Day +7	0.39%	-0.25%	0.00%	1.52%	1.58%	0.17%	1.12%	-2.10%
	Day +8	-1.66%	2.66%	-0.22%	-0.07%	2.04%	-0.96%	0.89%	-1.84%
	Day +9	-0.23%	-1.74%	0.31%	1.79%	6.57%	1.89%	-0.06%	0.08%
	Day +10	0.21%	1.45%	0.63%	3.28%	2.94%	-1.23%	-0.14%	1.09%
Standard error of estimated return		0.0468	0.0457	0.0405	0.0403	0.0422	0.0293	0.0331	0.0342

Share Code		NED	NHM	NHM	PAP	PAP	PAP	RBX	RES
Recommendation Date		12 Aug 2005	20 Jun 2005	28 Nov 2005	19 Oct 2005	26 Jun 2006	23 Jan 2008	16 Jan 2008	16 Apr 2007
Multiple Regression Coefficients									
SGN	β1	-0.1720	-0.3674	-0.4769	0.1886	0.3244	0.3491	0.4051	0.6197
SGR	β2	0.1038	-0.0617	-0.0699	-0.1307	-0.0817	0.0166	0.7529	-0.0304
SVN	β3	-0.5237	0.5101	0.1538	0.1526	0.4322	0.3601	0.2392	0.4737
SVR	β4	0.0142	0.0347	0.0043	0.0322	0.0078	-0.0136	0.2363	-0.0367
MGN	β5	0.4670	-0.1624	-0.0240	0.0464	0.1924	0.3445	1.6364	0.0029
MGR	β6	0.1320	-0.0107	0.0729	-0.0913	-0.0223	-0.1054	-0.0285	-0.0648
MVN	β7	-0.0768	0.0549	0.6737	-0.2353	-0.2581	0.0944	-0.6143	0.0801
MVR	β8	0.0568	0.6994	0.5222	0.0670	-0.0362	-0.1774	-1.0559	-0.0369
LGN	β9	0.5254	-0.2666	-0.2562	-0.1888	-0.1351	-0.2688	0.1192	-0.2100
LGR	β10	-0.2338	0.3475	0.4508	0.1101	0.1298	0.2293	0.0365	0.0243
LVN	β11	0.6487	0.3461	-0.0180	0.2771	0.1828	0.0921	-0.2712	0.0627
LVR	β12	-0.0503	0.2532	0.0788	-0.0935	-0.1360	-0.0892	0.3396	-0.0725
Intercept	α	-0.0038	-0.0028	-0.0013	0.0035	-0.0009	0.0010	0.0097	0.0026
Event Window									
	Day -10	28/07/05	03/06/05	14/11/05	05/10/05	09/06/06	09/01/08	02/01/08	29/03/07
	Day -9	29/07/05	06/06/05	15/11/05	06/10/05	12/06/06	10/01/08	03/01/08	30/03/07
	Day -8	01/08/05	07/06/05	16/11/05	07/10/05	13/06/06	11/01/08	04/01/08	02/04/07
	Day -7	02/08/05	08/06/05	17/11/05	10/10/05	14/06/06	14/01/08	07/01/08	03/04/07
	Day -6	03/08/05	09/06/05	18/11/05	11/10/05	15/06/06	15/01/08	08/01/08	04/04/07
	Day -5	04/08/05	10/06/05	21/11/05	12/10/05	19/06/06	16/01/08	09/01/08	05/04/07
	Day -4	05/08/05	13/06/05	22/11/05	13/10/05	20/06/06	17/01/08	10/01/08	10/04/07
	Day -3	08/08/05	14/06/05	23/11/05	14/10/05	21/06/06	18/01/08	11/01/08	11/04/07
	Day -2	10/08/05	15/06/05	24/11/05	17/10/05	22/06/06	21/01/08	14/01/08	12/04/07
	Day -1	11/08/05	17/06/05	25/11/05	18/10/05	23/06/06	22/01/08	15/01/08	13/04/07
	Day 0	12/08/05	20/06/05	28/11/05	19/10/05	26/06/06	23/01/08	16/01/08	16/04/07
	Day +1	15/08/05	21/06/05	29/11/05	20/10/05	27/06/06	24/01/08	17/01/08	17/04/07
	Day +2	16/08/05	22/06/05	30/11/05	21/10/05	28/06/06	25/01/08	18/01/08	18/04/07
	Day +3	17/08/05	23/06/05	01/12/05	24/10/05	29/06/06	28/01/08	21/01/08	19/04/07
	Day +4	18/08/05	24/06/05	02/12/05	25/10/05	30/06/06	29/01/08	22/01/08	20/04/07
	Day +5	19/08/05	27/06/05	05/12/05	26/10/05	03/07/06	30/01/08	23/01/08	23/04/07
	Day +6	22/08/05	28/06/05	06/12/05	27/10/05	04/07/06	31/01/08	24/01/08	24/04/07
	Day +7	23/08/05	29/06/05	07/12/05	28/10/05	05/07/06	01/02/08	25/01/08	25/04/07
	Day +8	24/08/05	30/06/05	08/12/05	31/10/05	06/07/06	04/02/08	28/01/08	26/04/07
	Day +9	25/08/05	01/07/05	09/12/05	01/11/05	07/07/06	05/02/08	29/01/08	30/04/07
	Day +10	26/08/05	04/07/05	12/12/05	02/11/05	10/07/06	06/02/08	30/01/08	02/05/07
Expected Returns									
	Day -10	0.03%	-0.87%	1.59%	0.52%	0.80%	0.14%	2.51%	0.27%
	Day -9	-1.37%	0.77%	0.37%	0.34%	-0.27%	0.10%	2.17%	0.25%
	Day -8	2.49%	-0.07%	0.42%	-0.03%	-1.48%	-0.94%	1.30%	1.10%
	Day -7	-0.09%	-0.26%	1.36%	0.71%	0.38%	-1.49%	0.02%	-0.02%
	Day -6	-1.17%	-0.99%	1.04%	0.74%	0.58%	-0.91%	1.12%	0.32%
	Day -5	-0.53%	0.56%	0.10%	1.07%	0.62%	-2.06%	-1.28%	0.18%
	Day -4	-0.40%	1.17%	-0.28%	-0.55%	-0.87%	-0.74%	0.55%	0.06%
	Day -3	-0.15%	0.13%	-1.19%	0.20%	0.25%	-1.15%	-3.93%	0.68%
	Day -2	0.99%	0.09%	1.37%	0.48%	-0.38%	-4.24%	2.12%	-0.17%
	Day -1	-1.77%	0.72%	-0.47%	-0.03%	-1.73%	0.10%	-2.72%	1.22%
	Day 0	-1.33%	-1.61%	-0.09%	0.25%	-1.46%	0.61%	-4.93%	0.07%
	Day +1	-0.67%	-1.48%	-2.10%	0.78%	-1.23%	1.26%	-0.05%	0.18%
	Day +2	-0.85%	-0.81%	0.52%	-0.05%	-0.26%	-0.56%	-0.13%	1.05%
	Day +3	-1.93%	-0.09%	-0.02%	0.61%	0.74%	-1.50%	-7.69%	0.91%
	Day +4	0.64%	-0.97%	0.71%	0.73%	1.19%	0.55%	-1.37%	-0.03%
	Day +5	0.75%	-0.29%	-0.23%	0.63%	0.15%	-0.26%	0.95%	0.47%
	Day +6	-0.15%	-1.73%	-0.77%	0.31%	0.37%	0.23%	5.99%	0.81%
	Day +7	-0.17%	1.80%	1.47%	0.60%	-0.17%	-0.99%	4.41%	0.73%
	Day +8	-0.91%	-0.73%	0.40%	0.16%	-1.05%	0.84%	-1.23%	0.82%
	Day +9	-0.68%	0.26%	0.05%	0.53%	0.52%	-1.45%	6.29%	0.49%
	Day +10	-0.23%	0.56%	0.67%	0.01%	-0.73%	-0.42%	0.30%	0.79%
Abnormal Returns									
	Day -10	1.49%	1.70%	-1.26%	-0.61%	-0.80%	-0.73%	-0.49%	-0.27%
	Day -9	-0.48%	0.69%	-0.63%	-0.25%	-0.12%	-0.87%	-2.07%	-0.25%
	Day -8	-1.31%	0.52%	1.73%	0.03%	-0.45%	-0.67%	-3.36%	-1.06%
	Day -7	0.90%	0.26%	-1.36%	-0.80%	-2.43%	0.58%	-1.39%	0.02%
	Day -6	0.36%	1.88%	-1.04%	-1.10%	-0.58%	1.83%	1.51%	-0.41%
	Day -5	0.59%	1.21%	0.90%	-2.85%	-0.13%	1.94%	3.20%	0.26%
	Day -4	0.81%	-2.47%	-0.71%	2.37%	-1.13%	-0.66%	-1.59%	-0.50%
	Day -3	1.88%	0.31%	0.66%	0.69%	-0.25%	0.84%	-1.31%	-0.19%
	Day -2	3.39%	-0.09%	-0.31%	-0.66%	-0.27%	-3.79%	-10.82%	0.17%
	Day -1	0.95%	0.60%	-5.29%	-0.85%	0.33%	1.91%	1.65%	-1.04%
	Day 0	-0.76%	-0.55%	6.76%	-0.25%	-0.63%	0.70%	6.13%	0.33%
	Day +1	-0.01%	3.52%	-0.50%	-0.60%	-0.05%	-0.81%	0.05%	0.53%
	Day +2	-1.07%	0.64%	-4.80%	0.05%	-0.17%	0.10%	0.01%	1.36%
	Day +3	0.47%	2.35%	0.58%	-1.05%	0.99%	-1.09%	3.04%	-0.69%
	Day +4	-0.06%	4.62%	0.79%	0.08%	0.94%	1.45%	-3.63%	0.24%
	Day +5	1.56%	0.29%	3.89%	-1.88%	-0.15%	0.92%	-4.95%	-0.47%
	Day +6	-0.07%	2.55%	-2.87%	-2.57%	-2.03%	0.42%	-7.99%	-0.39%
	Day +7	-0.74%	1.45%	-2.30%	-1.06%	0.17%	3.57%	-3.43%	1.17%
	Day +8	0.91%	-0.06%	-1.01%	-0.16%	-1.49%	-1.15%	-1.82%	-0.40%
	Day +9	1.26%	-0.26%	2.22%	-3.31%	0.35%	0.69%	-6.29%	-0.49%
	Day +10	-0.34%	0.63%	0.42%	2.84%	-0.13%	-2.57%	1.13%	0.45%
Standard error of estimated return		0.0338	0.0382	0.0410	0.0239	0.0241	0.0259	0.0525	0.0222

Share Code		RES	RES	SAP	SYC	SYC	SYC	SYC	SYC
Recommendation Date		26 Sep 2007	05 Dec 2007	13 Nov 2006	14 Jul 2006	02 Aug 2006	30 Aug 2006	05 Dec 2007	14 Mar 2008
Multiple Regression Coefficients									
SGN	β1	0.8068	0.6949	-0.1024	0.1652	0.0969	0.1255	-0.1013	0.0307
SGR	β2	0.0122	-0.0044	-0.0658	0.0278	0.0324	0.0543	0.0145	0.0679
SVN	β3	0.4853	0.5108	0.0391	0.6155	0.6469	0.7040	0.5561	0.3965
SVR	β4	-0.0632	-0.0681	-0.0111	-0.0153	-0.0104	-0.0105	-0.0223	-0.0213
MGN	β5	0.0394	0.1504	-0.3776	0.2996	0.3091	0.2785	0.2814	0.1365
MGR	β6	-0.0581	-0.0614	0.0730	0.0446	0.0257	0.0332	-0.0141	-0.0108
MVN	β7	0.1253	0.1580	0.0641	-0.2410	-0.1967	-0.2104	0.4591	0.4604
MVR	β8	-0.1721	-0.1801	0.0876	-0.1772	-0.1636	-0.1736	-0.1621	-0.1268
LGN	β9	-0.3671	-0.3743	0.7593	0.2117	0.1778	0.1852	-0.1589	-0.2897
LGR	β10	0.0660	0.0739	0.2715	-0.0945	-0.0919	-0.1153	-0.0822	-0.0604
LVN	β11	0.1049	0.0855	-0.2050	-0.2657	-0.2711	-0.2664	-0.0356	0.0604
LVR	β12	-0.0695	-0.0843	0.0999	-0.0877	-0.0936	-0.0838	-0.0343	0.0062
Intercept	α	0.0030	0.0041	-0.0014	-0.0006	-0.0002	-0.0001	0.0004	0.0007
Event Window									
	Day -10	11/09/07	21/11/07	30/10/06	30/06/06	19/07/06	16/08/06	21/11/07	29/02/08
	Day -9	12/09/07	22/11/07	31/10/06	03/07/06	20/07/06	17/08/06	22/11/07	03/03/08
	Day -8	13/09/07	23/11/07	01/11/06	04/07/06	21/07/06	18/08/06	23/11/07	04/03/08
	Day -7	14/09/07	26/11/07	02/11/06	05/07/06	24/07/06	21/08/06	26/11/07	05/03/08
	Day -6	17/09/07	27/11/07	03/11/06	06/07/06	25/07/06	22/08/06	27/11/07	06/03/08
	Day -5	18/09/07	28/11/07	06/11/06	07/07/06	26/07/06	23/08/06	28/11/07	07/03/08
	Day -4	19/09/07	29/11/07	07/11/06	10/07/06	27/07/06	24/08/06	29/11/07	10/03/08
	Day -3	20/09/07	30/11/07	08/11/06	11/07/06	28/07/06	25/08/06	30/11/07	11/03/08
	Day -2	21/09/07	03/12/07	09/11/06	12/07/06	31/07/06	28/08/06	03/12/07	12/03/08
	Day -1	25/09/07	04/12/07	10/11/06	13/07/06	01/08/06	29/08/06	04/12/07	13/03/08
	Day 0	26/09/07	05/12/07	13/11/06	14/07/06	02/08/06	30/08/06	05/12/07	14/03/08
	Day +1	27/09/07	06/12/07	14/11/06	17/07/06	03/08/06	31/08/06	06/12/07	17/03/08
	Day +2	28/09/07	07/12/07	15/11/06	18/07/06	04/08/06	01/09/06	07/12/07	18/03/08
	Day +3	01/10/07	10/12/07	16/11/06	19/07/06	14/08/06	04/09/06	10/12/07	19/03/08
	Day +4	02/10/07	11/12/07	17/11/06	20/07/06	15/08/06	05/09/06	11/12/07	20/03/08
	Day +5	03/10/07	12/12/07	20/11/06	21/07/06	16/08/06	06/09/06	12/12/07	25/03/08
	Day +6	04/10/07	13/12/07	21/11/06	24/07/06	17/08/06	07/09/06	13/12/07	26/03/08
	Day +7	05/10/07	14/12/07	22/11/06	25/07/06	18/08/06	08/09/06	14/12/07	27/03/08
	Day +8	08/10/07	18/12/07	23/11/06	26/07/06	21/08/06	11/09/06	18/12/07	28/03/08
	Day +9	09/10/07	19/12/07	24/11/06	27/07/06	22/08/06	12/09/06	19/12/07	31/03/08
	Day +10	10/10/07	20/12/07	27/11/06	28/07/06	23/08/06	13/09/06	20/12/07	03/04/08
Expected Returns									
	Day -10	0.46%	-0.04%	0.99%	0.69%	-0.18%	-0.41%	-0.20%	-1.35%
	Day -9	0.36%	-0.54%	-0.36%	-0.17%	0.57%	0.24%	-0.99%	-0.24%
	Day -8	-0.11%	-0.82%	0.44%	0.19%	0.87%	0.90%	-0.82%	-0.80%
	Day -7	0.73%	-0.80%	-0.14%	1.02%	0.08%	-0.29%	-1.43%	-1.02%
	Day -6	0.40%	-0.03%	1.00%	-0.71%	0.36%	-0.31%	-0.25%	-0.83%
	Day -5	0.66%	-0.29%	1.28%	0.31%	0.34%	0.90%	0.10%	-1.06%
	Day -4	0.09%	-0.11%	-0.65%	-0.29%	0.14%	-0.33%	-0.22%	-0.22%
	Day -3	0.21%	0.24%	-0.81%	0.14%	0.47%	-1.04%	-0.59%	0.11%
	Day -2	0.28%	0.16%	-1.30%	-0.06%	0.04%	0.17%	0.16%	0.96%
	Day -1	-0.86%	1.01%	0.91%	0.49%	-0.23%	0.75%	0.36%	-0.65%
	Day 0	-0.08%	0.41%	-0.59%	0.11%	-0.45%	0.00%	0.13%	-0.29%
	Day +1	1.04%	-0.59%	0.02%	-0.88%	0.45%	0.98%	-0.21%	-2.01%
	Day +2	1.31%	0.16%	-0.87%	-0.09%	0.05%	-0.38%	0.19%	0.72%
	Day +3	-0.04%	-0.35%	-0.85%	-0.21%	2.42%	0.09%	-0.60%	0.38%
	Day +4	0.82%	0.34%	-1.30%	0.37%	-0.03%	0.06%	0.17%	0.63%
	Day +5	1.50%	0.37%	1.44%	0.71%	-0.36%	-0.34%	-0.08%	0.19%
	Day +6	0.52%	0.51%	0.55%	0.20%	0.19%	0.35%	-0.15%	0.01%
	Day +7	0.75%	0.73%	-0.57%	0.35%	0.79%	0.67%	0.02%	0.69%
	Day +8	-0.21%	0.22%	-0.40%	0.32%	-0.24%	0.64%	-0.64%	0.02%
	Day +9	-0.02%	0.49%	0.70%	0.15%	-0.33%	0.09%	-0.06%	-0.01%
	Day +10	0.23%	-0.34%	-0.85%	0.36%	0.84%	0.24%	-0.29%	0.00%
Abnormal Returns									
	Day -10	-2.10%	-0.31%	-2.05%	0.64%	0.18%	1.06%	0.20%	-0.65%
	Day -9	1.51%	0.19%	2.01%	-0.55%	0.42%	5.53%	-1.40%	0.24%
	Day -8	0.11%	-0.58%	-0.54%	-0.45%	1.73%	-0.90%	3.02%	0.29%
	Day -7	-1.34%	-0.63%	-1.28%	4.56%	0.87%	1.32%	-3.11%	1.28%
	Day -6	0.62%	-1.57%	-2.48%	-2.62%	-0.36%	-0.71%	1.25%	0.83%
	Day -5	0.35%	0.07%	1.21%	0.67%	-1.59%	-1.20%	-0.84%	0.55%
	Day -4	0.40%	-1.18%	-0.89%	-0.42%	-0.14%	0.33%	0.47%	-2.09%
	Day -3	0.71%	-1.17%	0.66%	-0.14%	-0.16%	1.59%	0.09%	-0.11%
	Day -2	-0.08%	-0.54%	3.31%	0.06%	-0.80%	-0.17%	-2.66%	-0.96%
	Day -1	1.26%	-1.39%	5.10%	-0.49%	-0.98%	-0.39%	-0.36%	0.12%
	Day 0	0.27%	-1.17%	-0.40%	-1.41%	-1.42%	0.00%	0.13%	0.29%
	Day +1	-0.80%	0.21%	1.98%	1.27%	-1.77%	-0.98%	-0.05%	2.01%
	Day +2	-0.45%	-0.16%	1.58%	0.02%	4.48%	-1.43%	-0.19%	-4.96%
	Day +3	0.28%	0.35%	0.06%	0.21%	-3.56%	-0.71%	1.11%	-0.93%
	Day +4	0.00%	-0.34%	0.32%	0.61%	0.03%	-2.53%	-0.17%	-0.63%
	Day +5	-1.50%	-2.29%	-2.12%	1.88%	1.01%	-0.98%	0.08%	-0.19%
	Day +6	0.44%	1.45%	2.99%	0.75%	5.58%	-1.57%	-0.36%	1.10%
	Day +7	-0.67%	1.01%	3.85%	-0.35%	-0.79%	-0.67%	-0.02%	-0.69%
	Day +8	0.13%	0.73%	0.06%	-1.57%	1.27%	0.01%	0.64%	-1.12%
	Day +9	0.21%	-0.49%	-0.28%	-0.15%	-0.69%	1.20%	0.57%	0.01%
	Day +10	-0.23%	0.30%	-2.54%	-0.04%	-1.15%	-0.24%	-0.23%	0.00%
Standard error of estimated return		0.0218	0.0217	0.0380	0.0187	0.0190	0.0189	0.0237	0.0239

Share Code		TIW	TIW	TIW	TIW	TON	TSX	TSX	WAR
Recommendation Date		04 Oct 2005	18 Oct 2005	18 Jan 2006	24 Mar 2006	26 Nov 2007	12 Dec 2006	16 Apr 2007	02 Nov 2005
Multiple Regression Coefficients									
SGN	β1	0.3341	0.3015	0.2987	0.3380	-0.3893	-0.0292	0.0500	-0.0311
SGR	β2	0.0631	0.0689	0.0784	0.0892	-0.1315	0.1325	0.2595	0.3108
SVN	β3	1.0280	1.0499	1.0154	1.0552	-0.0050	0.0967	-0.1939	-0.2323
SVR	β4	-0.1117	-0.1130	-0.1190	-0.1259	0.0474	-0.0628	-0.0544	-0.0247
MGN	β5	0.2390	0.2324	0.2970	0.2956	0.9892	-0.1923	0.0204	0.2360
MGR	β6	0.0248	0.0213	-0.0200	-0.0366	0.1327	0.2093	0.1893	1.0375
MVN	β7	0.1440	0.1383	0.1702	0.0627	0.4579	0.1540	0.3068	-0.1607
MVR	β8	-0.1135	-0.1207	-0.1415	-0.1389	0.1176	0.1545	0.1893	-0.0928
LGN	β9	0.0440	0.0901	0.1134	0.0832	-0.3978	0.8894	0.7021	-0.1653
LGR	β10	0.1296	0.1282	0.1929	0.2310	0.0989	-0.1673	-0.2207	0.1861
LVN	β11	-0.3525	-0.4148	-0.4732	-0.3502	-0.1365	-0.7494	-0.6210	0.2852
LVR	β12	0.1433	0.1473	0.0800	0.0735	0.0941	0.0615	0.0715	-0.1441
Intercept	α	-0.0035	-0.0031	-0.0040	-0.0061	-0.0003	-0.0049	-0.0040	0.0001
Event Window									
	Day -10	20/09/05	04/10/05	04/01/06	09/03/06	12/11/07	28/11/06	29/03/07	19/10/05
	Day -9	21/09/05	05/10/05	05/01/06	10/03/06	13/11/07	29/11/06	30/03/07	20/10/05
	Day -8	22/09/05	06/10/05	06/01/06	13/03/06	14/11/07	30/11/06	02/04/07	21/10/05
	Day -7	23/09/05	07/10/05	09/01/06	14/03/06	15/11/07	01/12/06	03/04/07	24/10/05
	Day -6	26/09/05	10/10/05	10/01/06	15/03/06	16/11/07	04/12/06	04/04/07	25/10/05
	Day -5	27/09/05	11/10/05	11/01/06	16/03/06	19/11/07	05/12/06	05/04/07	26/10/05
	Day -4	28/09/05	12/10/05	12/01/06	17/03/06	20/11/07	06/12/06	10/04/07	27/10/05
	Day -3	29/09/05	13/10/05	13/01/06	20/03/06	21/11/07	07/12/06	11/04/07	28/10/05
	Day -2	30/09/05	14/10/05	16/01/06	22/03/06	22/11/07	08/12/06	12/04/07	31/10/05
	Day -1	03/10/05	17/10/05	17/01/06	23/03/06	23/11/07	11/12/06	13/04/07	01/11/05
	Day 0	04/10/05	18/10/05	18/01/06	24/03/06	26/11/07	12/12/06	16/04/07	02/11/05
	Day +1	05/10/05	19/10/05	19/01/06	27/03/06	27/11/07	13/12/06	17/04/07	03/11/05
	Day +2	06/10/05	20/10/05	20/01/06	28/03/06	28/11/07	14/12/06	18/04/07	04/11/05
	Day +3	07/10/05	21/10/05	23/01/06	29/03/06	29/11/07	15/12/06	19/04/07	07/11/05
	Day +4	10/10/05	24/10/05	24/01/06	30/03/06	30/11/07	18/12/06	20/04/07	08/11/05
	Day +5	11/10/05	25/10/05	25/01/06	31/03/06	03/12/07	19/12/06	23/04/07	09/11/05
	Day +6	12/10/05	26/10/05	26/01/06	03/04/06	04/12/07	20/12/06	24/04/07	10/11/05
	Day +7	13/10/05	27/10/05	27/01/06	04/04/06	05/12/07	21/12/06	25/04/07	11/11/05
	Day +8	14/10/05	28/10/05	30/01/06	05/04/06	06/12/07	22/12/06	26/04/07	14/11/05
	Day +9	17/10/05	31/10/05	31/01/06	06/04/06	07/12/07	27/12/06	30/04/07	15/11/05
	Day +10	18/10/05	01/11/05	01/02/06	07/04/06	10/12/07	28/12/06	02/05/07	16/11/05
Expected Returns									
	Day -10	0.06%	0.26%	0.27%	-0.45%	-1.48%	-0.39%	-0.29%	-0.61%
	Day -9	1.34%	-1.77%	-0.44%	0.56%	-1.56%	-0.34%	-0.95%	0.14%
	Day -8	0.59%	-1.34%	-0.13%	-1.21%	0.85%	0.63%	0.09%	-1.29%
	Day -7	-3.19%	-0.66%	-0.07%	0.38%	-0.43%	0.68%	0.48%	0.69%
	Day -6	0.42%	-0.19%	0.21%	1.26%	0.49%	-0.26%	-0.17%	-1.47%
	Day -5	0.14%	0.23%	0.73%	-0.51%	-1.65%	-0.60%	-0.11%	1.09%
	Day -4	0.16%	-1.30%	0.75%	0.22%	-0.07%	-1.55%	0.50%	-1.48%
	Day -3	-0.36%	-1.66%	-0.15%	0.55%	-0.16%	-1.01%	-0.61%	-2.59%
	Day -2	0.43%	-1.40%	0.07%	-1.16%	-0.79%	0.12%	0.38%	1.11%
	Day -1	0.17%	0.18%	-0.70%	-0.07%	0.27%	-1.08%	-0.18%	-2.39%
	Day 0	0.21%	0.46%	-3.02%	0.03%	0.37%	-0.88%	0.72%	1.45%
	Day +1	-1.83%	-1.94%	1.25%	0.20%	-0.22%	-0.08%	0.21%	3.39%
	Day +2	-1.43%	-0.01%	1.53%	-1.56%	-0.32%	-0.31%	-0.69%	-0.83%
	Day +3	-0.74%	-0.08%	-0.88%	0.76%	0.93%	-0.79%	-1.12%	-0.95%
	Day +4	-0.22%	-0.09%	2.70%	0.72%	0.96%	-0.63%	0.25%	0.28%
	Day +5	0.31%	0.91%	2.54%	-0.72%	0.58%	0.35%	0.32%	1.44%
	Day +6	-1.29%	1.12%	0.53%	-0.22%	0.71%	0.02%	-1.31%	5.33%
	Day +7	-1.76%	-0.77%	-0.18%	-0.25%	0.21%	-0.09%	-0.57%	0.51%
	Day +8	-1.46%	0.28%	-1.25%	0.94%	-0.49%	-0.94%	-0.39%	3.63%
	Day +9	0.22%	-0.22%	0.66%	-1.39%	0.94%	-0.34%	0.91%	1.70%
	Day +10	0.40%	-0.64%	-0.54%	-2.01%	0.02%	0.38%	0.36%	2.28%
Abnormal Returns									
	Day -10	-0.14%	0.14%	2.00%	-2.05%	1.40%	2.20%	-0.11%	-3.97%
	Day -9	-2.72%	3.56%	0.44%	-0.30%	1.19%	-0.55%	-0.68%	2.43%
	Day -8	-0.83%	-0.80%	2.35%	3.51%	-0.90%	0.27%	-0.09%	1.33%
	Day -7	3.39%	3.26%	0.07%	-0.13%	-0.08%	3.79%	-0.48%	-0.69%
	Day -6	-0.46%	-0.58%	-2.38%	-1.26%	-1.00%	0.26%	0.17%	1.47%
	Day -5	-2.10%	-1.61%	1.49%	4.25%	2.26%	-1.54%	-0.58%	-2.16%
	Day -4	1.88%	0.66%	-2.92%	-3.53%	-0.03%	-1.42%	0.20%	0.41%
	Day -3	-0.44%	-1.10%	0.15%	-1.10%	-2.37%	4.52%	2.68%	-1.76%
	Day -2	0.78%	1.81%	0.38%	1.16%	-2.60%	-0.12%	0.97%	1.16%
	Day -1	-0.37%	-0.18%	-0.19%	0.32%	0.01%	1.95%	4.85%	2.83%
	Day 0	0.19%	-1.07%	1.23%	2.41%	-0.91%	0.02%	-2.00%	3.42%
	Day +1	3.62%	1.94%	-3.52%	-2.78%	0.76%	1.39%	1.72%	-0.01%
	Day +2	-0.72%	0.01%	-1.53%	1.51%	0.86%	2.54%	0.69%	0.83%
	Day +3	3.34%	0.08%	0.93%	-0.76%	0.68%	-0.98%	-2.68%	0.95%
	Day +4	-0.56%	0.05%	-2.28%	-0.72%	-2.01%	3.11%	1.73%	-0.28%
	Day +5	-1.69%	-0.87%	-0.69%	0.77%	-0.80%	3.07%	-0.32%	-1.44%
	Day +6	0.65%	-1.12%	-0.53%	0.17%	-0.76%	0.78%	1.31%	-3.29%
	Day +7	-1.00%	-0.26%	2.00%	1.75%	-0.15%	-1.51%	-2.66%	-1.51%
	Day +8	1.87%	-1.53%	1.70%	-0.44%	0.49%	2.57%	0.39%	-3.63%
	Day +9	-0.22%	0.43%	-0.66%	1.64%	1.40%	-2.86%	1.76%	-2.71%
	Day +10	-1.01%	0.64%	0.54%	1.76%	-2.63%	0.04%	0.29%	-0.85%
Standard error of estimated return		0.0376	0.0379	0.0380	0.0391	0.0405	0.0426	0.0448	0.0517

APPENDIX C

Cumulative average abnormal return calculations

Summaries of the cumulative average abnormal return calculations for “sell-hold” recommendations are included as an example in Appendix C.

Share Code	Rec. Date	Standard error of estimated return	Event Window																			
			Day -10	Day -9	Day -8	Day -7	Day -6	Day -5	Day -4	Day -3	Day -2	Day -1	Day 0	Day +1	Day +2	Day +3	Day +4	Day +5	Day +6	Day +7	Day +8	Day +9	Day +10
ACL	07 Nov 2007	0.03017	1.73%	-1.56%	0.14%	0.48%	-0.74%	-0.67%	0.15%	0.82%	1.51%	-1.26%	-2.73%	-2.37%	-0.19%	-0.46%	0.50%	-1.01%	0.94%	-0.81%	1.82%	-0.43%	-0.20%
AEG	19 Sep 2005	0.03421	0.76%	4.25%	-1.60%	-2.01%	-0.40%	4.82%	0.03%	2.21%	0.99%	3.89%	3.24%	-1.16%	1.57%	2.75%	-0.49%	0.84%	0.97%	0.69%	0.91%	1.61%	0.77%
AMA	19 Jul 2007	0.03470	-1.25%	-0.80%	-2.54%	-1.18%	3.33%	-1.34%	-1.76%	0.64%	3.18%	2.00%	0.30%	-4.61%	-0.73%	-2.20%	2.25%	-7.22%	4.01%	4.12%	2.04%	1.32%	-0.82%
AMS	07 Oct 2005	0.03600	1.77%	1.67%	2.06%	0.81%	1.93%	0.53%	-1.54%	-3.86%	1.82%	-0.16%	0.68%	-1.03%	3.07%	5.34%	2.23%	0.34%	-0.37%	0.24%	3.44%	-0.63%	-1.77%
ARI	21 Jun 2005	0.04073	0.14%	0.75%	-1.38%	0.06%	-2.28%	-2.44%	-1.53%	-1.94%	5.25%	0.66%	-0.27%	1.00%	0.49%	-0.53%	0.30%	1.12%	-1.57%	4.64%	-1.36%	-0.96%	-0.29%
ARI	11 Oct 2005	0.03915	0.30%	1.28%	-1.85%	-0.52%	-4.60%	4.13%	-2.21%	0.22%	-0.35%	0.58%	0.97%	-0.38%	1.48%	-1.60%	1.17%	-2.07%	1.92%	-1.21%	-0.98%	4.99%	-3.20%
AXC	30 Jan 2008	0.05060	-0.30%	-0.43%	-1.81%	-8.71%	-2.33%	2.35%	3.63%	-1.84%	-3.48%	0.03%	-0.62%	0.41%	1.36%	0.93%	2.14%	-1.52%	2.91%	1.25%	3.29%	-0.96%	0.03%
CAT	16 Oct 2007	0.04192	-1.64%	-1.21%	0.45%	-0.26%	-2.39%	0.15%	-0.80%	-1.09%	0.39%	0.82%	1.40%	1.57%	-1.33%	-0.23%	2.20%	-0.51%	-0.54%	-0.04%	0.39%	-0.19%	0.03%
CAT	18 Jan 2008	0.04107	-0.20%	1.31%	-0.63%	-1.63%	0.59%	-4.97%	7.92%	-3.49%	2.61%	-5.90%	0.13%	4.23%	-3.66%	-0.64%	-4.20%	1.05%	2.15%	-4.05%	4.63%	-5.55%	2.62%
CPI	14 Mar 2008	0.04477	-1.82%	-1.34%	-0.35%	-0.79%	0.74%	0.05%	1.26%	-0.78%	-1.87%	-0.75%	1.42%	2.81%	-0.64%	0.56%	-1.04%	-0.94%	-1.44%	-0.60%	-0.05%	-1.83%	0.00%
DRD	12 Jan 2006	0.06992	-0.40%	3.15%	-2.88%	-3.35%	6.38%	1.52%	4.67%	4.29%	-6.28%	3.61%	0.13%	1.90%	1.48%	-0.37%	-3.44%	-2.50%	3.90%	-3.77%	0.21%	-2.59%	-2.34%
DRD	12 Apr 2006	0.06827	-0.44%	3.31%	0.44%	-2.67%	-4.43%	1.91%	2.58%	-0.58%	4.00%	-2.55%	0.35%	1.47%	1.28%	-1.35%	0.13%	1.71%	-3.70%	-1.83%	-1.07%	2.29%	-7.21%
DRD	08 May 2006	0.06824	0.01%	1.62%	-3.65%	-1.85%	-0.76%	1.94%	-6.98%	-3.24%	-2.56%	0.31%	1.02%	-2.28%	-1.47%	13.35%	4.10%	3.10%	-2.28%	-3.21%	1.23%	-2.94%	-1.79%
DRD	06 Sep 2007	0.06791	2.39%	2.01%	-0.55%	-3.17%	2.06%	2.24%	3.36%	-1.15%	1.71%	5.43%	3.02%	11.98%	2.67%	4.16%	10.73%	0.76%	-4.11%	5.10%	-1.62%	1.98%	4.13%
DRD	20 Sep 2007	0.06973	2.44%	11.05%	2.57%	4.17%	10.20%	0.27%	-4.53%	4.78%	-1.97%	2.11%	3.99%	-0.47%	-6.34%	0.32%	-5.71%	3.85%	1.33%	0.03%	1.28%	2.76%	2.64%
GND	08 Jun 2006	0.04553	2.17%	1.46%	-2.21%	-1.36%	0.31%	-0.77%	-2.70%	-2.38%	-0.22%	-2.54%	-2.76%	4.74%	2.99%	1.78%	0.21%	-0.15%	0.08%	-0.29%	0.83%	1.54%	1.23%
GND	12 Dec 2006	0.04264	0.24%	1.22%	-0.75%	-0.48%	-0.46%	-0.97%	-0.59%	-1.42%	0.34%	-1.96%	0.37%	-0.86%	0.52%	-1.29%	1.06%	-0.36%	-2.00%	-2.12%	0.38%	-1.30%	-0.23%
GND	02 Oct 2007	0.03444	0.47%	-0.95%	-0.99%	1.07%	1.24%	0.82%	2.67%	0.11%	-1.07%	-1.61%	-0.83%	1.29%	0.13%	-1.34%	0.36%	-0.36%	-0.30%	-0.10%	-0.88%	0.63%	0.17%
GND	03 Jan 2008	0.03275	-3.23%	0.75%	0.08%	2.60%	-2.93%	1.98%	0.56%	0.40%	1.67%	-2.44%	-1.15%	-1.08%	2.22%	-1.75%	-1.08%	0.02%	-0.09%	0.82%	-2.93%	-1.66%	2.85%
ILV	14 Oct 2005	0.03110	-0.54%	0.83%	1.12%	1.34%	0.82%	-1.66%	1.21%	0.07%	3.75%	-1.63%	0.46%	1.26%	1.91%	-1.07%	-0.10%	-2.47%	-2.24%	-1.08%	2.16%	1.62%	-0.51%
ILV	24 Nov 2005	0.03181	0.04%	-0.31%	-1.70%	0.86%	0.06%	5.73%	-0.60%	-4.07%	0.39%	3.91%	0.74%	-1.11%	-1.28%	0.98%	0.94%	0.84%	3.96%	2.04%	4.05%	-1.79%	0.79%
ILV	29 Nov 2006	0.03489	0.37%	0.09%	0.91%	1.25%	-1.89%	0.73%	-1.01%	-1.60%	-0.88%	0.68%	-0.75%	0.31%	1.94%	2.07%	0.92%	-2.05%	-0.27%	-1.61%	-0.22%	-1.16%	-0.02%
MAF	27 Sep 2006	0.04739	1.02%	3.92%	-2.17%	1.04%	-0.02%	-1.16%	-1.16%	-1.20%	-2.29%	-0.27%	-3.18%	-1.18%	-2.69%	0.65%	7.92%	-2.52%	-1.45%	1.86%	-1.66%	0.26%	-0.12%
MAF	05 Oct 2006	0.04769	-1.14%	-1.09%	-2.31%	-0.14%	-3.10%	-1.03%	-2.56%	0.66%	8.00%	-2.44%	-1.29%	1.96%	-1.58%	0.25%	-0.12%	-0.02%	2.55%	-1.71%	-2.38%	3.18%	-0.28%
MAF	12 Dec 2006	0.04681	0.90%	1.77%	2.74%	0.08%	1.76%	2.06%	-1.09%	1.05%	2.32%	0.11%	1.43%	0.72%	-0.03%	1.55%	-1.41%	0.00%	0.33%	0.39%	-1.66%	-0.23%	0.21%
MAF	16 Apr 2007	0.04567	0.24%	-0.21%	-1.56%	2.03%	-2.61%	1.58%	-3.49%	-0.03%	3.67%	-0.46%	-0.87%	0.48%	-1.59%	2.11%	-0.56%	1.61%	-0.44%	-0.25%	2.66%	-1.74%	1.45%
MAF	01 Oct 2007	0.04052	-0.07%	-3.02%	-0.06%	-0.23%	2.59%	1.02%	-1.62%	1.88%	-2.53%	0.84%	-0.58%	0.15%	-1.98%	0.09%	-3.02%	2.53%	1.38%	0.00%	-0.22%	0.31%	0.63%
MAF	09 Nov 2007	0.04033	0.14%	0.18%	4.33%	-1.65%	0.18%	-1.62%	4.26%	0.20%	0.34%	-5.41%	-3.11%	3.58%	-1.23%	-0.56%	0.18%	-0.81%	-0.61%	1.52%	-0.07%	1.79%	3.28%
MVL	05 Sep 2005	0.04220	-1.21%	-2.44%	0.20%	-0.14%	-4.28%	4.83%	-1.48%	-0.43%	-1.69%	0.89%	-0.99%	-0.65%	0.56%	-0.62%	-2.86%	-0.27%	0.41%	1.58%	2.04%	6.57%	2.94%
NCL	02 Aug 2006	0.02931	0.24%	4.67%	-0.16%	-0.59%	-0.32%	-0.21%	1.70%	0.42%	1.19%	3.13%	0.60%	2.96%	5.99%	-5.99%	0.17%	0.52%	2.19%	0.17%	-0.96%	1.89%	-1.23%
NCL	16 Apr 2007	0.03310	1.52%	-6.94%	6.87%	-0.74%	-1.63%	0.83%	-0.08%	-0.53%	1.80%	2.88%	-1.29%	0.55%	1.02%	-0.11%	-0.39%	-0.58%	1.58%	1.12%	0.89%	-0.06%	-0.14%
NCL	05 Oct 2007	0.03417	-0.61%	-0.14%	-0.13%	0.32%	0.38%	-0.98%	-1.67%	1.83%	1.88%	-0.93%	2.18%	-1.94%	-0.41%	-0.44%	0.52%	0.31%	-0.35%	-2.10%	-1.84%	0.08%	1.09%
NED	12 Aug 2005	0.03377	1.49%	-0.48%	-1.31%	0.90%	0.36%	0.59%	0.81%	1.88%	3.39%	0.95%	-0.76%	-0.01%	-1.07%	0.47%	-0.06%	1.56%	-0.07%	-0.74%	0.91%	1.26%	-0.34%
NHM	20 Jun 2005	0.03819	1.70%	0.69%	0.52%	0.26%	1.88%	1.21%	-2.47%	0.31%	-0.09%	0.60%	-0.55%	3.52%	0.64%	2.35%	4.62%	0.29%	2.55%	1.45%	-0.06%	-0.26%	0.63%
NHM	28 Nov 2005	0.04102	-1.26%	-0.63%	1.73%	-1.36%	-1.04%	0.90%	-0.71%	0.66%	-0.31%	-5.29%	6.76%	-0.50%	-4.80%	0.58%	0.79%	3.89%	-2.87%	-2.30%	-1.01%	2.22%	0.42%
PAP	19 Oct 2005	0.02388	-0.61%	-0.25%	0.03%	-0.80%	-1.10%	-2.85%	2.37%	0.69%	-0.66%	-0.85%	-0.25%	-0.60%	0.05%	-1.05%	0.08%	-1.88%	-2.57%	-1.06%	-0.16%	-3.31%	2.84%
PAP	26 Jun 2006	0.02412	-0.80%	-0.12%	-0.45%	-2.43%	-0.58%	-0.13%	-1.13%	-0.25%	-0.27%	0.33%	-0.63%	-0.05%	-0.17%	0.99%	0.94%	-0.15%	-2.03%	0.17%	-1.49%	0.35%	-0.13%
PAP	23 Jan 2008	0.02588	-0.73%	-0.87%	-0.67%	0.58%	1.83%	1.94%	-0.66%	0.84%	-3.79%	1.91%	0.70%	-0.81%	0.10%	-1.09%	1.45%	0.92%	0.42%	3.57%	-1.15%	0.69%	-2.57%
RBX	16 Jan 2008	0.05250	-0.49%	-2.07%	-3.36%	-1.39%	1.51%	3.20%	-1.59%	-1.31%	-10.82%	1.65%	6.13%	0.05%	0.01%	3.04%	-3.63%	-4.95%	-7.99%	-3.43%	-1.82%	-6.29%	1.13%
RES	16 Apr 2007	0.02224	-0.27%	-0.25%	-1.06%	0.02%	-0.41%	0.26%	-0.50%	-0.19%	0.17%	-1.04%	0.33%	0.53%	1.36%	-0.69%	0.24%	-0.47%	-0.39%	1.17%	-0.40%	-0.49%	0.45%
RES	26 Sep 2007	0.02181	-2.10%	1.51%	0.11%	-1.34%	0.62%	0.35%	0.40%	0.71%	-0.08%	1.26%	0.27%	-0.80%	-0.45%	0.28%	0.00%	-1.50%	0.44%	-0.67%	0.13%	0.21%	-0.23%
RES	05 Dec 2007	0.02171	-0.31%	0.19%	-0.58%	-0.63%	-1.57%	0.07%	-1.18%	-1.17%	-0.54%	-1.39%	-1.17%	0.21%	-0.16%	0.35%	-0.34%	-2.29%	1.45%	1.01%	0.73%	-0.49%	0.30%
SAP	13 Nov 2006	0.03797	-2.05%	2.01%	-0.54%	-1.28%	-2.48%	1.21%	-0.89%	0.66%	3.31%	5.10%	-0.40%	1.98%	1.58%	0.06%	0.32%	-2.12%	2.99%	3.85%	0.06%	-0.28%	-2.54%
SYC	14 Jul 2006	0.01875	0.64%	-0.55%	-0.45%	4.56%	-2.62%	0.67%	-0.42%	-0.14%	0.06%	-0.49%	-1.41%	1.27%	0.02%	0.21%	0.61%	1.88%	0.75%	-0.35%	-1.57%	-0.15%	-0.04%
SYC	02 Aug 2006	0.01899	0.18%	0.42%	1.73%	0.87%	-0.36%	-1.59%	-0.14%	-0.16%	-0.80%	-0.98%	-1.42%	-1.77%	4.48%	-3.56%	0.03%	1.01%	5.58%	-0.79%	1.27%	-0.69%	-1.15%
SYC	30 Aug 2006	0.01886	1.06%	5.53%	-0.90%	1.32%	-0.71%	-1.20%	0.33%	1.59%	-0.17%	-0.39%	0.00%	-0.98%	-1.43%	-0.71%	-2.53%	-0.98%	-1.57%	-0.67%	0.01%	1.20%	-0.24%
SYC	05 Dec 2007	0.02369	0.20%	-1.40%	3.02%	-3.11%	1.25%	-0.84%	0.47%	0.09%	-2.66%	-0.36%	0.13%	-0.05%	-0.19%	1.11%	-0.17%	0.08%	-0.36%	-0.02%	0.64%	0.57%	-0.23%
SYC	14 Mar 2008	0.02388	-0.65%	0.24%	0.29%	1.28%	0.83%	0.55%	-2.09%	-0.11%	-0.96%	0.12%	0.29%	2.01%	-4.96%	-0.93%	-0.63%	-0.19%	1.10%	-0.69%	-1.12%	0.01%	0.00%
TIW	04 Oct 2005	0.03764	-0.14%	-2.72%	-0.83%	3.39%	-0.46%	-2.10%	1.88%	-0.44%	0.78%	-0.37%	0.19%	3.62%	-0.72%	3.34%	-0.56%	-1.69%	0.65%	-1.00%	1.87%	-0.22%	-1.01%
TIW	18 Oct 2005	0.03785	0.14%	3.56%	-0.80%	3.26%	-0.58%	-1.61%	0.66%	-1.10%	1.81%	-0.18%	-1.07%	1.94%	0.01%	0.08%	0.05%	-0.87%	-1.12%	-0.26%	-1.53%	0.43%	0.64%
TIW	18 Jan 2006	0.03796	2.00%	0.44%	2.35%	0.07%	-2.38%	1.49%	-2.92%	0.15%	0.38%	-0.19%	1.23%	-3.52%	-1.53%	0.93%	-2.28%	-0.69%	-0.53%	2.00%	1.70%	-0.66%	0.54%
TIW	24 Mar 2006	0.03908	-2.05%	-0.30%	3.51%	-0.13%	-1.26%	4.25%	-3.53%	-1.10%	1.16%	0.32%	2.41%	-2.78%	1.51%	-0.76%	-0.72%	0.77%	0.17%	1.75%	-0.44%	1.64%	1.76%
TON	26 Nov 2007	0.04048	1.40%	1.19%	-0.90%	-0.08%	-1.00%	2.26%	-0.03%	-2.37%	-2.60%	0.01%	-0.91%	0.76%	0.86%	0.68%	-2.01%	-0.80%	-0.76%	-0.15%	0.49%	1.40%	-2.63%
TSX	12 Dec 2006	0.04256	2.20%	-0.55%	0.27%	3.79%	0.26%	-1.54%	-1.42%	4.52%	-0.12%	1.95%	0.02%	1.39%	2.54%	-0.98%	3.11%	3.07%	0.78%	-1.51%	2.57%	-2.86%	0.04%
TSX	16 Apr 2007	0.04480	-0.11%	-0.68%	-0.09%	-0.48%	0.17%	-0.58%	0.20%	2.68%	0.97%	4.85%	-2.00%	1.72%	0.69%	-2.68%	1.73%	-0.32%	1.31%	-2.66%	0.39%	1.76%	0.29%
WAR	02 Nov 2005	0.05174	-3.97%	2.43%	1.33%	-0.69%	1.47%	-2.16%	0.41%	-1.76%	1.16%	2.83%	3.42%	-0.01%	0.83%	0.95%	-0.28%	-1.44%	-3.29%	-1.51%	-3.63%	-2.71%	-0.85%

Standard deviation of AARs		0.82%																				
Event Day		**-10**	**-9**	**-8**	**-7**	**-6**	**-5**	**-4**	**-3**	**-2**	**-1**	**0**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
AAR		-0.0091%	0.5751%	-0.0793%	-0.1569%	-0.1604%	0.4647%	-0.2787%	-0.0964%	0.1954%	0.2128%	0.2375%	0.5602%	0.0844%	0.3442%	0.2570%	-0.2424%	0.0630%	-0.0365%	0.1913%	0.0381%	0.0315%
AAR Student t test		-0.01109	0.70313	-0.09699	-0.19177	-0.19608	0.56808	-0.34070	-0.11786	0.23885	0.26021	0.29035	0.68489	0.10314	0.42082	0.31414	-0.29635	0.07697	-0.04461	0.23392	0.04654	0.03855
AAR Significant	**95%**	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No
CAAR		-0.01%	0.57%	0.49%	0.33%	0.17%	0.63%	0.36%	0.26%	0.45%	0.67%	0.90%	1.47%	1.55%	1.89%	2.15%	1.91%	1.97%	1.93%	2.13%	2.16%	2.20%
CAAR (Day -10 to Day +10)		2.20%																				
CAAR (Day -10 to Day +10) Student t te		0.1397																				
CAAR Significant	**95%**	No																				
CAAR (Day -5 to Day +5)		1.74%																				
CAAR (Day -5 to Day +5) Student t test		0.1075																				
CAAR Significant	**95%**	No																				