Investment Analysts Journal

ISSN: 1029-3523 (Print) 2077-0227 (Online) Journal homepage: http://www.tandfonline.com/loi/riaj20

The impact of analyst recommendations and revisions on the prices of JSE-listed companies

DF Gerritsen & R Lötter

To cite this article: DF Gerritsen & R Lötter (2014) The impact of analyst recommendations and revisions on the prices of JSE-listed companies, Investment Analysts Journal, 43:80, 45-57

To link to this article: http://dx.doi.org/10.1080/10293523.2014.11082575

Published online: 18 Feb 2015.

DF Gerritsen* and R Lötter

The impact of analyst recommendations and revisions on the prices of JSE-listed companies

ABSTRACT

This study establishes that equity analyst recommendations have a significant short-term impact on share prices, by utilising an international database containing 31 363 analyst recommendations on JSE-listed and delisted companies, published over the period 1995 to 2011. In addition, two portfolio strategies were constructed. The first strategy shows that only investing in stocks with the most favourable consensus recommendations is associated with significant abnormal returns. The second strategy demonstrates that a portfolio consisting of recently upgraded stocks earns positive abnormal returns while a portfolio consisting of downgraded stocks is associated with negative abnormal returns.

1. INTRODUCTION

For decades security market analysts have provided the investment community with security recommendations. Analysts give their opinions about a specific company's future prospects by issuing recommendations. These recommendations generally range from strong buy to strong sell.

Any investment strategy based on recommendations which exhibit consistent outperformance can violate the assumption that markets are efficient. The Efficient Market Hypothesis (Fama, 1970) is related to the Random Walk theory (Fama, 1965) which states that share prices are mainly driven by news which, by definition, is unpredictable. Hence, share prices cannot be predicted, and therefore must follow a random walk. This theory has two implications for the potential value of recommendations. Firstly, as long as analysts only use publicly known information, the publication of a recommendation should not trigger significant share price movements unless analysts have superior insight in processing all facts and figures; and secondly, creating portfolios based on publicly known recommendations should not be associated with positive abnormal returns over time, because the recommendation levels are publicly known and will therefore already be discounted in the share price when the recommendation is published.

A large body of literature deals with the short-term and long-term share price effects of the publication of recommendations. Stickel (1995), for example, showed that upgrades (downgrades) were associated with positive (negative) abnormal returns. In addition, Womack (1996) pointed out that the post-event drift after downgrades lasted for as long as six months. Barber, Lehavy, McNichols and Trueman (2001) found that a portfolio consisting of highly favoured shares outperformed the least favoured shares. Jegadeesh, Kim, Krische and Lee (2004) created portfolios on the basis of the quarterly change in the average recommendation, showing that recommendation changes were a better predictor of future share returns than recommendation levels.

Evidence regarding the South African securities market is relatively scarce. As far as could be established, only three articles have been published on this topic (Bhana, 1990; Hall & Millard, 2002 and Prayag & Van Rensburg, 2006). While the findings of these articles are generally in line with international conclusions, South African articles have several limitations. Firstly, the number of recommendation providers is limited in two studies. Bhana (1990) and Hall and Millard (2002) use recommendations issued by four firms and three firms, respectively. Secondly, Hall and Millard (2002) analyse recommendations for only 16 companies. Thirdly, the number of analysed recommendations is limited. Only 200 recommendations are considered in Bhana (1990) and 1 573 in Hall and Millard (2002). In contrast to the small sample sizes in South African studies, influential United States studies have used 21 387 recommendations (Stickel, 1995) or 378 326 recommendations (Barber *et al.,* 2001). Fourthly, the sample period has been small in both Hall and Millard (2002) and Prayag and Van Rensburg (2006) as only three and five years respectively have been considered. Fifthly, Prayag and Van Rensburg (2006) relied on average monthly recommendation levels, and lastly, Prayag and Van Rensburg (2006) excluded delisted firms.

This study aims to overcome these limitations by using the internationally recognised Institutional Brokers' Estimate System, which contains daily published recommendations from both local and international analysts. Using 31 363 published recommendations for shares listed on the Johannesburg Stock Exchange (JSE), a comprehensive study is provided of short-term returns after the publication of share recommendations over the period 1995 to 2011. In addition, portfolio strategies are formed to consider potential abnormal returns beyond any initial share price effects.

* Corresponding author. Utrecht University School of Economics, P.O. Box 80125, 3508 TC Utrecht, The Netherlands, Phone +31 (0) 30 253 9289, Fax +31 (0) 30 253 7373
E-mail: d.f.gerritsen@uu.nl

This study establishes that the publication of optimistic (pessimistic) security recommendations by security analysts is associated with positive (negative) short-term abnormal returns. More specifically, upgrades (downgrades) are generally associated with significant positive (negative) abnormal returns. Furthermore, findings from two different portfolio strategies suggest that both the recommendation level and the recommendation revision contain value for investors on the JSE. Both variables should be taken into consideration when creating a share portfolio.

This study proceeds as follows: Section 2 describes the literature. In Section 3 the data, hypotheses and methodology are presented, and Section 4 discusses the results. Section 5 concludes the article.

2. LITERATURE

The literature regarding share returns after the publication of analyst recommendations is broadly divided into short-term returns and portfolio strategies. Empirical findings based on both recommendation levels and revisions are discussed for both of these categories. The impact of the publication of a recommendation regardless of the previous level of recommendations was investigated in early studies. Research on recommendation revisions has generally been published as of the 1990s, while studies on portfolio strategies using recommendations emerged in the 2000s.

First the international evidence is examined, after which findings in a South African context are considered.

2.1 Short-term returns: Recommendation levels

The effects of the publication of buy and sell recommendations on share price returns were considered in early studies. Diefenbach (1972) and Bidwell (1977) considered US recommendations published during the periods 1967 to 1969 and 1970 to 1973, respectively. Diefenbach (1972) documented that only 47% of the shares receiving buy recommendations outperformed the S&P425 index. Bidwell (1977) reported similar findings as his study showed that the risk-adjusted returns after a buy recommendation had been published were not significantly different from the S&P500 index. Only Diefenbach (1972) investigated stock returns after sell recommendations. As much as 74% of shares underperformed relative to the benchmark after the publication of a sell recommendation.

As far as could be established, Bhana (1990) conducted the only study regarding the short-term price impact of the publication of buy and sell recommendations in South Africa. In Bhana's study a random sample was used, consisting of 100 buy and 100 sell recommendations from two stockbroking firms and two investment advisory firms over the period 1979 to 1988. Share returns were compiled on a weekly basis. Bhana (1990) found that not only were buy recommendations preceded by 16 weeks of positive significant abnormal returns, but they were also followed by positive abnormal returns in both the week of the recommendation and the week following it. On the other hand, sell recommendations were preceded by four weeks with negative abnormal returns. Both the week of publication of the sell recommendation and the subsequent week exhibited a significant negative abnormal return. The conclusions of Bhana's study were partly in line with the international evidence of that time. However, the South African literature on this aspect has limitations: the recommendations were issued only by South African parties; a limited number of analysts were used; only 200 recommendations were analysed; and the conclusions were based on weekly share prices.

2.2 Short-term returns: Recommendation revisions

In addition to the level of the published recommendation, more recent literature considers the impact of the direction of recommendation revisions. Stickel (1995) studied recommendations on US shares published over the period 1988 to 1991. Upgrades to buy and strong buy recommendations were associated with significant market-adjusted gains for a period of up to 30 days after the publication. Significant negative abnormal returns for downgrades to hold, sell and strong sell were achieved until 10 days after the publication of the recommendation. Both for upgrades and downgrades, recommendation revisions which skipped a rank (e.g. from hold to strong sell as opposed to sell to strong sell) had a greater short-term effect on the share price. Womack (1996) considered upgrades to the equivalent of strong buy, downgrades from strong buy, upgrades from strong sell, and downgrades to strong sell. Significant size-adjusted returns over the period (-1, 1) days around the publication were found for upgrades to strong buy, downgrades from strong buy, and downgrades to strong sell.

Next to recommendation revisions, also recommendation initiations (e.g. a recommendation by a broker for a certain share which does not have an outstanding recommendation by its broker) are studied. Furthermore, brokers can also decide to stop coverage of a share, referred to as 'dropping a recommendation'. McNichols and O'Brien (1997) established that analysts would rather drop a recommendation than issue a sell recommendation, and that such an action might be favoured since analysts generally do not want to harm their relationship with the company in question. A drop might thus be interpreted as negative information when the concurrent recommendation is positive.

Short-term returns after recommendation revisions, initiations, and droppings of coverage on the South African market have not been studied before. Only Prayag and Van Rensburg (2006) have considered revisions in a South African context. However, their study used end-of-month average (also known as consensus) recommendation data. The exact date of a revision was therefore not known, and consequently short-term returns after revisions could not be computed.

2.3 Portfolio strategy: Recommendation levels

It is of particular interest whether a strategy would be profitable in which positively recommended shares are bought and negatively recommended shares are (short-) sold. In this respect, Barber *et al.* (2001) created five different portfolios based on the average published recommendation and they rebalanced these portfolios on a daily basis. The first portfolio consisted of shares with the highest consensus rating, and so on. They established that a strategy in which an investor would buy (short-sell) the most (least) recommended shares, yielded a significant abnormal annual return. A decreasing rebalancing frequency and a delay in acting to revisions decreased these abnormal returns. Barber *et al.* (2001) therefore suggested that investors should act quickly to capture returns from analyst revisions.

Two studies have been published on portfolio strategies based on share recommendations on the South African securities market. Hall and Millard (2002) analysed the returns of holding portfolios which were based on recommendations issued by three stockbroking companies for 16 shares during the period 1994 to 1998. The brokers were chosen based on the ranking of the 'Analyst of the year' awards. Three different portfolios (buy, hold and sell) were constructed based on the consensus recommendation. The portfolios were updated on a daily basis. Shares receiving an upgrade or downgrade were added to another portfolio on the next trading day. Hall and Millard (2002) concluded that both the buy and the hold portfolio outperformed the market as measured by both the JSE All Share Index and the Industrial Index, and that the sell portfolio underperformed the market. Prayag and Van Rensburg (2006) also focused on portfolio returns based on the published recommendations of South African stockbrokers, this time for the period 2000 to 2003. Prayag and Van Rensburg (2006) employed monthly consensus recommendations which were grouped into a buy, hold and sell portfolio. Portfolios were updated on a monthly basis. It was established that only the buy portfolio yielded significant positive abnormal returns.

The outperformance of buy portfolios in South Africa is in line with international findings (e.g. Womack, 1996 and Barber *et al.,* 2001), although the South African articles have limitations. South African articles used only recommendations issued by South African institutions. Hall and Millard (2002) introduced a selection bias by selecting only four analysts based on awards presented to the analysts. A limited number of shares were studied, and price returns rather than total returns were evaluated. Prayag and Van Rensburg (2006) excluded delisted firms. They also used month-end consensus recommendations, while Barber *et al.* (2001) suggested that a timely response to revisions is crucial for capturing potential share returns.

2.4 Portfolio strategy: Recommendation revisions

Rather than anticipating the level of consensus recommendations, Jegadeesh *et al.* (2004) studied quarterly rebalanced portfolios based on recommendation changes. It was established that recommendation changes were a more robust predictor of future share returns than the level of the consensus recommendation. Barber, Lehavy and Trueman (2010) noted that the relatively infrequent rebalancing of Jegadeesh *et al.* (2004) (i.e. quarterly) might have contributed to the conclusion that recommendation levels were not a robust return predictor. Barber *et al.* (2010) documented that both recommendation levels and changes were related to abnormal returns.

In the South African context, Prayag and Van Rensburg (2006) constructed portfolios based on the change in recommendation levels. Shares dropping from either the buy to the hold portfolio or from the hold to the sell portfolio exhibited negative abnormal returns in the next period. Other portfolios were constructed on the basis of reiterations, reappearances and discontinuations, but these portfolios generally had small sample sizes.

3. DATA AND METHODOLOGY

In this section the dataset with regard to the security recommendations will first be discussed. Secondly, price data will be considered, and finally the procedures used to test the hypotheses will be explained.

3.1 Recommendations

Analyst recommendations were retrieved from Thomson Reuters Institutional Brokers' Estimate System (I/B/E/S). The benefit of this database compared to previously used data sources in South Africa is that it covers international as well as local research firms. I/B/E/S categorises published recommendations on a 5-point scale from 1 to 5, where 1 represents a strong buy, 2 a buy, 3 a hold, 4 a sell and 5 a strong sell. The I/B/E/S Detail File, which contains recommendations on a day-to-day basis, is used for the entire study. This study enhances Prayag and Van Rensburg's (2006) methodology by using

daily recommendation data. Consequently, a consensus recommendation can be calculated on each day for every listed company. The database does not contain reiterations; in other words, recommendations which are only confirmed after a certain period of time are excluded in this research.

The first recorded recommendation on I/B/E/S for a South African share dates from November 1993. The number of shares covered in 1994 is very modest and poses problems for quintile portfolio construction. For that reason, January 1, 1995 is treated as the starting day of our dataset for all hypothesis tests. I/B/E/S keeps delisted firms in their database and the analysis therefore does not suffer from survivorship bias. All recommendations published until December 31, 2011 are analysed. For the purpose of the calculation of abnormal returns (ARs) around recommendations, the underlying shares need to be listed for at least one year in order to be included in the analyses.

Table 1: Summary statistics

Year	Average number of covered shares	Average number of analysts per firm	Maximum number of analysts per firm	Average recommen-dation level
1995	147	1.9	8	2.24
1996	220	2.7	9	2.50
1997	278	3.4	13	2.49
1998	300	3.6	14	2.34
1999	340	4.3	17	2.26
2000	306	4.2	17	2.35
2001	276	4.2	17	2.59
2002	249	3.9	15	2.58
2003	170	4.2	19	2.78
2004	147	3.9	15	2.81
2005	150	4.6	18	2.74
2006	162	4.3	18	2.72
2007	161	3.9	14	2.61
2008	175	3.9	18	2.49
2009	183	4.3	19	2.63
2010	176	4.7	25	2.60
2011	168	4.8	22	2.54

This table shows summary statistics for the sample on an annual basis. The second column shows the number of shares which have been covered by analysts in the respective year. Columns 3 and 4 depict respectively the average and the maximum number of analysts per covered company. Finally, the average recommendation level is given in column 5. Note that 1 represents a strong buy recommendation and 5 a strong sell recommendation.

During 1995, 147 shares were covered by analysts on average and this number increased sharply to 340 in 1999. In the years thereafter the number fluctuated between 150 and 200 shares. This decline was in line with the decrease in the number of listed domestic companies as reported by the World Bank in the World Development Indicators (World Bank, 2014). The average number of analysts per company has increased since 1996. Each firm is on average covered by 4 analysts, with a maximum of 25 analysts for some firms. The last column contains the consensus recommendation for each year, which is defined as the average of the consensus recommendation across all shares. On average, analysts issue a recommendation between buy and hold for the whole period under analysis.

Table 2 shows the dynamics of the recommendations that were made in the sample. It provides a transition matrix in which the number of recommendation revisions across all categories is depicted. An 'Initiation' is the first recommendation published by a certain analyst for a certain share. A revision from 'Stop' means that an analyst who previously dropped coverage starts to cover the company again.

The bottom row shows the distribution of recommendations in the five different categories. In line with the consensus recommendation in Table 1, Table 2 shows that hold recommendations have been published most often, followed by strong buy and buy recommendations. Table 2 further illustrates that most recommendation revisions appear in the buy and hold segments.

Table 2: Recommendation revision matrix

From recommendation	To recommendation of					
	1	2	3	4	5	Stop
1		624	2 531	207	321	1388
2	648		2 614	277	79	1309
3	2 345	2 540		1 565	1 026	2 201
4	183	261	1 491		246	516
5	285	85	1 007	264		465
Stop	753	846	1 172	317	281	
Initiations	1 021	767	1 263	222	243	
Total	5 235	5 123	10 078	2 852	2 196	5 879

This table shows the number of recommendation changes for the full sample. Initiations, revisions and stopped recommendations are considered.

The sample contains 9 992 one-step changes, 7 447 two-step changes, 554 three-step changes and 606 four-step changes. The total number of revisions considered is 18 599. In addition to this, 5 879 cases are also considered in which a recommendation has been dropped, as well as 3 516 new recommendations (i.e. initiations). The total number of recommendations considered in this study is 31 363.

3.2 Price and return

The hypotheses were tested using two different forms of abnormal returns. First the market-adjusted returns were computed, and secondly, risk-adjusted abnormal returns were calculated.

Total return share price indices (including reinvested dividends) were obtained from Thomson Reuters Datastream. Share returns were computed on a daily basis as defined in Equation (1). In this Equation, $r_{i,t}$ denotes the raw return including dividends.

$$r_{i,t} = \frac{P_{i,t}}{P_{i,t-1}} - 1 \quad (1)$$

The total return data for the FTSE/JSE All share index were collected. This index is considered as the market index. Although the total return index was only launched in 2003, index data has been restated to July 1, 1995 (see also Ward & Muller, 2012). For 1994 and the first six months of 1995 the JSE Overall index was used as benchmark. The return for the market index ($r_{m,t}$) was calculated in a similar fashion to (1), except that the share price was replaced by the index level. The market-adjusted return (MAR) was then calculated as follows:

$$MAR_{i,t} = r_{i,t} - r_{m,t} \quad (2)$$

For the calculation of the risk-adjusted return, first the daily excess return was calculated by subtracting the risk-free rate at day t ($r_{f,t}$) from the share return. As risk-free rate, the South African three-month Treasury bill rate was used.

$$R_{i,t} = r_{i,t} - r_{f,t} \quad (3)$$

In line with international articles (e.g. Womack, 1996; Barber *et al.*, 2001), we employed the Fama and French (1992) model for the estimation of expected returns. Basiewicz and Auret (2010) recently showed that this three factor model could be used for expected return estimation for JSE-listed firms. The model is set out in Equation (4):

$$E(R_{i,t}) = \alpha + \beta_{m_{i,t}} R_{m,t} + \beta_{SMB_{i,t}} SMB_t + \beta_{HML_{i,t}} HML_t \quad (4)$$

where $E(R_{i,t}) = E(r_{i,t}) - r_{f,t}$ is the expected excess return for share i at day t. $R_{m,t} = r_{m,t} - r_{f,t}$ is the excess return on the market index. SMB_t and HML_t are the Fama and French (1992) factors at day t. For this purpose, the smallest 5% listed shares in terms of market capitalisation on a given day were excluded because smaller shares are more prone to extreme price swings, possibly due to the thin trading phenomenon. The factors were computed on a daily basis where SMB_t represents the return on a portfolio consisting of the 30% smallest shares less the return on a portfolio consisting of the 30% largest shares. HML_t is the return on a portfolio that is long in the 50% shares with the highest earnings-price (E/P) ratio and short in the 50% lowest E/P-shares. Originally, Fama and French (1992) proposed that book-to-market values should be used to derive the HML-factor. South African studies are followed in this study (such as Van Rensburg and Robertson, 2003) by using the earnings-price ratio. All three factors were estimated on a daily basis with an estimation period of 260 trading days prior to the event day. Share returns of the last five trading days prior to a delisting were excluded since this period is sometimes characterised by large price swings (see Eisdorfer, 2008). Domestic factors were calculated based on South African shares because Griffin (2002) noted that a domestic model has a higher explanatory power than a world model.

Following Equations (3) and (4), the risk-adjusted return (RAR) is estimated for share i on day t as follows:

$$RAR_{i,t} = R_{i,t} - E(R_{i,t}) \quad (5)$$

Cumulative abnormal returns for a two-day event window are calculated as indicated by Equations (6) and (7). Equation (6) documents the equation for the

Cumulative Market-Adjusted Return (CMAR) and Equation (7) displays the Equation for the Cumulative Risk-Adjusted Return.

$$CMAR_i = (1 + MAR_{i,0}) \times (1 + MAR_{i,1}) - 1 \quad (6)$$

$$CRAR_i = (1 + RAR_{i,0}) \times (1 + RAR_{i,1}) - 1 \quad (7)$$

As a last step, the cumulative abnormal returns will be averaged across all events.

3.3 Test procedures

Hypotheses were identified from the existing literature. The hypotheses are listed below, followed by a brief description of the test(s) related to the specific hypothesis.

Hypothesis 1: The publication of a positive (negative) recommendation is associated with a positive (negative) short-term abnormal return.

In the first hypothesis, daily abnormal returns were analysed during a two-day window from the date of the publication of a recommendation. The publication can be any time during the day given the inclusion of international analysts in the dataset. Abnormal returns were thus analysed for both the day of the publication and the next trading day, to account for the possibility that recommendations are issued before the opening of the JSE or at the end of a trading day. This two-day event window also takes account of the possibility that recommendations were published after the daily close of the JSE for shares which are dual-listed on international exchanges. The new information, in this scenario, still has to be disseminated and will be reflected in the share price on the next day. For all 31 363 recommendations listed in Table 2, abnormal returns were calculated for this two-day period.

Hypothesis 2a: Recommendation upgrades (downgrades) are associated with positive (negative) short-term abnormal returns.

Hypothesis 2b: Positive (negative) recommendation initiations are associated with short-term positive (negative) abnormal returns.

Hypothesis 2c: A positive recommendation which is dropped is associated with negative short-term abnormal returns.

The second group of hypotheses considers recommendation initiations, revisions and stoppage of coverage respectively. Similar to the testing of the first hypothesis, abnormal returns were studied for a two-day period.

Hypothesis 3: A strategy involving a long position in shares with the highest consensus recommendation and a short position in shares with the lowest consensus recommendation is associated with positive abnormal returns.

In hypothesis 3 the consensus recommendations will be used to formulate a portfolio strategy. All recommendations for JSE-listed shares were evaluated on a daily basis. Whenever an analyst revised an existing recommendation, initiated the coverage, or dropped a recommendation, a new consensus recommendation for a share was calculated. Based on that, all shares were divided into five different equally-sized portfolios. Given the fact that certain average recommendations (such as a buy) occur more frequently than others, the five portfolios do not always contain exactly the same number of shares. Similar to Jegadeesh *et al.* (2004), the cut-offs for portfolios 1, 2, 3, and 4 were set equal to the 20th, 40th, 60th, and 80th percentiles respectively, of the distribution of the recommendations two days earlier. In other words, if the rebalancing day is called day *t*, then shares were rebalanced on the basis of the consensus recommendation on day *t*-2. This delay of two trading days before a share is eligible for changing portfolios has been incorporated, to accommodate the fact that (1) some recommendations may be published at the end of a trading day, (2) not all investors react promptly to the publication of new recommendations, and (3) liquidity constraints for the smaller shares may be present on the JSE. Portfolio 1 represents the shares with the most positive consensus recommendation (closer to recommendation level 1) and portfolio 5 contains shares on which the analysts are relatively bearish. In line with Prayag and Van Rensburg (2006), the daily returns of all portfolio constituents are equally weighted.

Hypothesis 4: A strategy involving a long position in shares with the largest increase in consensus recommendation and a short position in shares with the largest decrease in consensus recommendation is associated with positive abnormal returns.

Hypothesis 4 was also tested using a dynamic portfolio strategy to focus on recommendation revisions. The procedure was similar to that of the testing of hypothesis 3, but in this case the portfolios were based on the increase in the consensus recommendation during a period of 21 trading days. Shares without a recommendation change in this period were excluded from this analysis. Portfolio 1 contains the shares which had experienced the largest increase in consensus recommendation and portfolio 5 contains the shares with the lowest increase in the consensus recommendations (i.e. the highest decrease). If the rebalancing day again is called day *t*, the rebalancing process depends on the change in consensus recommendation in the period (-22, -2).

For the portfolio strategies the market-adjusted returns are the difference between portfolio returns and market

returns. The risk-adjusted return is calculated by regressing daily portfolio excess returns on daily market excess returns, SMB and HML factors. The intercept of this equation is the daily risk-adjusted return of a portfolio.

In line with Prayag and Van Rensburg (2006), statistical tests were performed for each hypothesis to determine whether the reported mean returns were significantly different from zero.

4. RESULTS

Following the four defined hypotheses, this section is divided into four subsections, each discussing the results of one of the hypotheses.

4.1 Short-term returns: Recommendation levels

Table 3 illustrates the results of the publication of a new recommendation, regardless of the level of the preceding recommendation. The table presents both market-adjusted and risk-adjusted returns.

Table 3: Abnormal returns in the two-day period surrounding the publication of a recommendation

Rec.	Market-adjusted returns			Risk-adjusted returns			# of rec.
	(0)	(1)	CMAR (0,1)	(0)	(1)	CRAR (0,1)	
1	0.18%***	0.15%***	0.32%***	0.16%***	0.11%***	0.28%***	5 235
	(4.07)	(3.63)	(5.49)	(3.80)	(2.95)	(4.81)	
2	0.12%***	0.09%**	0.21%***	0.12%***	0.09%**	0.22%***	5 123
	(3.26)	(2.36)	(3.82)	(3.37)	(2.48)	(4.01)	
3	-0.02%	-0.02%	-0.04%	-0.04%	-0.04%	-0.08%*	10 078
	(-0.76)	(-0.85)	(-1.11)	(-1.41)	(-1.34)	(-0.92)	
4	-0.07%	-0.11%*	-0.19%**	-0.09%	-0.16%***	-0.25%***	2 852
	(-1.29)	(-1.85)	(-2.26)	(-1.57)	(-2.79)	(-3.16)	
5	-0.23%***	-0.03%	-0.26%***	-0.23%***	-0.04%	-0.27%***	2 196
	(-3.40)	(-0.49)	(-2.71)	(-3.50)	(-0.61)	(-2.90)	
Stop	-0.05%	0.20%**	0.15%*	-0.07%*	0.08%	0.01%	5 879
	(-1.50)	(2.47)	(1.68)	(-1.90)	(-1.02)	(0.16)	

This table presents the mean market-adjusted return and mean risk-adjusted returns on both the publication day and the day subsequent to the publication of a recommendation. Additionally the cumulative market-adjusted return (CMAR) and the cumulative risk-adjusted return (CRAR) are presented. Coefficients marked with *, **, and *** are significant at the 10%, 5%, and 1% level for a two-tailed test. The t-statistics are given in the second line of each cell. Each t-statistic pertains to the hypothesis that the respective average return is equal to zero.

As can be observed from Table 3, strong buy and buy recommendations are associated with positive market-adjusted (risk-adjusted) returns on the day of the recommendation of 0.18% (0.16%) and 0.12% (0.12%), respectively. The shares for which strong sell recommendations have been published exhibit a negative abnormal return of -0.23% (-0.23%). Furthermore on the day after the recommendation has been published, statistically significant returns are found for strong buy, buy, and sell recommendations. The publication of a hold recommendation is associated with a negative cumulative risk-adjusted return of 0.08%. This observation is in line with Malmendier and Shantikumar (2007) who suggest that institutional investors perceive a hold recommendation to be a negative signal. Interestingly, after a recommendation has been dropped, the market-adjusted returns and risk-adjusted returns are not in line with each other. The market-adjusted return is positively significant on the day after the drop, while the risk-adjusted return is negative and significant on the day of the recommendation drop. The analysis of recommendation revisions in the next section can shed more light on this issue

4.2 Short-term returns: Recommendation revisions

The abnormal returns were studied further as shown in Table 4, in which the direction of the recommendation change is also included. Given the significance of the cumulative returns for both days as reported in Table 3, Table 4 depicts only two-day cumulative abnormal returns.

Table 4: Cumulative abnormal returns surrounding a recommendation revision, initiation or stop

Panel A Market-adjusted returns						
From recommendation	To recommendation of					
	1	2	3	4	5	Stop
1		-0.17% (-1.12)	-0.29%*** (-3.48)	0.49% (1.24)	-0.54%* (-1.84)	0.01% (0.07)
2	0.74%*** (4.07)		-0.08% (-1.00)	-0.45%* (-1.72)	0.26% (0.42)	0.15% (1.41)
3	0.27%*** (3.32)	0.37%*** (4.80)		-0.15% (-1.45)	-0.20% (-1.44)	0.00% (0.02)
4	0.30% (0.64)	0.25% (0.83)	0.06% (0.54)		0.21% (0.74)	0.96% (1.15)
5	0.79%*** (3.01)	1.28%*** (2.91)	0.40%*** (3.12)	-0.23% (-0.84)		0.36% (1.54)
Stop	0.37%** (2.51)	0.16% (1.20)	-0.05% (-0.49)	-0.46%* (-1.70)	-0.54%** (-2.27)	
Initiation	0.02% (0.13)	-0.07% (-0.46)	0.05% (0.43)	-0.29% (-1.09)	-0.46%** (-2.11)	
Panel B Risk-adjusted abnormal returns						
From recommendation	To recommendation of					
	1	2	3	4	5	Stop
1		-0.08% (-0.55)	-0.38%*** (-4.64)	0.17% (0.45)	-0.42% (-1.50)	-0.07% (-0.60)
2	0.61%*** (3.49)		-0.13%* (-1.65)	-0.55%** (-2.24)	0.09% (0.15)	-0.10% (-1.05)
3	0.24%*** (3.04)	0.35%*** (4.66)		-0.21%** (-2.11)	-0.26%* (-1.90)	-0.10% (-1.17)
4	0.08% (0.16)	0.18% (0.69)	0.06% (0.59)		0.10% (0.37)	0.75% (0.90)
5	0.42%* (1.70)	1.41%*** (3.17)	0.40%*** (3.29)	-0.54%** (-2.05)		0.30% (1.32)
Stop	0.35%** (2.43)	0.22% (1.64)	-0.01% (-0.10)	-0.36% (-1.45)	-0.52%** (-2.35)	
Initiation	0.08% (0.62)	-0.10% (-0.74)	0.04% (0.43)	-0.01% (-0.04)	-0.30% (-1.41)	

This table shows the average cumulative abnormal return for the two-day interval around a recommendation change. Panel A depicts market-adjusted returns and Panel B describes risk-adjusted returns. The days considered are the day of the change and the day subsequent to the change. Coefficients marked with *, **, and *** are significant at the 10%, 5%, and 1% level for a two-tailed test. The t-statistics are given in the second line of each cell. Each t-statistic pertains to the hypothesis that the mean abnormal return is equal to zero.

The general finding from Table 4 is that upgrades are generally associated with positive abnormal returns. The majority of the upgrades show statistically significant returns. The upgrade to sell from strong sell is noteworthy: although shares receive an upgrade they still experience a negative risk-adjusted return. Apparently a sell recommendation is perceived as bad news in most cases.

Downgrades are generally associated with share price decreases. This decrease is significant in five of the cases, using risk-adjusted returns as a measure of performance.

The returns after initiating previously dropped share recommendations are associated with the level of the recommendation: strong buy (strong sell) recommendations are associated with significant positive (negative) abnormal returns. Pure initiations are associated with significantly negative market-adjusted returns in the case of a strong sell recommendation. Ceasing coverage is not associated with significant abnormal returns. All in all, in the short run the share returns are mostly in line with the change in recommendation. The next sections discuss whether analyst recommendations have value over a longer term as well.

4.3 Portfolio strategy: Recommendation levels

In this section it will be considered whether a portfolio strategy based on consensus recommendations yields abnormal returns. Table 5 presents descriptive statistics regarding the portfolios.

Table 5: Descriptive statistics for the portfolios based on recommendation levels

	Portfolio				
	1	2	3	4	5
Average number of shares	53.5	36.7	45.0	40.6	34.2
Consensus recommendation	1.5	2.0	2.5	3.0	3.6

This table shows the average number of shares for five different portfolios which are formed on the basis of the consensus recommendation. The average consensus recommendation per portfolio is also shown in this table.

The average number of shares per portfolio is not exactly equal owing to the strong buy to strong sell measuring scale, often leaving several shares with the same consensus recommendation. By design, the

consensus recommendation is lower for each next portfolio. Note that portfolio 4, or the fourth quintile, has a consensus recommendation of 3, again supporting the hypothesis that analysts prefer to issue a positive recommendation rather than a negative one.

Next, the results of the portfolio strategy are presented. Cumulative market-adjusted returns are calculated for each of the portfolios from a base value of 100. Figure 1 depicts the results of this strategy for each portfolio.

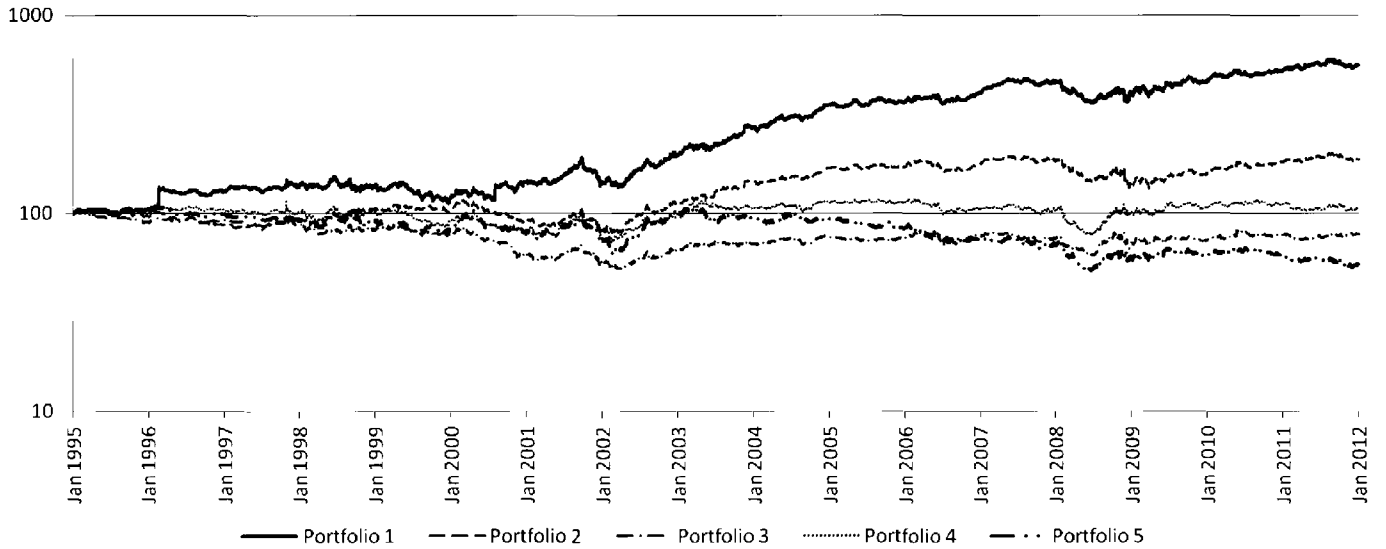

Figure 1: Consensus recommendation quintile portfolios

This figure shows the cumulative market-adjusted returns from a strategy in which portfolio 1 contains the shares with the most favourable recommendations and portfolio 5 the least favourable recommendations, as defined by the recommendations published by security analysts in the I/B/E/S database.

Portfolio 1 contains the shares which have the most favourable recommendations while portfolio 5 contains shares eliciting pessimistic analyst viewpoints. Portfolios 1, 2 and 5 perform in sequential order, with portfolio 1 outperforming all other portfolios while portfolio 5 generates the lowest market-adjusted return. Portfolios 3 and 4 are not in sequence as portfolio 4 outperforms portfolio 3. Judging by Figure 1, buying shares with a favourable consensus recommendations pays off, but it remains unclear whether (short) selling shares with the lowest consensus recommendation generates a positive abnormal return.

While Figure 1 provides a graphical explanation of the cumulative market-adjusted return of the different portfolios, Table 6 shows the statistical significance of the accompanying average daily abnormal returns for each portfolio. First the market-adjusted returns which were used in Figure 1 were evaluated. Only portfolio 1 generates significant abnormal returns measured by this approach. The bottom row of the table shows the results of a long/short portfolio in which a long position would be taken in portfolio 1 and a short position in portfolio 5.

Table 6: Average abnormal return for portfolios based on recommendation levels

Portfolio	Mean market-adjusted return	Fama and French three-factor analysis				
		Intercept	Coefficients			R^2
			$r_m - r_f$	HML	SMB	
1	0.04%***	0.06%***	0.45***	-0.04**	0.00	0.37
	(2.88)	(5.36)	(41.83)	(-2.18)	(0.11)	
2	0.02%	0.03%***	0.52***	-0.03**	-0.03***	0.64
	(1.46)	(4.14)	(69.31)	(-2.33)	(-2.71)	
3	-0.00%	0.02%**	0.54***	-0.05***	-0.07***	0.68
	(-0.26)	(2.18)	(74.72)	(-3.81)	(-7.44)	
4	0.01%	0.01%	0.46***	0.01	0.04***	0.48
	(0.39)	(1.51)	(52.93)	(0.75)	(3.41)	
5	-0.01%	0.00%	0.43***	0.03*	0.08***	0.40
	(-0.58)	(-0.41)	(47.5)	(1.92)	(6.91)	
1 – 5	0.05%***	0.06%***	0.03**	-0.08***	-0.08***	0.01
	(4.06)	(4.89)	(2.14)	(-3.24)	(-4.81)	

This table shows both the market-adjusted and the Fama and French three-factor coefficients for the five different portfolios and for a portfolio which is long portfolio 1 and short portfolio 5. The portfolios are based on the consensus recommendation with portfolio 1 containing the 20% shares with the highest consensus recommendation. Coefficients marked with *, **, and *** are significant at the 10%, 5%, and 1% level for a two-tailed test. The t-statistics are given in the second line of each cell. Each t-statistic pertains to the hypothesis that the mean abnormal return is equal to zero.

This portfolio strategy would have yielded a statistically significant daily market-adjusted return of 0.05%. The analysis so far has not taken risk into consideration. Daily risk-adjusted returns have been computed by regressing the portfolio excess returns on the three Fama and French factors as per Equation 4. Portfolio performance is re-evaluated on the basis of these returns and these results are also depicted in Table 6.

The intercept from the regressions represents the alphas for the various portfolios. The alphas are in line with the reported average market-adjusted returns. Interestingly, the risk-adjusted alphas for portfolios 1, 2 and 3 are significantly positive. The factor loadings with respect to the market risk premium were highly significant for all portfolios. The coefficients vary from 0.43 to 0.54 for the portfolios. A long/short strategy based on a long position in portfolio 1 and a short position in portfolio 5 would have yielded a daily risk-adjusted return of 0.06%. This portfolio would have a relatively low level of market risk, given its factor loading on the market risk premium of only 0.03.

It can thus be concluded from both Figure 1 and Table 6 that a portfolio consisting of the 20% of shares with the highest consensus recommendation outperformed the South African securities market over the period 1995 to 2011. A long/short strategy involving the purchase of portfolio 1 and the short-sale of portfolio 5 yields positive abnormal returns, while diminishing the level of market risk at the same time.

4.4 Portfolio strategy: Recommendation revisions

Rather than composing portfolios based on the level of the consensus recommendation, portfolios in this section were constructed based on the recent change in consensus recommendations. Again five different (roughly) equally-sized portfolios were created, of which portfolio 1 contains the shares with the biggest positive change in consensus recommendation and portfolio 5 the largest negative change over a 21-day period. Table 7 depicts the descriptive statistics for each portfolio.

Table 7: Descriptive statistics for the portfolios based on recommendation revisions

	Portfolio				
	1	2	3	4	5
Average number of shares	14.5	15.8	15.2	14.9	16.8
Average recommendation increase	0.8	0.2	0.0	-0.2	-0.6

This table shows the average number of shares for five different portfolios which are formed on the basis of the change in the consensus recommendation in the period (-22, -2). The average change per portfolio is also shown in this table. Note that an increase in this case means that the consensus recommendation comes closer to the level of 1 which represents a strong buy recommendation.

As in the previous approach, the portfolios were not identical in size as several shares exhibited the same change in recommendation level. The recommendation increase is not symmetrical for the five portfolios, and exhibits some skewness explained by the decrease in the average recommendation level over time in Table 1. Note that only shares which experienced a consensus recommendation change in the period (-22, -2) are included in this analysis. Figure 2 graphically shows the outcome of this trading strategy.

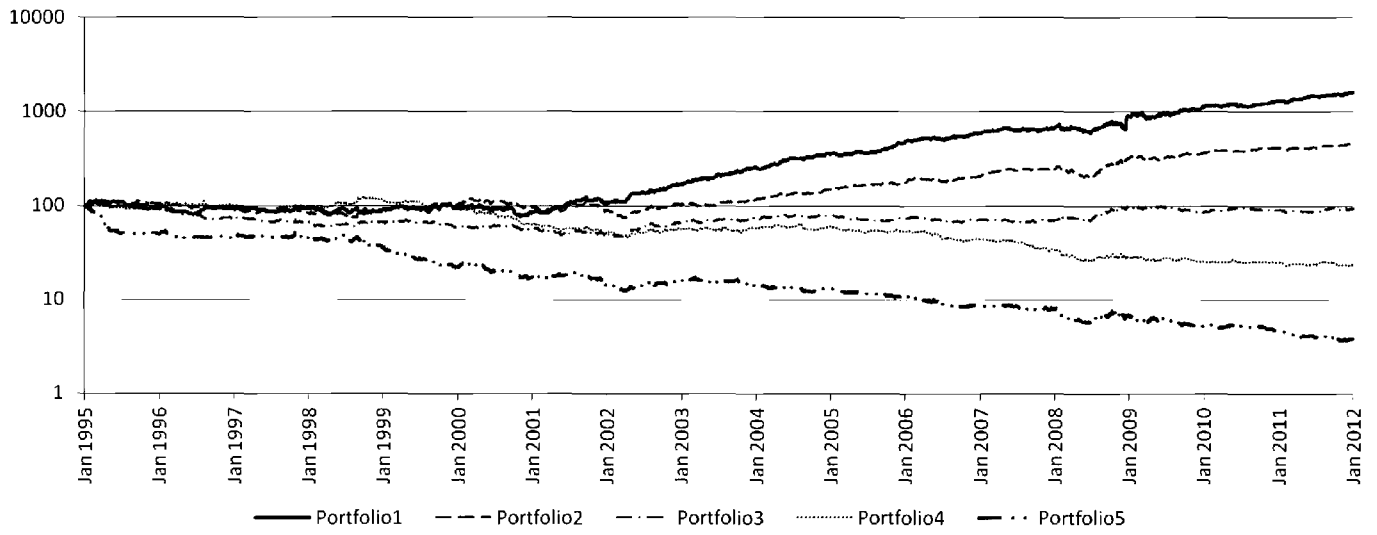

Figure 2: Recommendation revisions quintile portfolios

This figure shows the cumulative market-adjusted returns from a strategy in which portfolio 1 (5) contains the shares with the most (least) positive change in the consensus analyst recommendation. Inclusion in a portfolio is based on the change in the recommendation in the period (-22, -2).

In this strategy portfolio 1 again outperforms all other portfolios. This time the results of portfolios 2 to 5 are in line with expectations: the lower the increase in recommendation, the more negative the average market-adjusted return becomes. The findings depicted in Figure 2 suggest that a trading strategy based on the change of the consensus recommendation could be pursued to generate abnormal returns.

Table 8 indicates the statistical significance of the findings.

Table 8: Average abnormal return for portfolios based on recommendation revisions

Portfolio	Mean market-adjusted return	Fama-French three–factor analysis				R^2
		Intercept	Coefficients			
			$r_m - r_f$	HML	SMB	
1	0.07%***	0.09%***	0.53***	-0.05*	-0.04**	0.36
	(4.21)	(6.11)	(38.94)	(-1.92)	(-2.06)	
2	0.04%***	0.06%***	0.60***	-0.06***	-0.12***	0.60
	(3.12)	(5.77)	(60.24)	(-3.30)	(-9.11)	
3	0.00%	0.02%**	0.68***	-0.06***	-0.11***	0.65
	(0.11)	(2.03)	(67.65)	(-3.38)	(-8.66)	
4	-0.03%**	-0.01%	0.60***	-0.07***	-0.11***	0.53
	(-2.14)	(-0.52)	(52.91)	(-3.53)	(-7.40)	
5	-0.07%***	-0.05%***	0.45***	-0.05**	-0.00	0.32
	(-4.16)	(-3.90)	(36.68)	(-2.21)	(-0.27)	
1 – 5	0.14%***	0.14%***	0.08**	0.00	-0.03	0.01
	(7.86)	(7.67)	(4.41)	(0.06)	(-1.43)	

This table shows both the market-adjusted return and the Fama and French three-factor coefficients for the five different portfolios and for a long/short portfolio. The portfolios are based on the change in the consensus recommendation with portfolio 1 (5) containing the 20% shares with the most (least) positive change in the period (-22, -2). Coefficients marked with *, **, and *** are significant at the 10%, 5%, and 1% level for a two-tailed test. The t-statistics are given in the second line of each cell. Each t-statistic pertains to the hypothesis that the mean abnormal return is equal to zero.

Portfolios 1 and 2 show a daily significant market-adjusted outperformance of 0.07% and 0.04%, respectively. In contrast, portfolios 4 and 5 significantly underperform by roughly the same percentages. A long/short strategy in which investors would buy portfolio 1 and short-sell portfolio 5 yields a daily abnormal return of 0.14%. Risk-adjusted returns are in line with the market-adjusted returns. A long/short strategy would have yielded a similar 0.14% daily risk-adjusted return. The conclusions based on the market-adjusted figures are thus supported by the findings from the three factor analyses.

The R^2 values for portfolios 1 and 5 are lower than the other portfolios' R^2 values in both Table 6 and Table 8. The low R^2 values for portfolios 1 and 5 indicate that the three regression factors did not entirely explain the collective performance of the shares expected by analysts to outperform or underperform considerably. The extremely positive and extremely negative sentiment among analysts with respect to the shares in

portfolios 1 and 5, respectively, might have caused the share returns in these portfolios to be less related to traditional factors in the model.

4. CONCLUSIONS

In this article the relationship between security analyst recommendations and subsequent share returns was analysed for the South African share market. The existing South African research into analyst recommendations has suffered from several limitations, ranging from small sample sizes to relatively infrequent availability of recommendation data. To contribute to the body of knowledge on South African market efficiency in general and the value of analyst recommendations in particular, this study has been carried out using a large dataset of analyst recommendations on JSE-listed shares over the period 1995 to 2011.

In semi-strong efficient markets all public information is already incorporated in share prices, and security analyst opinions should not make a difference. However, this study documents that both strong buy and buy recommendations are associated with significant abnormal returns on the day of publication as well as the day after it. Strong sell recommendations are associated with significant negative returns on the day of publication, while sell recommendations are associated with significant negative abnormal returns on the next day. Considering the direction of the recommendation revision, it is concluded that upgrades (downgrades) are generally associated with positive (negative) abnormal returns. Interestingly, an upgrade from strong sell to sell is still perceived to be bad news for shareholders even though it represents an upgrade. Given this short-term market impact, analysts apparently disseminate information which was unknown until the publication of the recommendation. This may be an indication that analysts have an edge in processing information and hence contribute to the efficiency of the South African share market.

Next, two different portfolio strategies were analysed in which five different portfolios were created. The composition of the portfolios in the first strategy was dependent on the level of the consensus recommendation on day *t-2*. Shares with the highest recommendation level showed significant outperformance while the other portfolios exhibited mixed results. The second strategy considered portfolios based on the change in the recommendation level during the period (-22, -2). Five different portfolios were created, which were rebalanced on a daily basis. The two portfolios containing shares with the most positive recommendation revisions showed positive abnormal returns while the two portfolios with negative changes exhibited negative abnormal returns.

It can be concluded that the magnitude of the recommendation revision matters more for future share returns than the absolute level of the recommendation. This price drift also indicates that the information content in analyst recommendations is not fully incorporated into share prices at the moment of publication. Transaction costs will lower the magnitude of the findings. Given that investors incur these costs at any transaction, the conclusion remains that investors should consider recommendations when they are facing investment decisions.

REFERENCES

Barber B, Lehavy R, McNichols M and Trueman B. 2001. Can investors profit from the prophets? Security analyst recommendations and stock returns. *Journal of Finance,* **56**(2): 531-563.

Barber B, Lehavy R, and Trueman B. 2010. Ratings changes, ratings levels, and the predictive value of analysts' recommendations. *Financial Management,* **39**(2): 533-553.

Basiewicz PG and Auret CJ. 2010. Feasibility of the Fama and French three factor model in explaining returns on the JSE. *Investment Analysts Journal*, 71: 13-25.

Bhana N. 1990. An empirical evaluation of the effectiveness of share recommendations by stockbrokers and investment advisory services in South Africa. *South African Journal of Business Management,* **21**(3): 86-95.

Bidwell CM. 1977. How good is institutional brokerage research? *Journal of Portfolio Management,* 3: 26-31.

Diefenbach RE. 1972. How good is institutional brokerage research? *Financial Analyst Journal,* 28: 54-60.

Eisdorfer A. 2008. Delisted firms and momentum profits. *Journal of Financial Markets,* **11**(2): 160-179

Fama EF. 1965. The behavior of stock market prices. *Journal of Business,* 38: 34-105.

Fama EF. 1970. Efficient capital markets: A review of theory and empirical work. *The Journal of Finance,* **25**(2): 383-417.

Fama EF and French KR. 1992. The cross-section of expected stock returns. *The Journal of Finance,* **47**(2): 427-465.

Griffin JM. 2002. Are the Fama and French factors global or country specific? *The Review of Financial Studies,* **15**(3): 783-803.

Hall JH and Millard SM. 2002. An assessment of the value of brokerage information for individual investors. *Investment Analysts Journal,* 55: 45-51.

Jegadeesh N, Kim J, Krische SD and Lee CMC. 2004. Analyzing the analysts: When do recommendations add value? *The Journal of Finance,* **59**(3): 1083-1124.

Malmendier U and Shanthikumar D. 2007. Are small investors naive about incentives? *Journal of Financial Economics,* **85**(2): 457-489.

McNichols M. and O´Brien PC. 1997. Self-selection and analyst coverage. *Journal of Accounting Research,* 35: 167-199.

Prayag C and Van Rensburg P. 2006. The value of analysts' consensus recommendations: Evidence from South African brokerage houses. *Investment Analysts Journal,* 63: 5-17.

Stickel SE. 1996. The anatomy of the performance of buy and sell recommendations. *Financial Analysts Journal,* 51: 25-39.

Van Rensburg P and Robertson M. 2003. Size, price-to-earnings and beta on the JSE Securities Exchange. *Investment Analysts Journal,* 58: 7-16.

Ward M and Muller C. 2012. Empirical testing of the CAPM on the JSE. *Investment Analysts Journal,* 76: 1-12.

Womack KL. 1996. Do brokerage analysts' recommendations have investment value? *The Journal of Finance,* **51**(1): 137-167.

World Bank. 2014. *Table: Listed domestic companies, total.* Retrieved from http://data.worldbank.org