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# The value of analysts' consensus recommendations: Evidence from South African brokerage houses

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## 1. INTRODUCTION

This paper empirically investigates whether an investor can pursue an investment strategy that generates outperformance based on South African stock-broking firms' analysts' consensus recommendations. First, the returns that an investor achieves by holding portfolios formed on the basis of analysts' buy, hold or sell recommendations on the JSE of South Africa (JSE) for the period March 2000 to April 2003 are calculated. Second, the performance of portfolios constructed based on changes in analysts' consensus recommendations is explored. The performance of each portfolio of permutations of upgrade, downgrade, recurrence and first coverage is investigated.

This area of research has received much international attention with mixed results as to the exploitability of analyst's recommendations. In contrast, there appears to be only two South African studies published on the topic [Bhana (1990) and Hall and Millard (2002)]. However, the use of brokers' recommendations from just two and three broking houses respectively, may fail to generalise the value of South African brokers' recommendations as a whole. In particular, the latter study may also be subject to hindsight bias as the three brokerage firms selected were based on the Financial Mail 'Analyst of the Year' awards. Furthermore, investigations regarding acting on changes in analysts' recommendations have not yet been carried out in South Africa despite promising findings in the international literature.

In order to augment the existing literature, this paper investigates the outperformance earned by following analysts' *consensus* recommendations, which are composite recommendations from across the broking community and also looks at the effect of acting on changes in these recommendations. The study is organised as follows. Section 2 provides a review of prior research. In section 3, the data and methodology are discussed. The results of the empirical analysis are reported in Section 4 and Section 5 concludes.

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## 2. LITERATURE REVIEW

The performance of analysts' recommendations has been the subject of much research in the major financial markets. Most of the research concentrates on the value of individual broking firms' analysts' recommendations. This research is generally disclosed only to their clients who, in return, pay commissions upon the purchase of shares when trading through the broker concerned<sup>1</sup>.

### 2.1 United States evidence

Early studies conducted in the United States include Diefenbach (1972), Bidwell (1977), Groth (1978) and Groth, Lewellen, Schlardaum and Lease (1979). Inconsistent results were found with regard to the relative performance of stocks recommended by analysts. Diefenbach (1972) found that analysts' buy recommendations were unable to outperform although their sell recommendations performed as expected. Bidwell (1977) highlighted the lack of skill on the part of the most qualified analysts to isolate and recommend outperforming stocks. Groth (1978) observed abnormal returns for some stocks for as long as six months prior to recommendation although these returns do not appear to outperform in the 12-month post-recommendation period. Later, Groth et al (1979) found that abnormal returns could be achieved, even after taking transaction costs and risk into account.

More recently, Elton, Gruber and Grossman (1986) examined the information content in analysts' recommendations by analysing both the level of the recommendation and the effect of a change in an analyst's recommendation. Disregarding the accuracy of a particular asset pricing model, this study made the more robust assumption that beta is either in general a sufficient metric for risk or the only metric that systematically differs across recommendations and developed comparison portfolios based on differing recommendations but having the same beta. For portfolios of stocks upgraded in ranking, a large return during the month of the change was again followed by a substantial return in the month thereafter and a smaller return two months after the change. For portfolios of stocks downgraded in ranking, there was a substantial negative return in the month of the change in recommendation and a negative return of a larger size in the month after the change. The results were observed

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<sup>1</sup>It is noted that in South Africa, stock-broking firms' **consensus** recommendations are available to subscribers of I-Net Bridge Real Time. Individual brokers' recommendations are only available to clients of the stock-broking firms.

to be statistically significant at both the aggregate and individual brokerage firm levels. It was also shown that the excess returns achievable through investing in the brokerage firm's recommendations were not nearly as much as those earned by acting on changes in recommendations.

Stickel (1995) investigated the influence of factors such as the strength, the magnitude of the change and the reputation of the analyst on the short and long-term stock price performance of buy and sell recommendations. Regarding the recommendations considered, 55% were buys, 33% were holds and 12% were sells. The calculation of the mean abnormal performance showed that buys generally had positive returns and sells generally had negative returns through Days +60 of the recommendation, and statistically significant abnormal returns were within Days -10 to +10 of the recommendation. As a way of illustrating the immediate impact of the investigated factors on stock price, the author indicates, "...the average return to buy recommendations quadruples, going from 1,16% to 4,61% during Days -5 to +5, if it is a strong buy recommendation that skips a rank (e.g. 3 to 1), is issued by a first-team All-American employed by a large brokerage house recommending a smaller company, and is accompanied by a positive revision in an earnings forecast" (p. 37).

Womack (1996) considered the investment value to be gained by acting on changes to and from the extreme stock rating categories. Recommendations were predominantly for large-capitalisation companies and the ratio of buy to sell recommendations in the sample was about 7 to 1. The results revealed the existence of significant initial price and volume reactions to different types of recommendation changes. Upon the examination of the post recommendation excess returns, the author infers, "...not only are event-period returns large and significant for both added-to-buy and added-to-sell recommendations, but post event returns are in the direction predicted by the analysts" (p. 164).

Barber, Lehavy, McNichols and Trueman (2001) examined the investment performance, tracked in calendar time, of firms grouped into portfolios according to their analysts' consensus recommendations. It was found that purchasing (selling short) stocks with the most (least) favourable consensus recommendations, with daily portfolio rebalancing and a timely response to recommendation changes, resulted in annual abnormal returns greater than 4%. However, less frequent portfolio rebalancing or a delay in reacting to recommendation changes reduced those returns, although they remained significant for the least favourably rated stocks. The investment strategies considered required a great deal of trading that resulted in high transaction costs. Taking into consideration these transactions costs, none of the strategies achieved an abnormal net return that was reliably greater than zero.

More recently, Brav and Lehavy (2003) examined the information content of analysts' expectational data. Although, the primary focus was on the information content of analysts' target prices alongside that of analysts' stock recommendations and earnings forecasts, the value of analysts' recommendations was examined on its own. Significant positive (negative) price reaction to recommendation upgrades (downgrades) was shown. It was concluded that target price revisions contain information regarding future abnormal returns above and beyond that, which is conveyed in stock recommendations.

## 2.2 International evidence

The value of brokers' recommendations has also been investigated in other countries. Dimson and Marsh (1984) assessed brokers' forecasting ability in the United Kingdom by comparing forecast returns with realised returns for individual brokers, for brokers as a group, for internal analysts and for the sample as a whole. In investigating analysts' forecasting ability, the forecasts of specific returns rather than the typical buy, hold and sell recommendations were used. It was found that stock prices react rapidly to the informational content of forecasts. The 3000 trades, directly motivated by the forecasts, outperformed the market by 2,2 percent in the year following the trades. It was also affirmed that differences in forecasting ability between brokers do not appear to prevail, but predictive accuracy can be improved by pooling simultaneous forecasts from different sources.

Bjerring, Lakonishok and Vermaelen (1983) evaluated the investment advice of a leading Canadian brokerage house, which had recommendations of both Canadian and US stocks. The market model was used to estimate abnormal returns. As predicted by the brokerage firm, stocks on the recommended list produced positive abnormal returns. On the other hand, stocks on the representative lists (dropped from the recommended list) achieved abnormal returns that were close to zero. In addition, the raw returns of stocks on the recommended lists were significantly higher during the period of recommendation than in the surrounding period.

Aitken, Muthuswamy and Wong (2000) examined the impact of stock recommendations produced by twenty brokerage firms in Australia. The presence of significant daily abnormal returns surrounding the release of buy and sell-related recommendations indicated that brokers possessed stock-picking ability. However, their timing ability was questioned since prior to the official release of the recommendations, the stocks recommended for purchase and sale already showed evidence of positive and negative abnormal returns respectively. In addition, the study linked brokers' recommendations with significant abnormal trading activity. Both the order and trading activity of the brokers making the recommendations were

significantly higher than usual both on the recommendation day and in the immediate post-recommendation period.

### 2.3 Prior South African evidence

Bhana (1990) performed an evaluation of the effectiveness of share recommendations by two large firms of stockbrokers in the South African environment. The entire set of buy and sell recommendations made by the firms during the ten-year period from January 1979 through December 1988 were compiled. The average return residuals (estimated by means of the market model) of the buy recommendations were uniformly positive for the entire period. However, it was found that the average return residuals were statistically significant only for the 16 weeks prior to, the recommendation week itself and the week following the recommendation. The sell recommendations depicted negative and statistically significant average residuals during the four weeks preceding, and the week following the recommendation date. It was suggested that the evident ability of stockbrokers to provide better investment recommendations stems from their superior access to new information that is processed more quickly and efficiently than most investors.

Hall and Millard (2002) conducted the other published paper assessing the value of brokers' recommendations of shares listed on the JSE. The investment recommendations of three broking houses, selected on the basis of the results of the Financial Mail 'Analyst of the Year' awards, were used to generate an average recommendation for each of the 16 listed companies considered. Based on this recommendation, three portfolios (buy, hold and sell) were compiled. The monthly return of each portfolio was compared to the monthly movement of the JSE All-share Index and the Industrial Index. In addition, the risk-adjusted performance of the portfolio was evaluated using Jensen's alpha measure. The results

of the study indicated that if the returns were not adjusted for risk, based on brokers' buy and hold recommendations, investors could earn a return greater than that of the market return. If the returns were adjusted for risk, following brokers' recommendations was found to generate returns greater or equal to the market and limit investors' losses in relation to the movement of the market.

### 3. DATA AND METHODOLOGY

The analysts' consensus recommendations of brokerage houses used in this study were obtained from I-Net Bridge. The recommendations encompass the period from March 2000 through April 2003. Every month, I-Net Bridge compiles analysts' recommendations of shares listed on the JSE and computes an analysts' consensus recommendation for each share. Typically, the recommendations are graded in terms of B (Buy), Y (Buy+), D (Hold-), H (Hold), G (Hold+), T (Sell-) and S (Sell). For the purposes of this study, in each month of the sample period, the recommendations are simply grouped into buy, hold and sell portfolios.

The database consisted of 5282 recommendations from March 2000 to April 2003. Table 1 displays the number of observations in each category. The descriptive statistics are further grouped into shorter sub-periods in order to assess the trend in each category of recommendations over the sample period. Of all the recommendations, 37,92% (2003) are buys, 59,13% (3123) are holds and 2,95% (156) are sells. This distribution is broadly consistent with prior research [Bidwell (1977), Elton et al. (1986), Womack (1996), Barber et al. (2001) and Hall and Millard (2002)]. Analysts overwhelmingly provide buy and hold recommendations. Such behaviour on the part of analysts is speculated to be a direct result of their interest to stimulate share trades and cultivate relations with management.

**Table 1: Descriptive statistics of analysts' consensus recommendations of brokerage houses from the I-Net Bridge database, March 2000 to April 2003**

Period	March 00 - December 00 (10 months)			January 01 - December 01 (12 months)			January 02 - December 02 (12 months)			January 03 - April 03 (4 months)			March 00 - April 03 (38 months)		
	No.	%	Ave	No.	%	Ave	No.	%	Ave	No.	%	Ave	No.	%	Ave
Buy	755	44,10	75	562	33,25	47	562	38,36	47	124	29,18	31	2003	37,92	53
Hold	908	53,04	91	1081	63,96	90	852	58,56	71	282	66,35	70	3123	59,13	82
Sell	49	2,86	5	47	2,78	4	41	2,82	3	19	4,47	5	156	2,95	4
Total	1712	100,00	171	1690	100,00	141	1455	100,00	121	425	100,00	106	5282	100,00	139

A  $3 \times 3$  matrix of the number of analysts' consensus recommendations is provided in Table 2. In each cell  $\{i, j\}$  of the matrix, the number of observations in the database in which analysts' consensus moved from a recommendation of  $i$  to one of  $j$  is exhibited. Those recommendations that have reoccurred from one month to another are displayed in the diagonal cells of the matrix. The last column shows the number of buy, hold and sell recommendations that are dropped from the database of analysts' consensus recommendations over the sample period. The 'Reappearance' row in Table 2 reports the number of firms with previously discontinued recommendation on the I-Net Bridge database and subsequently reappear as a buy, a hold or a sell recommendation. The last row shows the number of firms, which were first covered by analysts with a buy, a hold or a sell recommendation. In all, comparing analysts' consensus recommendations from month  $t$  to month  $t+1$  over the sample period (37 comparisons) results in 18 portfolios of different permutation of changes<sup>2</sup> or recurrences.

In Table 2, it is also noticed that most of the entries in the transitional matrix are concentrated in the upper  $2 \times 2$  cells (recurrences of buy and hold recommendations and changes from a buy to a hold and from a hold to a buy recommendation). In addition, recommendations that are previously dropped reappear most frequently as a hold and least frequently as a sell. Shares of firms that are recommended for the first time in the database have either a buy or a hold recommendation and never a sell recommendation. All these observations once again support the claim that analysts are usually reluctant to make sell recommendations.

The performance of different investment strategies with respect to analysts' consensus recommendations is evaluated using three different measures. Firstly, the raw return is calculated for each portfolio constructed. The raw return of a share in a particular month is derived by computing the change in its Total Return Index on the Datastream database. Datastream does not have information of firms which were delisted during the sample period. The returns on these shares are calculated as:

$$R_{it} = \frac{(P_{it} - P_{i(t-1)}) + D_{it}}{P_{i(t-1)}}, \quad \dots (1)$$

where

$R_{it}$  = return on share  $i$  in period  $t$ ,

$D_{it}$  = the dividend on share  $i$  for which the last date to register fell within period  $t$ ,

$P_{it}$  = the price of share  $i$  at the end of period  $t$ .

The monthly closing price of these shares and any dividend declared are obtained from the I-Net Bridge database. The LDR or ex-dividend date, as opposed to the payment date, is used for timing the inclusion of the dividend. This compensates the shareholders for the drop in price occurring on the ex-dividend date by the amount of the dividend owing to them. This method is consistent with that suggested by Van Rensburg, Slaney and Hardy (1997).

Secondly, the market-adjusted return for each of the constructed portfolios is calculated. It is given by  $R_{pt} - R_{mt}$  for portfolio  $p$  in month  $t$ , where  $R_{mt}$  is the month  $t$  return on the All-share Index (ALSI). The returns for the indices used in this study are obtained by computing the change in their Total Return data on I-Net Bridge.

Thirdly, two measures of risk-adjusted evaluation of each portfolio are performed. Initially, Jensen's (1968) alpha is employed. It is based on the theoretical framework of the Capital Asset Pricing Model (CAPM) and is calculated as the difference between what a portfolio actually earns and what it is expected to earn given its level of systematic risk. The alpha ( $\alpha_p$ ) is estimated as the intercept term in the following monthly time-series:

$$R_{pt} - R_{ft} = \alpha_p + \beta_p (R_{mt} - R_{ft}) + \varepsilon_{pt}, \quad \dots (2)$$

where

$R_{ft}$  = the risk-free rate in period  $t$ ,

$\alpha_p$  = the estimated alpha or intercept term,

$\beta_p$  = the estimated beta of the portfolio,

$R_{mt}$  = the return on the ALSI during period  $t$ , and

$\varepsilon_{pt}$  = the random error term for portfolio  $p$  in period  $t$ .

<sup>2</sup>The first appearance of a company or the reappearance of a previously dropped company on the database is considered as a change in analysts' recommendation.

**Table 2: Transition matrix: Number of changes in analysts' consensus recommendations**

From Recommendation of:	To Recommendation of:				
	Buy	Hold	Sell	Total	Dropped
Buy	1645	260	1	1906	69
Hold	226	2721	32	2979	115
Sell	1	16	111	128	20
Total	1872	2997	144	5013	
Reappearance (previously dropped from database)	19	55	4		
First appearance	15	14	0		

This table shows the number of changes in or recurrences of the analysts' consensus recommendations over the 38 months from March 2000 to April 2003. The first row displays the recurrence of the buy recommendations and all the changes from a recommendation of buy to hold and sell. The last column shows all the buy, hold and sell recommendations that are dropped from the database of analysts' consensus recommendations over the sample period. The last two rows report the recommendations for firms that: (1) were previously dropped and reappear later and (2) are first covered by brokers.

Following van Rensburg and Slaney (1997), a two-factor APT model is subsequently used and the factors identified are the Resources Index (J000) and the All-share ex Resources Index (J250). The performance of each portfolio is further evaluated, using the following time-series regression:

$$R_{pt} - R_{ft} = \alpha_p + \beta_{1p}(R_{RESIt} - R_{ft}) + \beta_{2p}(R_{ALSI\ ex\ RESIt} - R_{ft}) + \varepsilon_{pt}, \quad \dots (3)$$

where

$\beta_{1p}$  = the sensitivity of return of the portfolio to the Resources Index,

$\beta_{2p}$  = the sensitivity of return of the portfolio to the All-share ex Resources Index,

$R_{RESIt}$  = the return on the Resources Index during period t,

$R_{ALSI\ ex\ RESIt}$  = the return on the All-share ex Resources Index during period t, and

In using the above-mentioned asset pricing models, the prevailing risk-free rate for the relevant period is needed. In estimating the abnormal return (1-month) achieved by a portfolio, the effective 1-month rate on a 3-month NCD is used.

The methodology used by this study follows a calendar-time perspective, very similar to the one used by Barber *et al.* (2001). Since the data is of a monthly nature, any portfolio rebalancing is assumed to occur at the end of the month. This implies a conservative bias to the results. After determining the composition

of each portfolio as at the end of month t, the equally-weighted return for the month t+1 is computed.

In determining the value of analysts' consensus recommendations, the arithmetic and geometric means of the monthly raw returns of portfolios constructed on the basis of each class of recommendations are calculated. The monthly geometric mean percentage raw return for each category of recommendations is annualised and compared to the annualised geometric mean percentage return achieved by the ALSI over the same period. The market-adjusted return of each portfolio is then computed for each month. The arithmetic means of the raw and market-adjusted returns for the buy, hold and sell portfolios are calculated over the sample period and statistical tests are performed to determine whether they are significantly different from zero. Finally, the risk-adjusted performance of each portfolio over the sample period is determined by estimating the resulting alpha from the CAPM and the two-factor APT model respectively.

Likewise, for each of the 18 portfolios (see tables 4 to 7) formed as a result of considering the changes in analysts' recommendations, the equally-weighted raw return is computed each month. The market-adjusted return of each portfolio is then calculated. The average raw and market-adjusted returns of each portfolio are then determined by working out the arithmetic mean of all the months for which a return has been calculated. Statistical tests are performed to determine whether the mean raw and market-adjusted returns are significantly different from zero. Also, the risk-adjusted performance of each portfolio based on the number of months for which each portfolio has observations is determined by estimating the resulting

alpha from the CAPM and the two-factor APT model respectively.

#### 4. RESULTS

The percentage monthly returns earned on the basis of analysts' consensus recommendations over the sample period are provided in Table 3. Student's t-statistic, testing whether the monthly returns of each class of recommendations are significantly different from zero (at a 90% confidence level), is displayed in brackets below each return. The mean raw return achieved by analysts' consensus buy, hold and sell recommendations over the sample period is 0,83%, 0,19% and 0,46% respectively. As expected, the portfolio of buy recommendations yields the highest mean raw return. Contrary to expectation, the portfolio of sell recommendations outperforms the portfolio of hold recommendations. The buy, hold and sell consensus portfolios do not achieve a mean raw returns, which are significantly different from zero.

The performance of the analysts' consensus recommendation is assessed relative to the market by calculating the market-adjusted return for each category of recommendations. The mean market-adjusted return is 0,09%, -0,54% and -0,28% for the buy, hold and sell list respectively. Consistent with the information inherent in analysts' recommendations, the buy recommendations outperform the market, while the sell recommendations achieve a return inferior to the market. However, the hold recommendations,

which are expected not to perform significantly different from the market, not only yield a negative market-adjusted return but also result in a higher negative market-adjusted return than the sell recommendations. Again when testing for statistical significance, none of the buy, hold and sell recommendations earn statistically significant mean market-adjusted returns.

Table 3 also displays the risk-adjusted return (or alpha) for each type of analysts' consensus recommendations, computed under the CAPM and the two-factor APT model respectively. The alphas estimated under the CAPM are 0,06%, -0,58% and -0,32% for the buy, hold and sell recommendations respectively. As such, only the buy recommendations result in a positive abnormal return and both the hold and sell recommendations yield a negative abnormal return, which is relatively higher for the hold recommendations. Alphas estimated under the CAPM are not found to be significantly different from zero. The alphas, estimated under the two-factor APT model, show a rather different abnormal return performance. The buy recommendations earn a statistically significant abnormal return of 0,99%. The hold recommendations gain a positive abnormal return of 0,17% and the sell recommendations yield a negative abnormal return of -0,73%. The alphas of analysts' consensus hold and sell recommendations are not significantly different from zero.

**Table 3: Percentage monthly returns earned on the basis of analysts' consensus recommendations**

Portfolio	Mean Raw Return	Mean Market-adjusted Return	Intercept from	
			CAPM	Two-factor APT
Buy	0,83 (0,87)	0,09 (0,13)	0,06 (0,10)	<b>0,99</b> <b>(2,05)</b>
Hold	0,19 (0,22)	-0,54 (-0,90)	-0,58 (-1,09)	0,17 (0,37)
Sell	0,46 (0,24)	-0,28 (-0,15)	-0,32 (-0,18)	-0,73 (-0,36)

This table displays the percentage monthly returns achieved by acting on portfolios formed on the basis of analysts' consensus recommendations. The mean raw return is the arithmetic mean of the monthly returns achieved by each category of recommendations. The market-adjusted return is the arithmetic mean of the raw returns less the return on the All-share Index. The CAPM intercept is the estimated intercept from a time-series regression of the portfolio return ( $R_p - R_f$ ) on the market (ALSI) excess return ( $R_m - R_f$ ). The intercept for the APT two-factor model is the estimated intercept from a time-series regression of the portfolio return on the excess return of (1) the All-share ex-Resources Index (2) the Resources Index as independent variables. Each t-statistic (displayed in brackets below each return) relates to the null hypothesis that the associated return is zero. The returns and respective t-statistics that are significant at a level of 10 percent or better are shown in bold.

Therefore, analysts' consensus buy recommendations yield a positive return, whether or not the return is adjusted for risk. In addition, if the two-factor APT model is the most appropriate asset pricing model to use (van Rensburg and Slaney, 1997), the buy recommendations earn a significant positive monthly abnormal return of 0.99% over the sample period considered. Unlike the CAPM, the two factor APT model recognises the FINDI-RESI dichotomy on the JSE. Equally weighted portfolios are likely to be tilted towards FINDI shares as the RESI shares are relatively few in number and large in size. As, it happened, the RESI also outperformed the FINDI over the sample period. Thus, under the CAPM it is possible that the equally weighted portfolios returns relative to the market are influenced not only by stock selection but also due to the sectoral composition of the portfolio that arises as a consequence of its equally weighted method of construction. By adjusting for FINDI and RESI risk the two-factor APT avoids the possibility of this type of bias. This type of consideration is relevant for a broad range of studies that use JSE data.

Little can be inferred by looking at the risk-adjusted and unadjusted returns of the hold and sell recommendations. Besides yielding inconsistent results under each asset pricing model, the hold and sell recommendations achieve returns that are not significant enough to induce any conclusion. The sell portfolio also comprises of a relatively small sample.

Each category of analysts' consensus recommendations in a given month is made up of the (1) recurrences of (2) changes from other categories (3) reappearances after being previously dropped and (4) first appearances of the recommendation in the database. Analysts also frequently discontinue their recommendations of certain shares. Apart from assessing the value of each category as a whole, this study investigates whether any valuable investment strategy emanates from acting exclusively on changes in or recurrences of analysts' consensus recommendations.

The percentage raw and market-adjusted returns achieved by acting on changes in or recurrences of analysts' consensus recommendations are provided in Table 4 and 5 respectively. In addition, the risk-adjusted returns estimated under the CAPM and a two-factor APT model and realised by acting on changes in or recurrences of analysts' consensus recommendations, are displayed in Table 6 and Table 7. For each of the 18 categories, a one, two and three-month holding period return is computed with the intention of analysing the 'post-event' effect. The t-

statistic, based on the null hypothesis that the raw or market-adjusted or abnormal return is zero, is displayed in brackets below each return. The returns and respective t-statistics, of those categories of changes in or recurrences of analysts' consensus recommendations that are significant at a level of 10% or better, are shown in bold. For categories with insufficient data points to test for the consistency of the returns over time, 'n/a' is displayed.

The 'Buy-Buy' portfolio (recurrence of a buy recommendation) achieves a positive market-adjusted return, which increases uniformly from 0,10% for a one-month holding period to 0,58% for a three-month holding period. The alpha estimated under CAPM displays a similar pattern of increasing abnormal return of 0,11%, 0,24% and 0,58% over the one, two and three-month holding periods respectively. Neither the market-adjusted returns nor the CAPM alphas are significantly different from zero. If the risk-adjusted return is estimated under the two-factor APT model, the 'Buy-Buy' portfolio earns an alpha of -0,60% for a one-month holding period but for the two and three-month holding periods, positive alphas of 2,22% and 3,74% are estimated and found to be significantly different from zero.

The market-adjusted return and the alpha estimated under CAPM for the 'Hold-Hold' portfolio (recurrence of a hold recommendation) decreases uniformly from -0,47% and -0,46% respectively for a one-month holding period to -0,12% for a three-month holding period. Neither the market-adjusted return nor the CAPM alphas are tested significantly different from zero. In estimating the risk-adjusted return for the one, two and three-month holding periods under the two-factor APT model, alphas of -1,99%, 1,28% and 2,47% are obtained and each alpha is found to be significantly different from zero.

The 'Sell-Sell' portfolio (recurrence of a sell recommendation) earns positive market-adjusted and risk-adjusted (under CAPM) returns that increase uniformly over the three holding periods. Moreover, for the two and three-month holding periods, the positive returns are significantly different from zero. Similarly, the risk-adjusted return of 4,71% estimated under the two-factor APT for the 'Sell-Sell' portfolio is significantly positive for a one-month holding period. The two and three-month holding periods result in positive alphas that are not significantly different from zero.

**Table 4: Raw percentage returns achieved by acting on changes in or recurrences of analysts' consensus recommendations**

Holding Period	One-month				Two-month				Three-month			
	To Recommendation of:				To Recommendation of:				To Recommendation of:			
	Buy	Hold	Sell	Dropped	Buy	Hold	Sell	Dropped	Buy	Hold	Sell	Dropped
Buy	1,02 (1,11)	-1,26 (-1,15)	3,85 (n/a)	-0,25 (-0,08)	2,06 (1,59)	-1,39 (-0,79)	3,85 (n/a)	8,44 (1,23)	<b>3,28</b> <b>(2,22)</b>	0,01 (0,01)	111,54 (n/a)	8,21 (1,24)
Hold	1,25 (0,81)	0,46 (0,50)	<b>-6,05</b> <b>(-1,83)</b>	0,83 (0,42)	1,10 (0,59)	1,44 (1,11)	<b>-9,53</b> <b>(-1,94)</b>	1,95 (0,80)	0,55 (0,25)	<b>2,59</b> <b>(1,73)</b>	-3,34 (-0,59)	0,31 (0,08)
Sell	0,00 (n/a)	1,93 (0,38)	3,52 (1,54)	8,78 (1,27)	3,85 (n/a)	3,94 (0,70)	<b>8,20</b> <b>(2,40)</b>	-0,91 (-0,14)	3,85 (n/a)	11,95 (0,83)	<b>10,50</b> <b>(2,47)</b>	3,08 (0,27)
Reappearance (Previously dropped from database)	2,27 (0,50)	0,22 (0,09)	-10,03 (-0,99)		2,66 (0,38)	-0,01 (0,00)	-19,82 (-1,04)		2,06 (0,24)	4,17 (0,70)	-16,80 (-0,71)	
First appearance	-3,93 (-0,89)	-0,54 (-0,14)	n/a (n/a)		-4,75 (-1,04)	6,48 (0,90)	n/a (n/a)		-3,71 (-0,70)	5,04 (0,71)	n/a (n/a)	

This table shows the one, two and three-month percentage raw returns achieved by acting on changes in or recurrences of analysts' consensus recommendations. Raw returns are the arithmetic mean of the monthly returns (share price appreciation or depreciation plus any dividend declared) over the period March 2000 to April 2003. The first row displays the one, two and three-month raw percentage returns associated with the recurrence of the buy recommendations and all the changes from a recommendation of buy to hold, sell or discontinuation of coverage. The last two rows report one, two and three-month raw percentage returns associated with recommendations for firms that: (1) were previously dropped and reappear later and (2) are first covered by brokers. Portfolios are rebalanced at the end of each month. t-statistics of the returns (displayed in brackets below each return) are calculated for each category of changes in or recurrences of analysts' consensus recommendations with sufficient observations over the sample period. Each t-statistic is based on the hypothesis that the mean return is zero and return that is significant at a level of 10 percent or better is shown in bold. For those categories of changes in or recurrences of analysts' consensus recommendations that have no or insufficient data points, 'n/a' has been displayed.

**Table 5: Market-adjusted percentage returns achieved by acting on changes in or recurrences of analysts' consensus recommendations**

Holding Period	One-month				Two-month				Three-month			
	To Recommendation of:				To Recommendation of:				To Recommendation of:			
	Buy	Hold	Sell	Dropped	Buy	Hold	Sell	Dropped	Buy	Hold	Sell	Dropped
Buy	0,10 (0,14)	-2,19 (-2,39)	5,70 (n/a)	-1,84 (-0,6)	0,23 (0,21)	-3,22 (-2,31)	7,07 (n/a)	5,32 (0,81)	0,58 (0,40)	-2,69 (-1,27)	118,80 (n/a)	3,87 (0,57)
Hold	0,33 (0,27)	-0,47 (-0,74)	-5,25 (-1,72)	0,48 (0,30)	-0,73 (-0,53)	-0,39 (-0,39)	-10,49 (-2,21)	2,04 (1,01)	-2,16 (-1,09)	-0,12 (-0,10)	-5,75 (-1,02)	-0,46 (-0,12)
Sell	-9,84 (n/a)	1,16 (0,23)	2,59 (1,12)	9,21 (0,40)	-3,95 (n/a)	2,56 (0,55)	6,38 (1,87)	-1,85 (-0,27)	-2,44 (n/a)	9,66 (0,68)	7,80 (1,94)	0,31 (0,03)
Reappearance (previously dropped from database)	2,45 (0,55)	-1,39 (-0,72)	-14,58 (-22,10)		1,83 (0,33)	-2,37 (-0,65)	-21,05 (-2,42)		-0,07 (-0,01)	-0,37 (-0,06)	-17,60 (-2,67)	
First appearance	-5,43 (-1,23)	-2,22 (-0,51)	n/a (n/a)		-8,05 (-1,81)	1,79 (0,24)	n/a (n/a)		-10,46 (-1,69)	-2,52 (-0,31)	n/a (n/a)	

This table shows the one, two and three-month percentage market-adjusted returns achieved by acting on changes in or recurrences of analysts' consensus recommendations. Market-adjusted returns are the arithmetic mean of the raw returns less the return on the All-share Index over the period March 2000 to April 2003. The first row displays the one, two and three-month market-adjusted percentage returns associated with recurrence of the buy recommendations and all the changes from a recommendation of buy to hold, sell or discontinuation of coverage. The last two rows report one, two and three-month market-adjusted percentage returns associated with recommendations for firms that: (1) were previously dropped and reappear later and (2) are first covered by brokers. Portfolios are rebalanced at the end of each month. t-statistics of the returns (displayed in brackets below each return) are calculated for each category of changes in or recurrences of analysts' consensus recommendations with sufficient observations over the sample period. Each t-statistic is based on the hypothesis that the mean return is zero and return that is significant at a level of 10 percent or better is shown in bold. For those categories of changes in or recurrences of analysts' consensus recommendations that have no or insufficient data points, 'n/a' has been displayed.

**Table 6: Risk-adjusted percentage returns, estimated under CAPM, achieved by acting on changes in or recurrences of analysts' consensus recommendations**

Holding Period From Recommendation of:	One-month To Recommendation of:				Two-month To Recommendation of:				Three-month To Recommendation of:			
	Buy	Hold	Sell	Dropped	Buy	Hold	Sell	Dropped	Buy	Hold	Sell	Dropped
Buy	0,11 (0,18)	<b>-2,18</b> <b>(-2,55)</b>	n/a (n/a)	-1,63 (-0,52)	0,24 (0,26)	<b>-3,21</b> <b>(-2,37)</b>	n/a (n/a)	5,08 (0,75)	0,58 (0,50)	-2,69 (-1,46)	n/a (n/a)	4,96 (0,73)
Hold	0,33 (0,27)	-0,46 (-0,84)	-5,38 (-1,66)	0,47 (0,28)	-0,73 (-0,53)	-0,37 (-0,44)	<b>-10,72</b> <b>(-2,21)</b>	1,79 (0,85)	-2,16 (-1,15)	-0,12 (-0,12)	-5,88 (-1,04)	-1,29 (-0,35)
Sell	n/a (n/a)	1,08 (0,21)	2,61 (1,15)	9,14 (1,29)	n/a (n/a)	2,66 (0,56)	<b>6,39</b> <b>(1,89)</b>	-2,65 (-0,39)	n/a (n/a)	9,52 (0,65)	<b>7,80</b> <b>(1,92)</b>	0,58 (0,05)
Reappearance (Previously dropped from database)	1,95 (0,42)	-1,27 (-0,67)	-14,82 (n/a)		2,57 (0,47)	-2,34 (-0,62)	-20,30 (n/a)		-0,12 (-0,02)	0,47 (0,08)	-16,66 (n/a)	
First appearance	-5,12 (-1,13)	-1,37 (-0,34)	n/a (n/a)		-7,43 (-1,61)	4,33 (0,53)	n/a (n/a)		-6,32 (-1,10)	5,36 (0,64)	n/a (n/a)	

This table shows the one, two and three-month percentage risk-adjusted returns achieved by acting on changes in or recurrences of analysts' consensus recommendations. The risk-adjusted return (alpha), based on the CAPM, is given by the Jensen's differential return measure. It is represented by the estimated intercept from a time-series regression of the portfolio return (Rp-Rf) on the market (ALSI) excess return (Rm-Rf). The first row displays the one, two and three-month risk-adjusted percentage returns associated with recurrence of the buy recommendations and all the changes from a recommendation of buy to hold, sell or discontinuation of coverage. The last two rows report the one, two and three-month risk-adjusted percentage returns associated with recommendations for firms that: (1) were previously dropped and reappear later and (2) are first covered by brokers. Portfolios are rebalanced at the end of each month. t-statistics (displayed in brackets below each alpha) are calculated for each category of changes in or recurrences of analysts' consensus recommendations with sufficient observations over the sample period. Each t-statistic is based on the hypothesis that the estimated alpha is zero and alpha that is significant at a level of 10 percent or better is shown in bold. For those categories of changes in or recurrences of analysts' consensus recommendations that have no or insufficient data points, 'n/a' has been displayed.

**Table 7: Risk-adjusted percentage returns, estimated under APT, achieved by acting on changes in or recurrences of analysts' consensus recommendations**

Holding Period From Recommendation of:	One-month To Recommendation of:				Two-month To Recommendation of:				Three-month To Recommendation of:			
	Buy	Hold	Sell	Dropped	Buy	Hold	Sell	Dropped	Buy	Hold	Sell	Dropped
Buy	-0,60 (-0,77)	<b>-2,39</b> <b>(-2,51)</b>	n/a (n/a)	-0,50 (-0,15)	<b>2,22</b> <b>(3,55)</b>	-1,29 (-0,98)	n/a (n/a)	9,93 (1,46)	<b>3,74</b> <b>(4,65)</b>	1,34 (0,77)	n/a (n/a)	8,37 (1,10)
Hold	-0,44 (-0,30)	<b>-1,99</b> <b>(-2,68)</b>	-3,83 (-1,11)	0,79 (0,42)	1,20 (0,90)	<b>1,28</b> <b>(1,96)</b>	-8,32 (-1,54)	2,19 (0,86)	0,63 (0,31)	<b>2,47</b> <b>(3,07)</b>	-4,78 (-0,65)	2,42 (0,52)
Sell	n/a (n/a)	-4,24 (-0,63)	<b>4,71</b> <b>(2,68)</b>	<b>13,57</b> <b>(2,57)</b>	n/a (n/a)	2,30 (0,40)	4,50 (1,18)	7,66 (1,18)	n/a (n/a)	17,86 (0,99)	4,95 (1,04)	6,04 (0,31)
Reappearance (Previously dropped from the database)	<b>8,36</b> <b>(2,20)</b>	0,70 (0,34)	n/a (n/a)		10,82 (1,52)	-0,52 (-0,12)	n/a (n/a)		<b>26,10</b> <b>(2,05)</b>	1,39 (0,16)	n/a (n/a)	
First appearance	-4,47 (-1,00)	-2,04 (-0,39)	n/a (n/a)		-5,23 (-1,10)	1,32 (0,14)	n/a (n/a)		0,05 (0,01)	6,73 (0,71)	n/a (n/a)	

This table shows the percentage risk-adjusted returns (alpha), estimated under a two-factor APT model, achieved by acting on changes in or recurrences of analysts' consensus recommendations. The alpha is the estimated intercept from a time-series regression of the portfolio return on the excess return of (1) the All-share ex-Resources Index (2) the Resources Index as independent variables. The first row displays the one, two and three-month percentage risk-adjusted returns associated with recurrence of the buy recommendations and all the changes from a recommendation of buy to hold, sell or discontinuation of coverage. The last two rows report the one, two and three-month percentage risk-adjusted returns associated with recommendations for firms that: (1) were previously dropped and reappear later and (2) are first covered by brokers. Portfolios are rebalanced at the end of each month. t-statistics (displayed in brackets below each alpha) are calculated for each category of changes in or recurrences of analysts' consensus recommendations with sufficient observations over the sample period. Each t-statistic is based on the hypothesis that the estimated alpha is zero and alpha that is significant at a level of 10% or better is shown in bold. For those categories of changes in or recurrences of analysts' consensus recommendations that have no or insufficient data points, 'n/a' has been displayed.

Each category of recurrences (reiterations of a firm's recommendation over two successive months) results in significant returns under at least one measure of performance. Although the 'Hold-Hold' portfolio achieves a negative risk-adjusted return under the two-factor APT model for a one-month holding period, an investor would have earned positive abnormal returns of 1,28% and 2,47% respectively over the two and three-month holding periods. However, by acquiring shares for which there is a recurrence of buy recommendations, the investor would have achieved higher positive abnormal returns of 2,22% and 3,74% respectively over the two and three-month holding periods. Intriguingly, the 'Sell-Sell' portfolio achieves positive market-adjusted and abnormal returns, as estimated under CAPM, for the two and three-month holding periods and positive abnormal return estimated under the two-factor APT model for a one-month holding period.

Generally, it is noted that the market-adjusted returns and the risk-adjusted returns estimated under CAPM are consistent with each other over the three holding periods. The risk-adjusted return, estimated under the two-factor APT model shows rather different results for each category of recurrences discussed above. The same discrepancy is detected when investigating the changes in analysts' consensus recommendations.

The market-adjusted returns and the CAPM alphas earned by the 'Buy-Hold' portfolio (change from a buy to a hold recommendation) are -2,19% and -2,18% respectively for a one-month holding period and -3,22% and -3,21% respectively for a two-month holding period. For a three-month holding period, both measures of return yield -2,69%. The market-adjusted returns and CAPM alphas are significantly different from zero only for the one and two-month holding periods. On the other hand, the alpha estimated under the two-factor APT model is -2,39% and -1,29% respectively for the one and two-month holding periods. For a three-month holding period, the abnormal return is 1,34%. Only the negative alpha of -2,39% for a one-month holding period is statistically significant.

The 'Hold-Buy' portfolio (change from a hold to a buy recommendation) achieves identical market-adjusted returns and CAPM alphas of 0,33%, -0,73% and -2,16% for the one, two and three-month holding periods respectively. However, the alphas estimated under the two-factor APT model are -0,44%, 1,20% and 0,63% for each of the three holding periods. Each measure of performance yields returns for the 'Hold-Buy' portfolio that are not significantly different from zero.

The trend in the performance of the 'Hold-Sell' portfolio (change from a hold to a sell recommendation) over the three holding periods is consistent for the three measures of returns. The portfolio generally achieves

negative return which first increases from a one-month to a two-month holding period before decreasing over a three-month holding period. Only the market-adjusted return of -10,49% for a two-month holding period is significantly different from zero.

Over the one, two and three-month holding periods, the 'Sell-Hold' portfolio (change from a sell to a hold recommendation) gains market-adjusted returns of 1,16%, 2,56% and 9,66% respectively. A similar increasing positive pattern is observed when the risk-adjusted return is estimated under CAPM. The risk-adjusted return estimated under the two-factor APT model is -4,24%, 2,30% and 17,86% for the one, two and three-month holding periods respectively. Neither the market-adjusted nor the risk-adjusted returns are significantly different from zero for any of the three holding periods.

As depicted in Table 2, both the 'Buy-Sell' portfolio (change from a buy to a sell recommendation) and the 'Sell-Buy' portfolio (change from a sell to a buy recommendation) have only one observation over the sample period, implying that analysts seldom change a buy to a sell recommendation or vice versa. Consequently, the computation of the market-adjusted returns for these portfolios is rendered meaningless and it is also impossible to compute risk-adjusted returns.

Although none of the upgrade portfolios produces significant returns, it can be observed that in general, an investor will earn higher returns by acting on changes in recommendations (both upgrades and downgrades) instead of strictly following analysts' consensus recommendations of brokerage houses. This is consistent with the findings of Elton, Gruber and Grossman (1986), Womack (1996) and Brav and Lehavy (2003). The downgrade portfolios, on the other hand, provide significant results, which can be replicated in viable investment strategies. More specifically, shares with a change from a hold to a sell recommendation achieve a market-adjusted return of -10,49% and an abnormal return estimated under CAPM of -10,72% for a two-month holding period. In addition, shares with a change from a buy to a hold recommendation, constantly earn negative market-adjusted and risk-adjusted returns for a one-month holding period [-2,19% and -2,18% & -2,39% respectively]. A two-month holding period generates significantly greater negative market-adjusted and risk-adjusted (under CAPM only) returns for shares with a change from a buy to a hold recommendation.

In addition, three portfolios of shares for which a buy, hold and sell recommendation has been discontinued are formed on a monthly basis and are referred to as 'Buy-Dropped', 'Hold-Dropped' and 'Sell-Dropped' respectively. The 'Buy-Dropped' and 'Hold-Dropped' portfolios do not provide a significant return in any of the three holding periods irrespective of whether the

market-adjusted or the risk-adjusted returns are computed. Under each measure of performance, a negative return is observed for a one-month holding period, followed by a positive return for a two-month and a smaller positive return for a three-month holding period. For the 'Sell-Dropped' portfolio, the market-adjusted return is 9,21%, -1,85% and 0,31% respectively over the one, two and three-month holding periods. Similarly, the one, two and three-month holding periods produce alphas estimated under the CAPM and the two-factor APT model of 9,14%, -2,65% and 0,58%, and 13,57%, 7,66% and 6,04% respectively. Only the two-factor APT one-month's alpha of 13,57% is statistically significant.

Moreover, all recommendations that are dropped from the database and reappear in a later month are placed in separate buy, hold and sell portfolios. Those recommendations that are dropped and reappear as a buy recommendation achieve positive market-adjusted and risk-adjusted (CAPM) return for a one and two-month holding period. Both measures of returns result in a negative value over a three-month holding period. Significant risk-adjusted returns of 8,36% and 26,10% for the one and three-month holding periods respectively are estimated under the two-factor APT model. Those recommendations that reappear as a hold earn negative market-adjusted returns over the three holding periods. CAPM alphas of -1,27%, -2,37% and 0,47% are estimated for the one, two and three-month holding periods respectively. Using the two-factor APT model, alphas of 0,70%, -0,52% and -1,39% are approximated for the one, two and three-month holding periods respectively. None of the returns computed for those recommendations that reappear as a hold are significant at a 90% confidence level. Those recommendations that are dropped from the database and reappear as a sell recommendation achieve a significant market-adjusted return of -14,58% for a one-month holding period. Due to only four recommendations reappearing as a sell (with three occurring in the same month), it is not possible to perform statistical test on the risk-adjusted return estimated under CAPM and no approximation of the risk-adjusted return can be made using the two-factor APT model.

Furthermore, three different portfolios comprising of shares of companies that are first listed on the database are formed on a monthly basis. The aim is to establish the relative performance of shares for which coverage has just been initiated. Shares that have been introduced in the database as buy recommendations earn negative market-adjusted return for each of the three holding periods. However, only the market-adjusted return of -8,05% over a two-month holding period is statistically significant. While the alpha estimated under CAPM is -5,12%, -7,43% and -6,32% for the one, two and three-month holding periods respectively, that estimated under the two-factor APT model is -4,47%, -5,23% and 0,05%. The

risk-adjusted returns are not statistically significant. Those shares that appear for the first time as a hold recommendation attain negative return over a one-month holding period under each measure of performance. Over a two-month holding period though, each measure of returns yields a positive value. Over a three-month holding period, the market-adjusted return is -2,52% and each asset pricing model gains a positive alpha. None of the returns in each holding period are significantly different from zero. There has not been a single share that appears for the first time on the database of analysts' consensus recommendations over the sample period, with a sell recommendation.

In summary, shares that reappear as a sell recommendation, after previously being dropped from the database earn a significant market-adjusted return of -14,58% over a one-month holding period. Although, this may indicate that analysts have the ability to identify shares that underperform, one must realise that there are only four instances where a share has reappeared as a sell recommendation in the database over the sample period (Table 2). On the other hand, by holding shares that reappear as a buy recommendation, an investor earns a significant alpha, estimated under the two-factor APT model of 8,36% for a one-month holding period. Holding the same portfolio of shares for a three-month holding period, an alpha of 26,10% is achieved, implying that shares which reappear as a buy recommendation, have worth lasting up to three month.

Shares for which a sell recommendation has been discontinued, surprisingly earn a positive abnormal return, approximated using the two-factor APT model, of 13,57% over a one-month holding period. Another unexpected finding relates to shares that are covered for the first time by analysts and appear as a buy recommendation. These shares yield a significant market-adjusted return over a two-month holding period of -8,05%. However these findings are based on a very small sample size.

## 5. CONCLUSION

This paper investigates whether the analysts' consensus recommendations from South African brokerage houses were of value to investors over the period from March 2000 to April 2003. If an investor strictly follows analysts' consensus recommendations of shares listed on the JSE, only the buy recommendations result in a significant alpha, estimated under a two-factor APT model of 0,99% over a one-month holding period. The hold and sell recommendations produce insignificant results under all performance measures. The implication for the potential investors in the stock exchange is not to base their investment decisions solely on the level of analysts' consensus recommendations.

Several investment strategies designed to take advantage of changes in or recurrences of analysts' consensus recommendations are investigated and they show considerably more promise. If an investor acts on the recurrences (reiterations of a firm's recommendation over two successive months) of hold and buy recommendations, positive two factor APT alphas of 2,47% and 3,74% respectively are earned over a three-month holding period. A high positive APT alpha is earned by holding shares for three months that reappear as a buy recommendation after previously being dropped from coverage. Shares that have reappeared as a sell recommendation earn a significant market-adjusted return of -14,58% for a one-month holding period. Both of the latter findings are based on small sample sizes.

Surprisingly, the recurrences of sell recommendations yield significantly positive abnormal returns over a three-month holding period. Shares for which a sell recommendation is discontinued, earn a significant positive alpha of 13,57% for a one-month holding period. Also, shares that are covered for the first time by analysts and appear as a buy recommendation yield a significant market-adjusted return over a two-month holding period of -8,05%. However, it should be noted that the above findings are also based on a very small sample.

It is found that an investor generally earns significantly higher returns by acting on *downgrades* instead of strictly following the level of South African stock-broking firms' analysts' consensus buy, hold and sell recommendations. Over a two-month holding period, shares with a change from a hold to a sell recommendation achieve an abnormal return of -10,72%. In addition, shares with a change from a buy to a hold recommendation also earn negative market-adjusted and abnormal returns over one and two-month holding periods.

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