
The market reaction to open market share repurchases announcements: The South African experience

1. INTRODUCTION

When companies plan their allocation of any surplus capital resources, they are faced with two major alternatives. They may decide to invest the funds in order to advance their business goals, which includes capital expenditure, retaining funds for working capital or engaging in acquisitions and mergers. On the other hand they may decide on returning cash to their claim holders through dividends, debt repayment or share buybacks. This study examines the market behaviour of companies announcing share repurchases.

Share repurchases have become an important financial policy for listed companies for the past twenty years in the United States. Bagwell and Shoven (1991) and Grullen and Michaely (2002) report that open market share repurchases have been the most popular method for companies to repurchase shares. The literature reveals several motives as to why firms might repurchase their own shares. The list includes tax benefits, distributing excess cash, and adjusting capital structure to avoid reduction in earnings caused by granting employee stock options.

Many managers, however, assert that the decision to embark on share repurchases is to signal to the market that their share prices are too low and hence their own shares are an excellent investment option (Dann (1983), Wansley, Lane and Sarkar (1989)). Several studies report evidence consistent with this managerial view of share price under valuation. A United States investigation of open market share repurchases by Ikenberry, Lakonishok, and Vermaelen (1995) found that the market's initial response to repurchase announcements is not complete. They report annualized abnormal performance of 12,1% over a four-year period following the announcement. For value stocks, where a stronger case can be made for under valuation, the annual abnormal return was 45,3% over the same post-announcement period. That is, open market repurchase announcements are good news for the stock market. This is known as the signalling hypothesis for open market repurchases.

Several studies, however, including papers on repurchases, find long-term return drifts following many different types of corporate transactions and suggest that the initial market reaction may be incomplete. These drifts are puzzling for they suggest that the economic benefit of repurchasing shares is not

immediate and that conclusions drawn from studies that focus narrowly on the short-term market reaction may not be complete. On the other hand, measuring long-term abnormal share returns is difficult as the results can be sensitive to the procedures used (Barber and Lyon (1997)). Other papers raise suspicion about studies that focus on long-term return drifts (e.g., Fama (1998) and Eckbo, Masulis, and Norli (2000)). The literature challenges the extent to which there is economic value to share repurchases beyond that recognized in the initial announcement.

This paper investigates the share market reaction to share repurchases by a sample of companies listed on the JSE. We first consider the initial market reaction. Consistent with prior studies, the mean market reaction to repurchase announcement is positive and suggests that shareholders generally benefit from this transaction. Yet focusing only on the initial announcement does not enable us to capture all the benefits accruing to shareholders from the share repurchase.

We also investigate the extent to which this initial reaction is not complete by considering the long-term abnormal returns following the share repurchase announcements. The largest abnormal returns are observed in high book-to-market companies; for low book-to-market companies no positive abnormal returns are observed. This result is consistent with the notion that investors are not fully responding to the news of share repurchase announcements for undervalued companies and that some portion of the long-term price drift reflects real information. This suggests that the long-term returns may provide some insights into a theory motivating share repurchases i.e., the equity under valuation hypothesis.

2. LITERATURE REVIEW

2.1 Share repurchase drivers

As noted earlier, there are many potential reasons why firms might wish to purchase their own shares. These include allowing shareholders the tax benefit of repurchases over that for dividends (Black (1976), Barclay and Smith (1988) and Stephens (2001)), paying out temporary cash flows (Jagannathan, Stephens and Weisbach (2000)), funding option programmes (Jolls (1998) and Weisbenner (1998)), or use as a takeover defense (Denis, 1990). However, signalling that the firm's shares are currently undervalued is the most commonly attributed motive for share repurchases.

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The signalling hypothesis has two primary forms. First, what we term the “earnings signalling” hypothesis, which suggests that announcement of a share repurchase signals unexpected future improvements in the firm’s earnings performance. This hypothesis is a variation of Miller and Rock’s (1985) dividend signalling argument. The firm’s promise to distribute cash flows is viewed as a positive signal of the future earnings potential of the firm. Alternatively, the signal could be that the firm’s shares are currently undervalued without implying any future earnings improvements. Comment and Jarrell (1991) suggest that firms have an incentive to repurchase their shares when their equity is likely to be undervalued. They also find that returns observed around announcement of a share repurchase are negatively correlated to share returns during the 60 days prior to announcement and positively correlated to the announcement size of the repurchase plan. Since firms with recent negative abnormal returns are more likely to be undervalued at the time of a repurchase announcement, this finding is generally viewed as supportive of the under valuation hypothesis.

Grullon and Michaely (2002) find a substitution effect between dividends and open market repurchases, and that firms are not reducing dividends and replacing them with repurchases. Instead, they find that large dividend-paying firms are repurchasing shares rather than increasing dividends and that much of the growth in popularity of share repurchases is due to this shift by large dividend-paying firms. Jagannathan *et al.* (2000) report that dividend-increasing firms are large, have higher payout ratios, have higher, more stable operating income, and higher levels of institutional ownership.

Jolls (1998) and Weisbenner (1998) suggest that much of the growth in popularity of share repurchases is due to increased use of stock options for incentive compensation. Share prices decrease when a stock goes ex-dividend decreasing the value of stock options, but repurchases actually enhance the value of stock options – share price generally increases at the repurchase announcement. Further, repurchases increase leverage, and consequently increase earnings variance and stock-price volatility.

Guay and Harford (2000) have demonstrated that the method used by managers to distribute cash flows reflect the nature of the underlying cash flow process and shapes investors’ expectations about the permanence of cash flow distributions. First, companies prefer repurchases to distribute cash that is primarily temporary, and use dividends for cash flows containing a larger permanent component. Second, the market recognizes this association and uses the announcement of a particular distribution method to update its belief about the permanence of past and contemporary cash flow fluctuations. Furthermore, share purchases provide valuable flexibility by allowing

managers to distribute temporary cash flows without committing to an increase in a recurring dividend.

Gordon (2001) investigated share repurchases on the JSE that in part covered a period before the formal approval of such transactions by the JSE Listings Requirements. This study investigated the market reaction to 18 companies that made share repurchases of 3 percent of their issued capital between July 1999 and January 2001. The market reacted favourably to the repurchase announcements as there was a consistent run-up in share prices leading up to the to the event day and continues for a period up to 15 days after the repurchase announcement. The overall evidence indicates that these share repurchase announcements convey information about the company and that the market responds positively to this signal.

Analyzing the share repurchases by South African companies, Le Roux (2006) found that South African companies prefer share repurchases to special dividends when distributing surplus cash to shareholders. Share repurchases are perceived to be the most tax effective way of distributing cash to shareholders. Local companies also regard a share repurchase to be safer for a company than paying a special dividend, as a consequence of companies being able to raise or lower the value of a repurchase more easily than adjusting a value of a special dividend.

Consistent with overseas trends, South African companies such as Anglo American PLC, that are benefiting from the commodities boom, are engaging in large scale repurchases of their shares. These companies are making a special effort to explain to their shareholders that due to the record prices earned by commodities, they have extra cash on hand that they are unable to invest profitably. In the short-term, there are a limited number of projects that meet their internal rates of return.

2.2 Signalling theory and hypothesis development

The explanation most widely discussed in finance literature is that corporate managers use repurchases to “signal” their optimism about the firm’s prospects to the market. There are two different versions of this “signalling” explanation (Grullon, 2000). The first version states that repurchases are intended to convey management’s expectation of future increases in the firm’s earnings and cash flow- optimism about the future value of the stock that is not shared by the market. The second version holds that managers are not attempting to convey new information to the market, but are instead expressing their disagreement with how the market is pricing their current performance. In either case, the firm’s management views the share as undervalued. The disagreement between the two versions is over the

cause of the discrepancy between price and fair value. In the first case, it is the company's inability (without the repurchase) to communicate its prospects convincingly to the market; in the second, it is the market's failure to reflect publicly available information in the current price representing market "inefficiency".

It is accepted that the firm's management is better informed about the company's true value than outside shareholders. This information "asymmetry" can lead to occasions where managers have good news about future profitability, yet prevailing share prices do not reflect this because investors have access only to public information. Consequently, the share can be priced below its intrinsic value. Of course, managers could try to eliminate the price discrepancy by simply telling investors whatever good news they have. Yet, economists argue that such simple announcements, in the absence of concrete evidence, are likely to lack credibility.

What can managers do to convey their private information in a credible way? There is a well-developed literature that argues that managers provide credible signals of their optimism about future earnings by engaging in actions, like share repurchase plans. For example Miller and Rock (1985) argue that managers anticipating better than expected earnings are more likely to distribute cash in advance to their shareholders, whether through dividends or share repurchases. According to this explanation, managers are willing to commit themselves to making these cash outflows now because they expect that future capital needs can be financed with anticipated increases in future earnings. In contrast, companies that foresee a decrease in earnings are less likely to take the same action because significant distributions to shareholders could not only force them to forgo profitable investment opportunities, but might also push them into financial distress.

The first version of the signalling theory would imply that share repurchasing firms should on average experience increases in future earnings and cash flows. Most studies of open market share repurchases report evidence of significant increases in operating performance and cash flows after repurchase announcements (Vermaelen (1981). Bartov (1991) and Dann, Masulis and Meyers (1991) showed that share repurchase announcements release information about the repurchasing companies' subsequent earnings performance and market risk levels. Hertzal and Jain (1991) found that analysts revised their earnings per share forecasts upwards after share repurchases announcements. They concluded that the results supported the signalling theory even though the positive correlation held only for the short-term.

There are however, some studies that contradict the hypothesis that managers announcing open market repurchases are signalling good news about future cash flows or earnings. The findings of a study by Grullon

(2000), for example, point to a reduction in earnings and profitability after repurchase announcements. A partial explanation for this finding was that many firms in the sample used their surplus cash to shrink the firm's asset and capital base. For many companies in mature or declining industries, the decision to shrink the firm by repurchasing shares may turn out to be an important value increasing strategy.

The second version of the signalling theory implies that managers are signalling their disagreement with how the market is pricing existing public information. With their intimate knowledge of the firm and its industry, a firm's managers are perhaps best positioned to recognize when market prices diverge from true value. This explanation is consistent with statements managers often make when announcing share repurchase programmes i.e., that the firm's shares are "undervalued" or "prices don't reflect the underlying value of the firm". Chan, Ikenberry, and Lee (2004) provide strong evidence that points to the undervaluation of shares for both value and growth firms as a strong motive for companies repurchasing their shares.

This study will test the following hypotheses to determine if managers use share repurchases to signal their optimism about their firm's prospects to the market:

H₁: The asymmetric information between managers and investors results in the under-valuation of company shares. Management's decision to distribute excess cash through open market share repurchases is an increasing function of perceived equity under valuation.

H₂: For share repurchases that are motivated by equity under valuation, the market appears to ignore much of the information conveyed through repurchase announcements and there is an under reaction to the initial announcement.

3. SAMPLE SELECTION AND RESEARCH METHODOLOGY

3.1 Sample selection

Share repurchases in South Africa were allowed on an informal basis from July 1999. The JSE amended its Listing Requirements and formally allowed share repurchases from October 2000. All open market share repurchases reported by companies listed on the JSE during the period October 2000 to March 2003 were considered for this investigation All open market share repurchase announcements are examined without regard to whether the programmes were actually completed. The following criteria were used to construct the sample:

1. The number of shares authorized for repurchase must have been known at the announcement date.

2. The company must not have had any other announcement during the 20 days before and 20 days after the share repurchase announcement.
3. The company must have complete daily share price data available from 180 days before the announcement to 20 days after the announcement.
4. The company does not reduce its dividends during the year of the announcement of the share repurchase. The purpose of this exclusion is to ensure that companies are not just substituting share repurchases for dividends (Grullon and Michaely, 2002).

A total of 117 share repurchase announcements met the criteria and were included in the final sample for this investigation. The data related to the repurchase announcements were obtained from *Reuters News*, which provides selected news service stories from *Business Day* and other financial publications. This publication was used to identify news related to repurchase announcements during the period of the investigation. The announcement dates were obtained from *Business Day* and the database of JSE SENS, which commenced providing company specific announcements from March 1998. The data required in respect to company size, book-to-market data, share prices of repurchasing companies and the JSE All Share Index were obtained from the McGregor/BFA Financial Analysis (McG/BFA) and I-NET Bridge databases. All data required to perform the OLS regression were also obtained from these sources.

3.2 Research methodology

The event study methodology developed by Brown and Warner (1985) is used to examine the excess returns around the announcement day. An estimation period from day -180 to day -21 is used to calculate the parameters, A_i and B_i , of the following market model:

$$R_{it} = A_i + B_i R_{mt} + E_{it} \quad \dots (1)$$

where R_{it} is the rate of return of the share of the repurchasing company i on day t , adjusted for dividends. R_{mt} is the equal-weighted market rate of return on day t , and also adjusted for dividends. B_i is the estimated market risk of share i . A_i is the estimated intercept. E_{it} is the error term on day t ; $E(E_{it}) = 0$. The estimated parameters, B_i and A_i , are used to calculate the excess returns, E_{it} from day -20 to day 20 for each share as follows:

$$E_{it} = R_{it} - A_i - B_i R_{mt} \quad \dots (2)$$

To test the statistical significance of these excess returns, we calculate the following statistics:

$$AR_t = \frac{1}{N} \sum_{i=1}^N E_{it} \quad \dots (3)$$

$$CAR = \sum_{t=-D}^D AR_t \quad \dots (4)$$

where

AR_t is the average of excess returns of all repurchasing companies on a given day t ; CAR is the cumulative average of excess returns from day $-D$ to day D , and N is the number of companies.

Precautions must be taken when calculating the long-term performance because the results can be sensitive to the procedures used (Chopra, Lakonishok, and Ritter (1992)). Therefore, two different approaches are followed. The first is the more common technique based on cumulative abnormal returns (CARs) relative to some benchmark. The second approach calculates long-term abnormal performance assuming a buy-and-hold strategy. For both these methods, abnormal returns are calculated relative to four benchmarks: the JSE equal and value weighted indices, a size based benchmark, and a size and book-to-market based benchmark. The use of the book-to-market benchmark is motivated by the findings of Fama and French (1992) who suggested that it can be used as a proxy for some underlying risk related to the well known "size effect". Furthermore, Auret and Sinclair (2006) have shown that the book-to-market ratio has a strong role in explaining share returns on the JSE.

3.2.1 The CAR approach

Using the CAR approach abnormal returns are calculated each month relative to a benchmark, and then aggregated over time. This procedure assumes monthly rebalancing, with sample companies receiving equal portfolio weights each month. The abnormal performance is not based on compounded returns. Furthermore, abnormal performance is measured using the returns to all companies existing in a given month, and even those that eventually depart the sample are included.

To calculate abnormal returns adjusted for size, we form ten sized-based portfolios at the end of April each year, using all companies listed on the JSE. Monthly returns are calculated for these ten portfolios over the next year, assuming equal weighting. These returns are then used as benchmarks to measure abnormal performance. Each month, abnormal returns are calculated for each repurchase company relative to its respective benchmark, CARs are then calculated by summing the monthly abnormal returns over time.

To calculate abnormal returns controlling for both size and book-to-market, each of the ten size deciles

discussed above is further sorted by book-to-market ratio into quintiles. Quintile 1 contains the 20% of all shares in a given size decile with the lowest book-to-market ratios. At the other extreme are the 20% of companies within a given size decile with the highest ratios. This sorting results in 50 benchmark portfolios for each month (10 size deciles times 5 book-to-market quintiles). We assume a four-month lag in reporting financial results to avoid any look-ahead bias. Therefore, for companies whose financial years ends in December, the book-to-market value will be from the recent year. For companies with financial years ends after April, we calculate book-to-market ratios using book equity values from the previous year. Abnormal performance for each of the repurchase companies is then calculated using the appropriate size and book-to-value benchmark.

3.2.2 The buy-and-hold strategy

The results obtained using the CAR approach do not represent a realistic investment strategy. The buy-and-hold approach represents a more feasible investment strategy. We assume an equal-weighted buy-and-hold investment in the share repurchasing companies beginning in the month following the announcement and continuing for 12 months. After one year, the portfolio is rebalanced, thus reducing the possibility that a small set of companies will dominate the return calculations. The multi-year total return from this investment strategy is calculated by compounding average annual returns over time.

To calculate abnormal performance, we form four benchmarks. These are similar in design to the four benchmarks created for the CAR approach, but are calculated in a manner consistent with the buy-and-hold investment strategy. To save space, we report results for only size and book-to-market benchmark approach. To form the reference portfolio, all companies listed on the JSE are sorted each month into one of 50 size and book-to-market portfolios, as described earlier. Beginning in the next month, the one-year buy-and-hold return is calculated for each firm in a given portfolio. The equal-weighted average of all annual returns in a given portfolio is then used as a benchmark return for the firms ranked in that particular size and book-to-market rank at that point in time. This procedure enables us to compute annual buy-and-hold returns for each of the 50 benchmark portfolios for each calendar month.

In addition to annual returns, we also measure compound abnormal performance for two and three years following the repurchase announcement. The statistical inference of annual buy-and-hold and compounded multi-year returns is done according to a bootstrapping technique developed by Brock, Lakonishok, and LeBaron (1992).

4 EMPIRICAL RESULTS

4.1 Short-term market reaction

Panel A of Table 1 presents an analysis of the short-term market reaction represented by abnormal returns surrounding share repurchases by a sample of JSE listed companies. There appears to be negative but not statistically significant abnormal return totalling $-0,56\%$ during the period preceding the repurchase announcement (days -20 to -3). There is a statistically significant abnormal market reaction of $4,38\%$ during the period covering two days before to two days following public announcements of share repurchases by listed companies. Following the announcement (days $+3$ to $+20$) the abnormal return is only $0,37\%$, which is not significantly different from returns earned by the market. Investors are reacting to the favourable information conveyed through the repurchase announcement by an upward revision in the share price i.e., a reduction in the under-valuation. These results are consistent with hypothesis 1, which reflects the traditional signalling theory.

Panel B provides the initial market reaction to announcements of share repurchases of different sizes. The highest average announcement period abnormal return is $6,87\%$ for repurchases plans, which are for more than 10% of the issued shares. For those repurchase plans that are for less than 2,5% of the issued capital, the average market reaction is the lowest at $2,69\%$.

Panel C of Table 1 shows short-term market reaction to repurchase announcements by company size. The market reaction shows a distinct pattern across different size groups. Companies ranked in the two smallest size deciles provide the highest average abnormal return of $9,18\%$. It is highly significant and is more than double the observed overall reaction. Companies belonging to the two largest size deciles provide an abnormal return of only $2,49\%$. If company size is regarded as a proxy for information asymmetries, the observed relation between company size and market reaction is consistent with hypothesis 1. The greater the perception of under valuation (small companies), the greater is the correction in share price.

Table 1: Abnormal returns on and around the announcements of open market share repurchase.

Days relative to repurchase announcement				
	N	-20 to -3	-2 to +2	+3 to +20
Panel A: All Companies				
	117	-0,56% (-1,27)	4,38% (3,91)***	0,37% (1,13)
Panel B: Percentage intended to be repurchased				
0 to 2,5%	23	-0,79% (-1,07)	2,69% (1,71)*	0,19% (0,25)
2,5 to 5%	32	-0,70% (-1,02)	3,36% (1,97)**	0,28% (0,47)
5 to 10%	35	-0,47% (-0,69)	4,50% (4,02)***	0,41% (0,58)
Above 10%	27	-0,33% (-0,56)	6,87% (4,88)***	0,58% (0,75)
Panel C: Company size decile				
1 to 2 (small firms)	16	-0,71% (-1,05)	9,18% (5,36)***	0,87% (1,29)
3 to 4	19	-0,85% (-1,26)	5,37% (4,47)***	0,63% (0,88)
5 to 6	22	-0,60% (-0,83)	4,03% (3,76)***	0,45% (0,64)
7 to 8	21	-0,42% (-0,61)	3,70% (2,01)**	0,22% (0,41)
9 to 10 (large firms)	39	-0,41% (-0,57)	2,49% (1,69)*	0,07% (0,15)
Panel D: Book-to-market				
Quintile 1 (glamour stocks)	19	-0,82% (-1,21)	3,99% (3,72)***	0,25% (0,43)
Quintile 2	25	-0,74% (-1,18)	4,18% (3,83)***	0,29% (0,49)
Quintile 3	27	-0,61% (-0,85)	4,40% (4,07)***	0,34% (0,54)
Quintile 4	22	-0,40% (-0,58)	4,57% (4,14)***	0,45% (0,64)
Quintile 5 (value stocks)	24	-0,26% (-0,45)	4,69% (4,2)***	0,51% (0,68)

* Significant at the 10% level

** Significant at the 5% level

*** Significant at the 1% level

One way to determine the different motivations managers may have for repurchasing shares is to consider the book-to-market ratio (Ikenberry, Lakonishok and Vermaelen (2000)). Using this approach, companies with high book-to-market ratios or value stocks are more likely to have share under-valuation as their primary motive for repurchasing. Managers in growth companies with relatively low book-to-market ratios (glamour stocks) are likely to repurchase shares for a variety of reasons, such as avoiding dilution of earnings. This expectation is not reflected in Panel D of Table 1. Rather we observe that the market reaction to the repurchase announcement is similar across all five book-to-market quintiles. The average market reaction for companies in quintile 1 (glamour stocks) is 3,99%, while it is 4,69% for companies in quintile 5 (value stocks). It would appear that the book-to-market ratio has no impact on the short-term market reaction to share repurchases.

4.2 The long-term performance of South African companies involved in open market share repurchases

The preceding analysis has shown that despite managers' frequent claims of under valuation when announcing share repurchases, the return in the immediate days following the announcement is relatively small. This suggests that either the managers are being overly optimistic relative to the market about the firm's value or, alternatively the market is wrong in responding and thus under reacting to the repurchase signal. There is also the possibility that the market is slow in responding to the under valuation signal contained in the

repurchase announcements. Therefore, we examine the long-term performance of share repurchasing companies to see whether the initial market response is complete.

Because of the relatively short duration of this investigation the long-term performance of abnormal returns associated with share repurchases could only be measured for a period up to 36 months. Table 2 shows the CARs for the 36 months following the repurchase announcements using four different benchmarks. These CARs are calculated beginning one month following the actual announcement date, thereby excluding the initial market reaction to the repurchase announcement.

The results in Table 2 shows that companies that announce open market share repurchases tend to perform well when measured in terms abnormal returns in the long-term. All four benchmarks provided statistically significant positive returns in the long-term. Focusing on the size-adjusted returns, the CAR from month 1 to 36 is 9,33% (t=2,59). This positive drift cannot be explained by the book-to-market effect. When the returns are adjusted for both size and book-to-market, the CAR from 1 to 36 months is nearly the same i.e., 9,51% (t=2,42). Focusing only on the equal weighted portfolio, a long-term CAR totalling 12,88% is observed. It is clear that by concentrating only on the initial market reaction of 4,38%, about 66% of the total valuation impact of the repurchase announcement is ignored. These results support hypothesis 2, which states that the market will under react because it will

ignore much of the favourable information contained in the repurchase announcement.

Table 2: Cumulative 3-year returns following open market share repurchase announcements.

Market adjusted returns	CAR	t-statistic
Equal weighted portfolio ¹	12,88%	3,64***
Size adjusted portfolio ²	9,33%	2,59**
Size and book-to-market adjusted portfolio ³	9,51%	2,42**
Value weighted portfolio ⁴	7,39%	1,81*

*** Significant at 1% level
 ** Significant at 5% level
 * Significant at 10% level

- ¹ Market adjusted returns using the equal-weighted index of JSE listed companies
- ² Size adjusted returns using equal-weighted portfolio returns of JSE listed companies from same size decile (size only).
- ³ Size and book-to-market adjusted returns using equal-weighted portfolio returns of JSE listed companies from same size decile and book-to-market quintile.
- ⁴ Market adjusted returns using the value-weighted index of JSE listed companies.

An interesting long-term performance is observed when value weighted index is used as a benchmark. While the post-announcement abnormal returns of 7,39% are positive and significant, they are lower than when either the size-only or size and book-to market benchmarks are used, and are about 57% of that observed using the equal weighted index. An explanation for this is that large companies substantially outperformed smaller companies during the latter part of our sample period

The CAR approach can, at best, be regarded as descriptive and does not allow us to detect the dynamics of the share repurchase phenomenon. A more useful approach is the buy-and-hold procedure described earlier. The annual returns for share repurchases are calculated beginning in the month following the announcement. Equal weighted portfolios are formed in event time and are rebalanced each year. These returns are compared to a benchmark portfolio formed on the basis of size and book-to-market. The compounded difference in return between the repurchase sample portfolio and the benchmark portfolio is calculated for a three-year period following the repurchase announcement.

Panel A of Table 3 shows the compounded return differences from buying an equal-weighted portfolio of repurchasing companies using the buy-and-hold strategy. The difference in average return in the first year

following the repurchase announcement is 3,31%. The difference in annual returns increases to 6,87% and 14,35% in years 2 and 3 respectively. The compounded return difference in performance after three years of 14,35% is particularly noteworthy as the p-value of 0,018 indicates that the probability that a random portfolio will exhibit abnormal performance as high as our repurchase sample is remote i.e., in only 18 of any randomly selected 1000 pseudo-portfolios. These results suggest that investing in JSE listed companies that announced share repurchases was a profitable long-term investment strategy during the study period.

4.2.1 Long-term performance by book-to-market ranking

In Panel B of Table 3 we report long-term performance by book-to-market ranking at the time of the repurchase announcement. We start by reviewing the performance on high book-to-market companies (value stocks) in quintile 5. The results are impressive in that the compounded three-year buy-and-hold return is 32,78% above the reference portfolio return of similar size and book-to-market companies. The associated p-value is 0,003, which means that only 3 of the 1000 pseudo-portfolios formed from this sub-sample are likely to equal this performance. This extraordinary performance is not likely to be influenced by a small number of cases. Value stocks make up 28,5% of the sample measured on a monetary (rand-weighted) basis.

We would generally expect that the value stocks in quintile 5 of the sample to be the most undervalued at the time of the announcement. However, the long-term superior abnormal performance is not exclusive to this group. Companies in quintile 4, which constitute 23,2% of our sample when measured on a rand-weighted basis, show a three-year average abnormal performance of 13,32% with an associated p-value of 0,049. These results tend to support hypothesis 1 stating that the primary motivation of management in initiating share repurchases is to signal to the market the under valuation of the share.

As we move from value stocks toward glamour stocks, the long-term performance declines. For example, the average three-year compounded abnormal return for glamour stocks in quintile 1 is slightly negative, -2,14%. Furthermore, companies in quintile 2 also report a negative three-year compounded return of -1,87%. Companies belonging to the lower book-to market quintiles show little evidence of under-valuation. As a group, these companies appeared to be fairly priced at the time of the repurchase announcement, a result consistent with the idea that these companies are repurchasing shares for reasons other than under valuation.

Table 3: Long-term share returns following open market share repurchase announcements.

	n	Year 1	Year 2	Year 3
Panel A: Compounded return differences overall using the buy-and-hold strategy				
All firms	117	3,31% (0,057)	6,87% (0,025)	14,35% (0,018)
Panel B: Compounded return differences by book-to-market ratio				
Quintile 1 (Glamour stocks)	19	-1,35% (0,532)	0,27% (0,410)	-2,14% (0,341)
Quintile 2	25	2,43% (0,219)	-0,69% (0,517)	-1,87% (0,243)
Quintile 3	27	2,66% (0,093)	3,87% (0,125)	10,63% (0,073)
Quintile 4	22	1,25% (0,321)	5,41% (0,172)	13,32% (0,049)
Quintile 5 (Value stocks)	24	3,72% (0,063)	17,05% (0,009)	32,78% (0,003)

Sample portfolio and benchmark portfolio is calculated for a three-year period following the announcement. Significance is determined using a bootstrap methodology. The p-values are shown in parenthesis.

4.2.2 Robustness of long-term performance measurement

The observed long-term abnormal returns for value stocks suggest that the market tends to under react to the signals emanating from managers at the time of the repurchase announcement. The market appears to be reacting with scepticism to the implied signal that managers convey through the announcement. This apparent contradiction with market efficiency has led to Ikenberry, Lakonishok, and Vermaelen (2000) suggesting that the robustness of long-term abnormal returns should be tested. In this section we test the robustness of our findings, especially with respect to the value stocks where the abnormal returns are particularly high.

We will use the three-factor regression coefficients model recommended by Fama and French (1993) to measure long-term abnormal performance. The first factor is the excess return to the value-weighted portfolio of JSE listed shares. The second and third factors represent the size and book-to-market variables respectively. These two factors are formed by sorting all JSE shares on the basis of market equity into either a small-cap or a large-cap portfolio measured relative to the median JSE values at the end of each June. These same shares are also independently sorted on the basis of book-to-market into one of three portfolios. Those whose low book-to-market rank them in the bottom 30% of all JSE shares are sorted into the first portfolio. Those with ratio values among the middle 40% of all JSE shares are included in the second portfolio, while the third portfolio contains those shares with high book-to-market ratios that rank them among the top 30% of JSE

shares. Value-weighted returns are calculated on a monthly basis for six portfolios defined from the intersection of the two size portfolios and three book-to-market portfolios. The size factor in the Fama-French three-factor model is then calculated monthly by taking the difference in the average return between the three small-cap portfolios and the three large-cap portfolios. The book-to-market factor is calculated similarly, taking the difference in the average return between the two high book-to-market portfolios and the two low book-to-market portfolios.

To test the robustness of the results, we form a time series of monthly returns in calendar time. Specifically, we buy companies at the end of the month in which repurchase announcements are made and keep them for 36 months. The composition of the portfolio changes over time. Each month, the portfolio is rebalanced, new companies are added as they make announcements, and old companies are removed. This results in a time series of monthly returns for announcement between October 2000 and March 2003. The main interest is the extraordinary performance obtained for value stocks. We again form portfolios based on book-to-market rankings at the time of the repurchase announcement. Excess monthly returns are then regressed on the three factors developed by Fama and French. The alpha (α) from the regression is a monthly estimate of abnormal performance, which controls for size and book-to-market factors in addition to the overall market. The Fama and French (1993) three-factor model can be expressed as:

$$r_{p,t} - r_{f,t} = \alpha + B_m (r_{m,t} - r_{f,t}) + B_s (r_{small,t} - r_{large,t}) + B_{bm} (r_{high,t} - r_{low,t}) + \epsilon_t \quad \dots (5)$$

where

$r_{p,t} - r_{f,t}$ is the excess portfolio return in month t ,

α is the monthly estimate of abnormal performance,

$(r_{m,t} - r_{f,t})$ is an overall market factor formed for a value weighted portfolio of JSE companies,

$(r_{small,t} - r_{large,t})$ is a size factor,

$(r_{high,t} - r_{low,t})$ is a book-to-market factor,

B_m , B_s , and B_{bm} are the beta coefficients for overall market, size portfolio, and the book-to market portfolios respectively,

ϵ_t is the error term.

This approach is robust and differs from the traditional buy-and-hold procedure in several respects. First, returns are rebalanced monthly, thus the abnormal performance measured under this approach is less representative of a simple investment strategy. Second, the procedure assumes that the coefficients are stable over time, which implies that the characteristics of the portfolio are not changing.

Table 4: Fama-French three-factor model regression coefficients to test robustness of long-term performance

Book-to-market rank	A	B_m	B_s	B_{bm}	R^2
Quintile 1 (Glamour stocks)	-0,27 (-1,31)	1,15	0,91	0,05	75,2%
Quintile 2	0,11 (0,51)	1,21	0,64	0,02	79,3%
Quintile 3	0,15 (0,82)	1,12	0,72	0,31	84,7%
Quintile 4	0,18 (1,06)	1,06	0,61	0,39	82,2%
Quintile 5 (Value stocks)	0,45 (3,17)***	1,19	0,69	0,45	83,9%

*** Significant at the 1% level.
t-values are shown in parenthesis.

The results are reported in Table 4. The alpha obtained in the first regression using book-to-market quintile 1 shares (glamour stocks) is $-0,27\%$ per month, though not significant from zero at the traditional confidence levels. The alpha obtained using book-to-market quintile

5 shares (value stocks) is $0,45\%$ per month and is highly significant. The spread in performance between high and low book-to-market companies repurchasing their shares is $0,72\%$ per month, or $8,64\%$ per year, and is consistent with our earlier findings. Gibbons, Ross and Shanken (1989) suggest the F-statistic to test more formally whether the alphas produced in these regressions are jointly equal to zero. The F statistic associated with this analysis is 2,713, with an associated probability level of 0,967, thus rejecting the hypothesis that the alphas from the five regressions are jointly equal to zero.

5. DISCUSSION OF THE RESULTS

The most significant finding of this paper is that the information conveyed by open market share repurchases announcements is not fully incorporated in the share price. The initial market reaction of $4,38\%$ is only $23,4\%$ of the combined announcement and long-term return of $18,73\%$. It would seem that managers of companies that repurchase their own shares appear to have been correct, on average, in assuming that they can buy these shares at bargain prices to the benefit of their long-term shareholders. Beginning in the month following the repurchase announcement, the average buy-and-hold return is $14,35\%$ above that of a control portfolio over the three-year period.

Over the long-term, the largest abnormal returns following the repurchase announcements are observed in the high book-to-market category companies. The average return over the next three years for the buy-and-hold portfolio of these shares is $32,78\%$ above a control portfolio of similar size and book-to-market category companies. The propensity for under valuation is only observed for companies having high book-to-market ratios. Clearly there must be different reasons for managers announcing repurchase of value stocks (considered to be undervalued) and growth stocks (considered to be overvalued). The results of this investigation support the findings of Lakonishok, *et al.* (1994) that companies with high book-to-market ratios with poor past performance can be considered to be truly out-of-favour shares. The share repurchase announcements by these high book-to-market companies can be expected to signal management's expectation of more favourable prospects, which will trigger an increase in share prices.

Few companies in the low book-to-market category can be considered undervalued (Lakonishok, *et al.*, 1994). If underpricing were the only motive for repurchasing shares, one would expect few low book-to-market companies involved in buybacks. Yet the evidence in Table 1 shows that the propensity for low book-to-market companies to announce repurchases is nearly the same as for high book-to-market companies. Therefore, for these companies, the motivation for repurchasing shares would not be dominated by under valuation.

For example, managers in low book-to-market companies may view repurchases as a way to artificially support prices that have typically risen dramatically in the recent past. In addition, managers in low book-to-market companies are more likely than managers in high book-to-market companies to take advantage of superior past share performance by exercising share options. As these options are exercised, there is a dilution in their share ownership and the repurchase can be seen as an effort by managers to preserve their stake in the company. Also, given the relatively superior past performance of low book-to-market companies, managers in these companies may be more prone to hubris, and thus repurchase shares that are not under priced. Therefore, for companies with low book-to-market ratios, true under valuation would not appear to be as important a motive for repurchasing shares, as it would be for firms having high book-to-market ratios.

In an efficient market investors would fully react to the signal management is conveying regarding the company's optimistic prospects. The observation of an abnormal share price increase of 14,35% in the 36-month period following the announcement suggests that the JSE appears to be inefficient in reacting to announcements of share repurchases. A possible reason for the under reaction is that the market treats the management optimism accompanying the repurchase announcement with scepticism, leading to share prices adjusting slowly over time.

This apparent market inefficiency is a serious challenge for managers trying to convey favourable information to shareholders through repurchases announcements. It is suggested that managers should provide shareholders a detailed explanation of the future benefits likely to arise from repurchases. Such an approach is likely to remove the observed scepticism that is currently associated with share repurchases. Le Roux (2006) reports that Anglo American PLC and other companies in the commodities market are providing shareholders with comprehensive details for their repurchase programmes in order to avoid investor misconception. The regulatory framework of the JSE has made no provision for a mandatory disclosure outlining the reasons for a share repurchase. Such a comprehensive mandatory disclosure can be expected to assist managers in sending an unambiguous signal to the market when announcing share repurchases. It will also assist in reducing the long-term drifts in share prices of companies announcing share repurchases.

This study has provided evidence of delayed market reaction to share repurchases announcements in South Africa. Such a delayed market reaction has also been observed for seasoned equity issues on the JSE (Bhana, 1998). Delayed market reactions have also been reported for events such as initial public offerings (Ritter, 1991), acquisitions and mergers (Agrawal, Jaffe, and Mandelker, 1992), spin-offs (Cusatis, Miles, and Woolridge (1993) and seasoned equity offerings (Loughran and Ritter (1995). In all these cases there

appears to be evidence of managers having market timing abilities that enabled their companies to benefit from the long-term price drift following company-specific announcements. The evidence of the South African study on share repurchases is consistent with other studies that find managers having market-timing abilities. For some reason the benefits signalled by managers for both the issue and repurchase of shares, is largely ignored by investors in the short-term. Serious concerns should be raised regarding the reliability of short-term measures of performance to evaluate the economic impact of company-specific announcements.

The market under reaction to announcements of share repurchases suggests that profitable trading strategies can be developed to benefit from the long-term drift in share prices. Pireu (2006) has reviewed the performance of *David Fried's Buyback Letter*, which has followed a strategy of short selling the companies that announced seasoned equity offerings and buying the shares of companies repurchasing their shares during the 10-year period ending 2005. It was found that companies that issued equity capital under-performed the market and companies that repurchased their shares out-performed the market in the three-year period following these events. Based on this evidence, the newsletter developed the "share supply theory", which states that an increase in shares is bad for shareholders and a decrease in shares is good. The newsletter also subscribes to the view that regarding share capital, managers in charge of companies know "when to hold them and when to fold them".

6. SUMMARY AND CONCLUSIONS

The South African experience of share repurchases is similar to the earlier evidence obtained for U.S. share repurchases. The initial market reaction to share repurchases on the JSE is small, the abnormal return is 4,38% at the time of the announcement. We further find evidence that the market under reacts to open market share repurchase announcements. Using a buy-and-hold strategy, three-year abnormal performance following the announcement is 14,35%. Such a magnitude of under-reaction is consistent with the manager's claim of share price under valuation. Companies with high book-to-market ratios that announced repurchase programmes provided a three-year abnormal return of 32,78%. A systematic trader in value stocks that announce share repurchases would have earned significant abnormal returns for a period of up to three years.

The findings of this investigation broadly support the signalling theory: company managers use share repurchases to signal their optimism about the company's prospects to the market. Overall, the results provide support for hypothesis that repurchase announcements lead to increased share prices because they are credible managerial signals that the company's shares are undervalued or that there are

other reasons suggesting that the long-term prospects are better than reflected by the existing share price. The repurchase announcement represents an attempt to pass on this inside information to the current shareholders. It is suggested that the JSE makes comprehensive disclosure outlining the benefits to shareholders from share repurchases mandatory. Such a disclosure will serve to improve the credibility of the repurchase announcement and will also assist in improving the efficiency of the JSE.

A limitation of this study of share repurchases by companies listed on the JSE is small sample size due to the relatively short period of the investigation. Share repurchases have only been allowed by the JSE after October 2000 and the sample comprises of 117 companies involved in share repurchases during the 30-month period ending March 2003. The small sample size and the limited period of the investigation are likely to provide unreliable results. Therefore, this study must be regarded as exploratory. Follow-up studies must be undertaken covering a longer period having a larger sample size.

Company insiders have an information advantage over outside investors. There is the possibility of insiders exploiting private information through transactions in their company's shares around the announcement period of share repurchases. Pettit, Ma, and He (1996) provide evidence of a significant level of insider transactions circumventing the insider trading regulations by reducing sales below normal levels in the quarter before the event, and increasing sales to above normal levels in the quarter after the event. This study has not investigated the role (if any) that insider trading plays in the abnormal returns that are earned by companies announcing their share repurchases. This remains a fruitful area of research that may be pursued in the future.

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